Supervisory Incentives in a Banking Union

Elena Carletti (Bocconi University and CEPR)
Giovanni Dell’Ariccia (IMF and CEPR)
Robert Marquez (University of California, Davis)
The centralization of supervision in the Euro area

- Bank supervision prior to the crisis: Home country supervision
  - Nationally-bounded supervisors may not have the right incentives to control bank risk in a way consistent with larger, international objectives
  - Perception of excessive risk taking by financial institutions and laxity in countries’ regulatory policies

- Centralization of supervision: SSM responsible for all banks in the Euro area
  - SSM has legal power over all decisions regarding banks
  - But, it has to rely (at least partly) on local supervisors to collect the information necessary to act
Bank supervision in the banking union

- Centralization of supervision in the Euro area
  - With possibility of joining for non-euro members

- SSM responsible for all banks in the Euro area
  - SSM has legal power over all decisions regarding banks
  - **But**, it has to rely (at least partly) on local supervisors to collect the information necessary to act – “Hub-and-spokes”

- This implies a separation between decision making institutions and information collection bodies
  - Idea is to remove discretion from hands of local supervisors and create level playing field
What we do

- Use classical approach to bank supervision
  - Banks subject to limited liability choose their portfolios
  - Bank supervisors have the task of controlling banks’ risk talking through capital requirements, portfolio restrictions and, ultimately, \textit{intervention}
  - Anticipating the supervisor’s intervention, (some) banks may prefer to comply with supervisory requirements

- What we add
  - Centralization, which reduces “local” concerns
  - \textbf{But} that also alters incentives of local supervisors (to collect information)
A simple framework

- Banks have capital $k$, and raise $1-k$ in insured deposits and choose their portfolio.

<table>
<thead>
<tr>
<th>Probability</th>
<th>Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>$q$</td>
<td>$R-(1/2)cq$</td>
</tr>
<tr>
<td>$1-q$</td>
<td>0</td>
</tr>
</tbody>
</table>

- A higher payoff can be earned at greater risk (lower $q$).
- The more capital banks have, the less risk they take.

- If banks fail, deposit insurer pays cost of providing deposit insurance: $\psi_L > 1$.
A simple framework (cont.)

- A (local) supervisor can invest costly resources to collect information about banks’ balance sheet
  - With probability $e$, he observes the balance sheet of the bank
  - He observes nothing otherwise

- Conditional on having information, the supervisor can:
  - Intervene at the bank and bear cost $A_L$
  - Implement a portfolio $q_L^*$ to maximize total surplus
Bank’s investment choice

- Bank chooses portfolio $q$ to maximize its profit

$$\max_q q \left( R - \frac{1}{2} cq - (1 - k) \right) - k$$

- Profit-maximizing portfolio $\hat{q}(k)$ is increasing in $k$:

$$\hat{q}(k) = \frac{R - (1 - k)}{c}$$
What does a supervisor want?

- The supervisor would instead like to maximize

\[
\max_q \left( R - \frac{1}{2} cq - (1 - k) \right) - (1 - q)(1 - k)\psi_L - k
\]

so that \( q_L^* = (R + (1 - k)(\psi_L - 1)) \)

- But because intervention is costly, he intervenes only if

\[
\hat{q} < \tilde{q}_L(k) = \frac{1}{c} \left( R + (1 - k)(\psi_L - 1) - \sqrt{2cA_L} \right)
\]

- This is equivalent to intervening only if \( k < \tilde{k}_L \)
What does a supervisor want?

The supervisor would instead like to maximize

$$q \max \left( R - \frac{1}{2} cq - (1 - k) \right) - (1 - q)(1 - k) \psi_L - k$$

so that

$$q_L^* = \frac{1}{c} \left( R + (1 - k)(\psi_L - 1) \right)$$

But because intervention is costly, she intervenes only if

$$\hat{q} < \tilde{q}_L(k) = \frac{1}{c} \left( R + (1 - k)(\psi_L - 1) - \sqrt{2cA_L} \right)$$

This is equivalent to intervening only if $$k < \tilde{k}_L$$
Bank's choice of portfolio quality increases in its capital
Bank portfolio quality

