


Supervisory Incentives in a Banking Union



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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, **intervention**
 - Anticipating the supervisor's intervention, (some) banks may prefer to comply with supervisory requirements
- What we add
 - Centralization, which reduces “local” concerns
 - **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

Probability	Return
q	$R - (1/2)cq$
$1-q$	0

- 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

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

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 $k < \tilde{k}_L$

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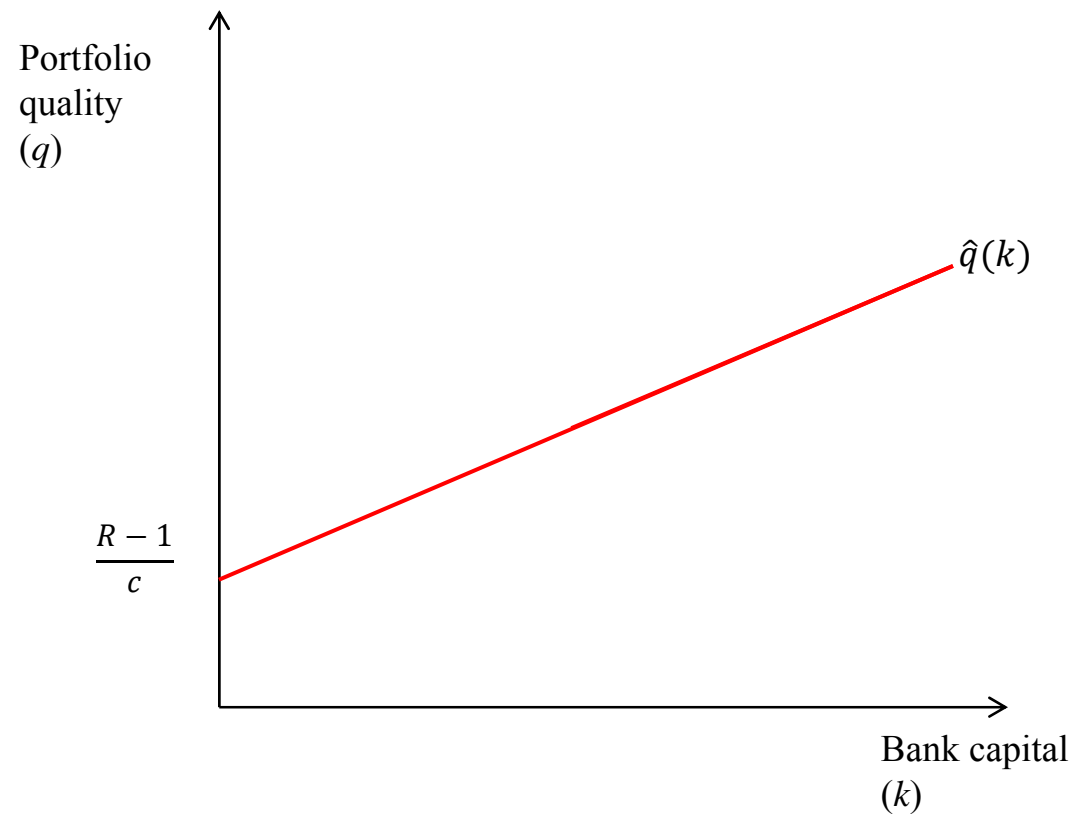
so that $q_L^* = \frac{1}{c}(R + (1 - k)(\psi_L - 1))$ Implementation
portfolio quality

