The Effect of Bank Supervision on Risk Taking: Evidence from a Natural Experiment

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Federal Reserve Board of Governors

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Disclaimer: The analysis and conclusions set forth are those of the authors alone and do not indicate concurrence by the Board of Governors of the Federal Reserve System or anyone else associated with the Federal Reserve System.
Motivation & Research Question

• The ongoing supervision and enforcement of established guidelines is a crucial companion to financial regulation
  • Works in concert with regulation as a more flexible element of banking policy
  • Moral suasion may be important in keeping banks in check

• To what extent does supervision limit risk taking at financial institutions?
  • Changes in supervision often tied to differences between banks or regional changes
  • Difficult to disentangle effects of regulation

• We examine a natural experiment during the S&L crisis
• We focus on federally-chartered S&Ls in the 1980s
• Primary regulator: FHLBB (subject to same regulations)

• Supervisory oversight: purview of regional FHLBs (PSA)
  • Supervisors: FHLB employees, reported to local president
  • Field agents responsible for taking action on facts unearthed by examiners
Natural Experiment: Relocation of 9th District FHLB

- Since founding of the FHLB System, the 9th district’s principal office was located in Little Rock, AR

- Texas attempted to secure relocation as early as 1950s

- Weakening of Arkansas congressional delegation led to successful relocation vote in 1983

- Directed to move to Dallas “as rapidly as possible”
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Natural Experiment: Relocation of the 9th District HQ

Little Rock

Dallas

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• Rather than relocate, much of the staff simply quit (especially in Bank’s division of supervision)

• All but 11 employees quit (including the chief). Only 2 were field agents, remainder were clerical/admin staff

• Restaffing effort was slow; in 1986, chairman of FHLBB brought in 250 supervisory and examination staff from other districts for six-week blitz
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Examination Intensity: Examinations per Institution

- 9th District
- FHLB System


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Trainee Examiners in Selected FHLB Districts (1984)

<table>
<thead>
<tr>
<th>Trainee Examiners</th>
<th></th>
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<tbody>
<tr>
<td>4th district, Atlanta</td>
<td>27%</td>
</tr>
<tr>
<td>7th district, Chicago</td>
<td>22%</td>
</tr>
<tr>
<td><strong>9th district, Dallas</strong></td>
<td><strong>43%</strong></td>
</tr>
<tr>
<td>10th district, Topeka</td>
<td>19%</td>
</tr>
<tr>
<td>All FHLB districts</td>
<td>22%</td>
</tr>
</tbody>
</table>
Supervisory Fees Paid by S&Ls

Supervisory fees as a share of assets (June 1981 = 1)

Post-treatment

9th District
Other FHLB Districts

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Data

- Federally-chartered S&Ls in contiguous U.S.
  - Thrift Financial Reports (TFR)
  - Key measure of risk: “Higher risk real estate investments”
    - CRE, ADC, service corp. investments

- County and state-level characteristics
  - Census, BEA, BLS

- Failure Transaction Database (FTDB) from the FDIC
Higher Risk Real Estate Investment by S&Ls

Post-treatment

Percent

Higher risk real estate investments as a share of assets

12/31/1982 06/30/1983 12/31/1983 06/30/1984

9th District Other FHLB Districts

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Methodology: Difference-in-Differences

- Basic difference-in-differences specification, with 9th district thrifts composing the treatment group:

\[
Y_{i,t} = \alpha + \gamma(\text{Post}_t \times \text{Treatment}_i) + \phi'(\text{Post}_t \times B_{i,1982}) + \\
\zeta'S_{i,t-1} + \theta'C_{i,t-1} + \eta_t + \psi_i + \varepsilon_{i,t}
\]
9th District Relative to Other Districts

Coefficient estimate

Little Rock relocation

Additional examiners arrive

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9th District Relative to 4th District

- Coefficient estimate
- Little Rock relocation
- Additional examiners arrive

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• The 9th district was more reliant on oil extraction than other districts on average

1. Variation within 9th District states: AR had a mining share of GSP of < 2%
   • Compare with Missouri, which also had a low mining share
## Robustness Checks

### Panel A: Arkansas (9th District) vs Missouri (8th District)

<table>
<thead>
<tr>
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<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$Post \times Treatment$</td>
<td>9.13***</td>
<td>4.75**</td>
<td>4.72**</td>
<td>5.00**</td>
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<tr>
<td></td>
<td>(1.98)</td>
<td>(1.97)</td>
<td>(1.97)</td>
<td>(2.07)</td>
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<tr>
<td>State-level controls</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>County-level controls</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Bank-level controls</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Number of observations</td>
<td>543</td>
<td>543</td>
<td>543</td>
<td>543</td>
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<tr>
<td>Adj. $R^2$</td>
<td>0.79</td>
<td>0.80</td>
<td>0.81</td>
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</table>
Falsification and Placebo Tests