Supervisor demands a minimum portfolio quality $\tilde{q}_L$
Bank portfolio quality

Supervisor demands a minimum portfolio quality $\tilde{q}_L$
Banks may react to the presence of the supervisor
Bank reaction to regulation - equilibrium

Banks with capital below $\bar{k}_L$ stick with their preferred portfolio; those with capital between $\bar{k}_L$ and $\bar{k}_L$ choose to comply.
Equilibrium with local supervision

Once we have determined, for a given $e$,

- supervisory intervention threshold $\tilde{q}_L$ and implementation portfolio quality $q_L^*$
- and given banks’ response to the threat of supervisory intervention $\tilde{k}_L$

we need to determine

- supervisory information effort $e$
- aggregate banks’ response $\bar{k}_L$
The supervisor’s reaction function for effort is increasing in the threshold level of capital $\bar{k}_L$ (the higher $\bar{k}_L$ the fewer banks comply).
The banks’ reaction function is given by the threshold level of capital ($\bar{k}_L(e)$) above which banks comply. It is decreasing in the supervisor’s effort $e$. 
Equilibrium with local supervision

The intersection of the two reaction functions – for the banks and for the supervisor – defines the equilibrium \((e^*_L, k^*_L)\)
Introducing a central supervisor

- A central supervisor decides when to intervene and which portfolio to implement upon intervention.

- Local supervisor retains control over information collection (but is mandated to transmit findings to the central agency).

- Conflict: A central supervisor may be tougher
  - He is less captured by local banks: $A_C < A_L$
  - He internalizes more of the losses associated with bank failure: $\psi_C > \psi_L$
Intervention decisions of the central supervisor

- In either case ($A_C < A_L$ or $\psi_C > \psi_L$) the central supervisor is **tougher** in his **intervention policy**: $\tilde{q}_L(k) < \tilde{q}_C(k)$
  - Higher intervention threshold
  - So that now banks with $k < \tilde{k}_C$ are intervened, where $\tilde{k}_L < \tilde{k}_L$

- If $\psi_C > \psi_L$, the central supervisor implements also a **higher portfolio** quality when he intervenes: $q_C^* > q_L^*$

- “Two” sources of conflict:
  - Intervention thresholds – which banks to intervene
  - Implemented quality – what to impose on intervened banks
Reaction functions with $A_C < A_L$

- **Result:** Effort by local supervisor will be *weakly* lower than in absence of central supervisor
  - The central supervisor mandates to intervene banks, which the local supervisor would prefer not to intervene

- **Result:** For given supervisory effort, fewer banks will comply with supervisory standards
  - The tougher standards make it more costly for banks to comply
Centralization and the local supervisor’s effort decision with $A_C < A_L$

Supervisory effort becomes decreasing in the banks’ threshold level of capital beyond $\tilde{k}_L$
Centralization and the local supervisor’s effort decision with $A_C < A_L$

Banks’ reaction function shifts up, leading to an increase in supervisory effort in equilibrium
Centralization and the local supervisor’s effort decision with $A_C < A_L$

**Question:** Can supervisory effort decrease in equilibrium? Yes, if the conflict is large enough (i.e., if $A_L - A_C$ large enough)
Centralization and the local supervisor’s effort decision with $A_C < A_L$

**Result:** If $A_L - A_C$ is large enough,
- There are equilibria with lower (but positive) regulatory effort under centralization
- These equilibria can entail more overall risk in the banking sector
Centralization and the local supervisor’s effort decision with $\psi_C > \psi_L$

Local supervisor’s reaction function for effort shifts down (i.e., is lower) when central supervisor has a lower cost of funds
Agency conflicts in supervisory effort

Banks’ reaction function under central supervision
Agency conflicts in supervisory effort

Supervisory effort may increase or decrease in equilibrium – Aggregate portfolio risk may be higher even though regulatory standards have increased
Conclusions and future work

- When supervision is centralized
  - Standards increase, but …
  - … Reliance on local supervisor who faces a larger agency conflict may lead to less information acquisition which …
  - … may lead to greater risk-taking by banks
  - As a result, aggregate bank portfolio risk may go up or down

- Centralization may entail hurdles if local agencies still play an important role in information acquisition and implementation of regulation