- But because intervention is costly, she intervenes only if

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

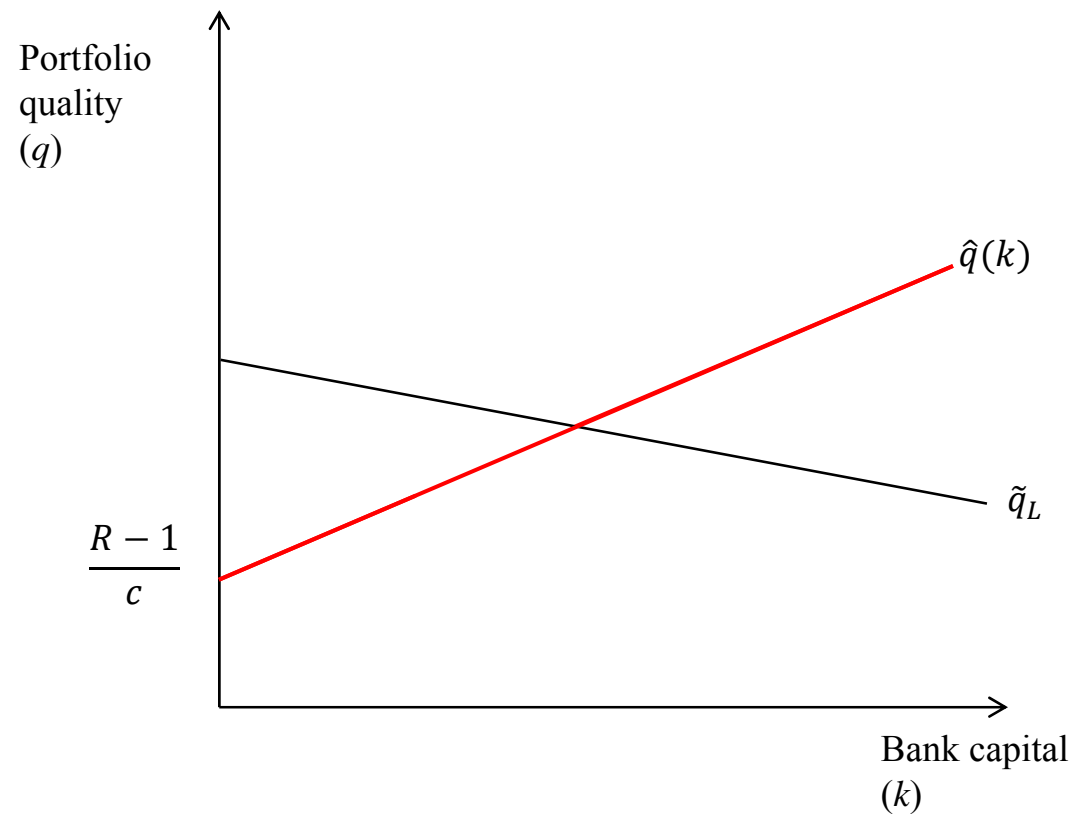
- This is equivalent to intervening only if $k < \tilde{k}_L$

Bank portfolio quality



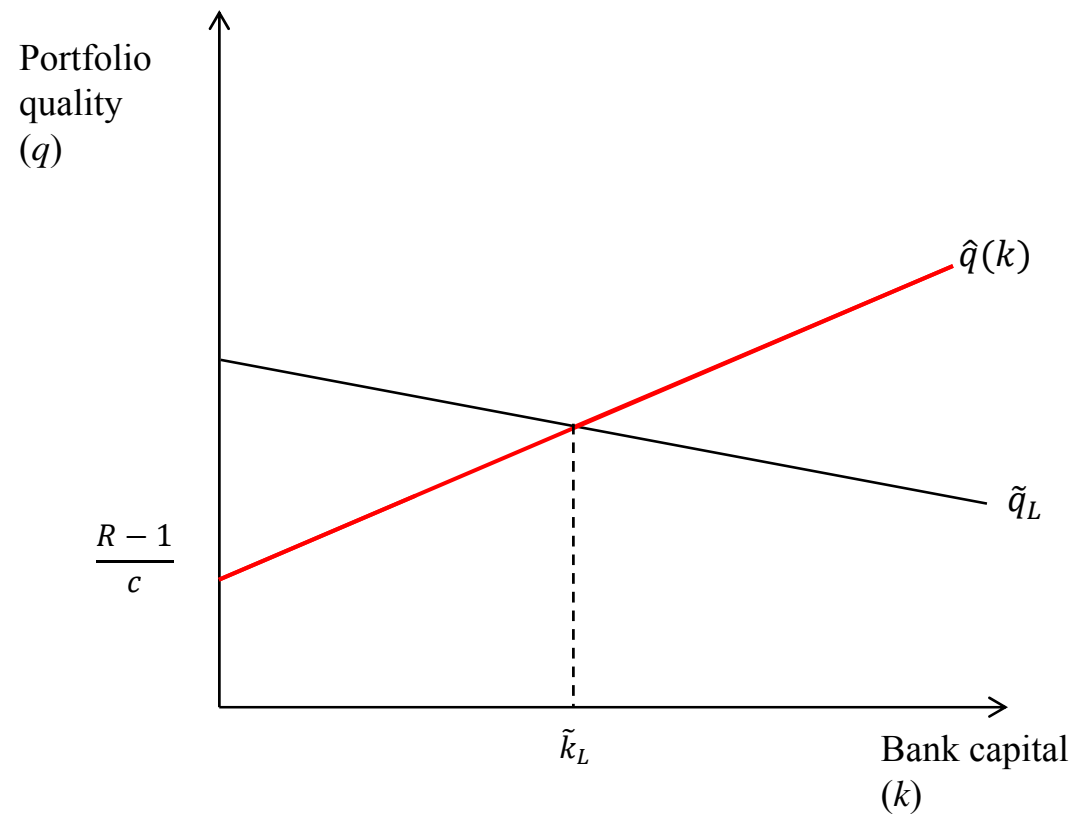
Bank's choice of portfolio quality increases in its capital