1. Texas thrifts were notorious for their aggressive lending practices
   - Results could be driven by “outlier states” like TX
     - Within-district Diff-in-Diff with TX thrifts as treatment (AR, NM, MS, LA as controls)

2. Placebo tests using commercial banks that look like S&Ls
   - Shared local lending environment, able to invest in higher risk real estate loans, but subject to different supervisor
     - NN matching on assets, residential lending, deposit funding, capital-to-assets, FHLB district, metropolitan operating area
### Panel B: 9th district commercial banks vs rest of country

<table>
<thead>
<tr>
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<th>(1)</th>
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<tbody>
<tr>
<td>$Post \times Treatment$</td>
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<tr>
<td>State-level controls</td>
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<tr>
<td>County-level controls</td>
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<td>Yes</td>
</tr>
<tr>
<td>Bank-level controls</td>
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<td>No</td>
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<td>Yes</td>
</tr>
<tr>
<td>Number of observations</td>
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<td>15,165</td>
<td>14,918</td>
<td>14,918</td>
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<tr>
<td>Adj. R^2</td>
<td>0.75</td>
<td>0.75</td>
<td>0.73</td>
<td>0.73</td>
</tr>
</tbody>
</table>
1. We show that the risky loans increased the probability of failure

2. Failure costs would likely be higher in 9th district

   2.1 Poorer quality assets ⇒ fewer assets passed to acquirers, more bad assets passed to FSLIC

   2.2 Less oversight should lead to delays in resolution

\[
Y_{i,t} = \alpha + \beta \cdot 9th \ District_i + \Phi' X_{i,t-1} + \eta_t + \varepsilon_{i,t}
\]
### Resolution Costs by FHLB District (1983-1990)

**Panel A: Weighted Average Costs of Failure by FHLB District and Charter Type**

<table>
<thead>
<tr>
<th>FHLB District</th>
<th>Rank</th>
<th>Savings &amp; Loans</th>
<th>Resolution Costs/Assets (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dallas</strong></td>
<td>1</td>
<td></td>
<td>80.7</td>
</tr>
<tr>
<td>Topeka</td>
<td>2</td>
<td></td>
<td>35.7</td>
</tr>
<tr>
<td>Des Moines</td>
<td>3</td>
<td></td>
<td>21.8</td>
</tr>
<tr>
<td>Atlanta</td>
<td>4</td>
<td></td>
<td>19.8</td>
</tr>
<tr>
<td>New York</td>
<td>5</td>
<td></td>
<td>18.4</td>
</tr>
<tr>
<td>Chicago</td>
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<td>Boston</td>
<td>7</td>
<td></td>
<td>15.8</td>
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<tr>
<td>Cincinnati</td>
<td>8</td>
<td></td>
<td>13.5</td>
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<td>Indianapolis</td>
<td>9</td>
<td></td>
<td>12.6</td>
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<td>Seattle</td>
<td>10</td>
<td></td>
<td>10.4</td>
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<tr>
<td>Pittsburgh</td>
<td>11</td>
<td></td>
<td>9.9</td>
</tr>
<tr>
<td>San Francisco</td>
<td>12</td>
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<td>9.3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>FHLB District</th>
<th>Rank</th>
<th>Commercial Banks</th>
<th>Resolution Costs/Assets (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cincinnati</td>
<td>1</td>
<td></td>
<td>25.9</td>
</tr>
<tr>
<td>Topeka</td>
<td>2</td>
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<td>24.6</td>
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<tr>
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<td></td>
<td>20.7</td>
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<tr>
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<td>20.7</td>
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<tr>
<td>Chicago</td>
<td>5</td>
<td></td>
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<td>San Francisco</td>
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<td></td>
<td>17.3</td>
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State-level ranks for 9th District S&Ls (commercial banks):

AR:1(6); TX:2(25); NM:3(9); LA:4(10); MS:12(34)

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9th District Resolution Costs as a Percent of Assets (1983-1990)

[Graph showing resolution costs as a percent of assets for S&Ls and Commercial Banks]
9th District Assets Passed to Acquirer as a Percent of Assets (1983-1990)

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9th District Probability (Net Worth < 3%) 1yr Before Failure (1983-1990)

Odds Ratio

S&Ls  Commercial Banks

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Conclusion

In this paper, we show that supervision (narrowly defined) can significantly affect bank risk taking and is therefore crucial to the success of microprudential regulation

1. Thrifts invested more heavily in most risky classes of loans
2. Risk taking activity ceased upon arrival of additional supervisors/examiners
3. Additional risk taking is not present in similar commercial banks (geography, other attributes) without supervisory disruption
4. Higher incidence and cost of failures resulted