Bank portfolio quality



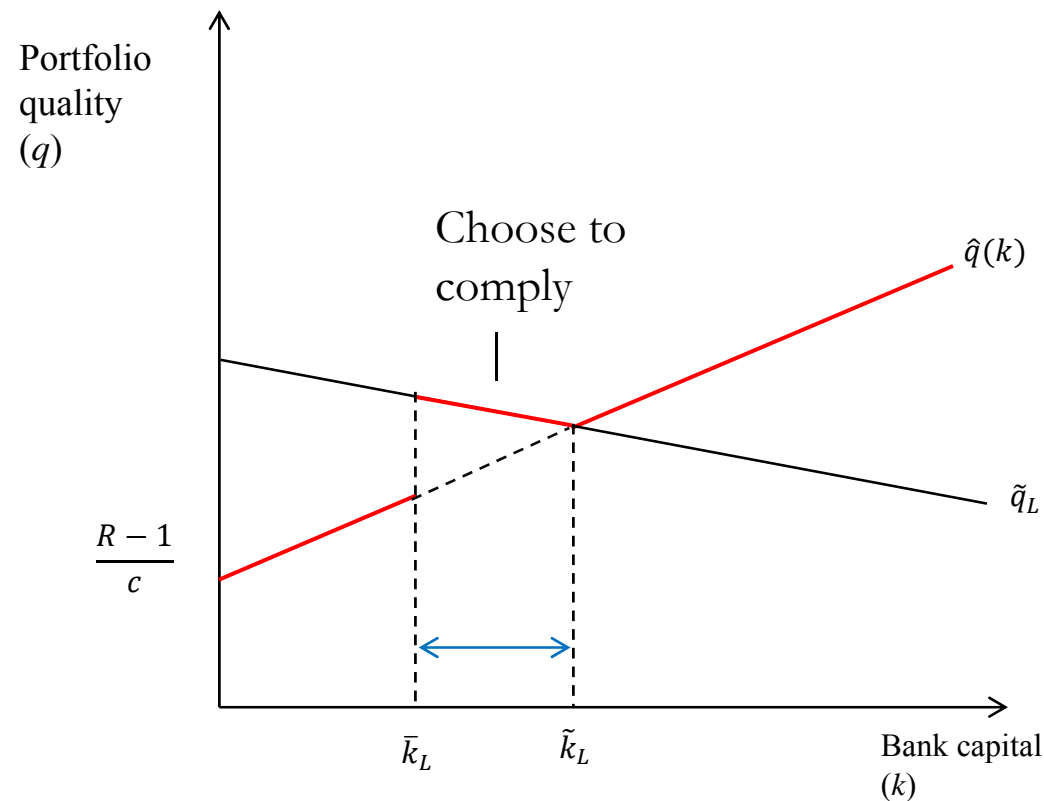
Supervisor demands a minimum portfolio quality \tilde{q}_L

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 \tilde{k}_L choose to *comply*

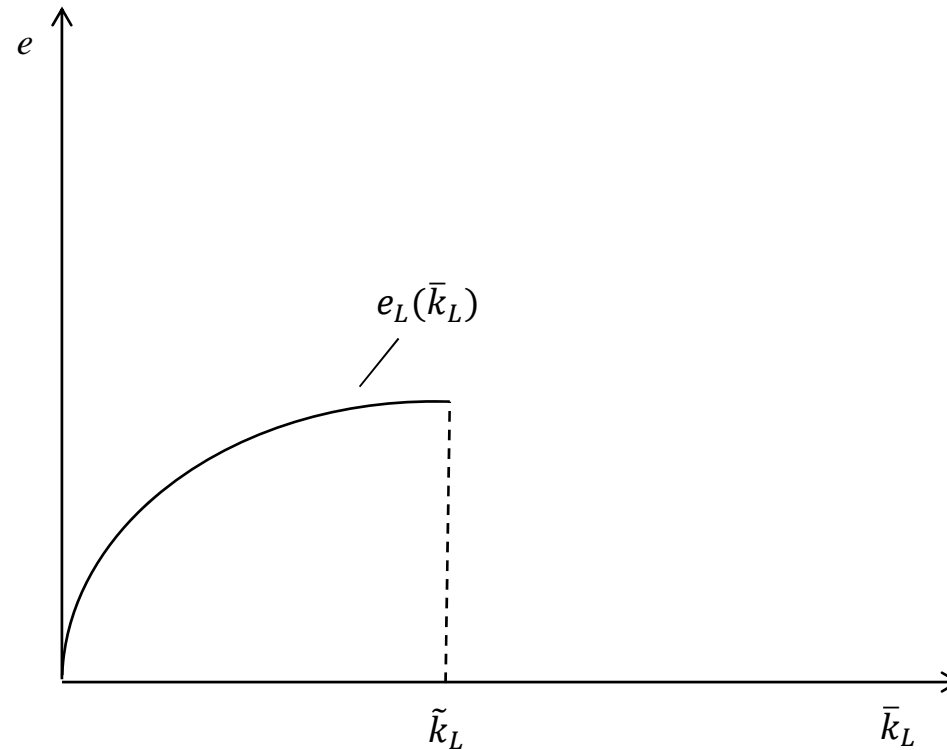
Equilibrium with local supervision

- 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 \bar{k}_L

we need to determine

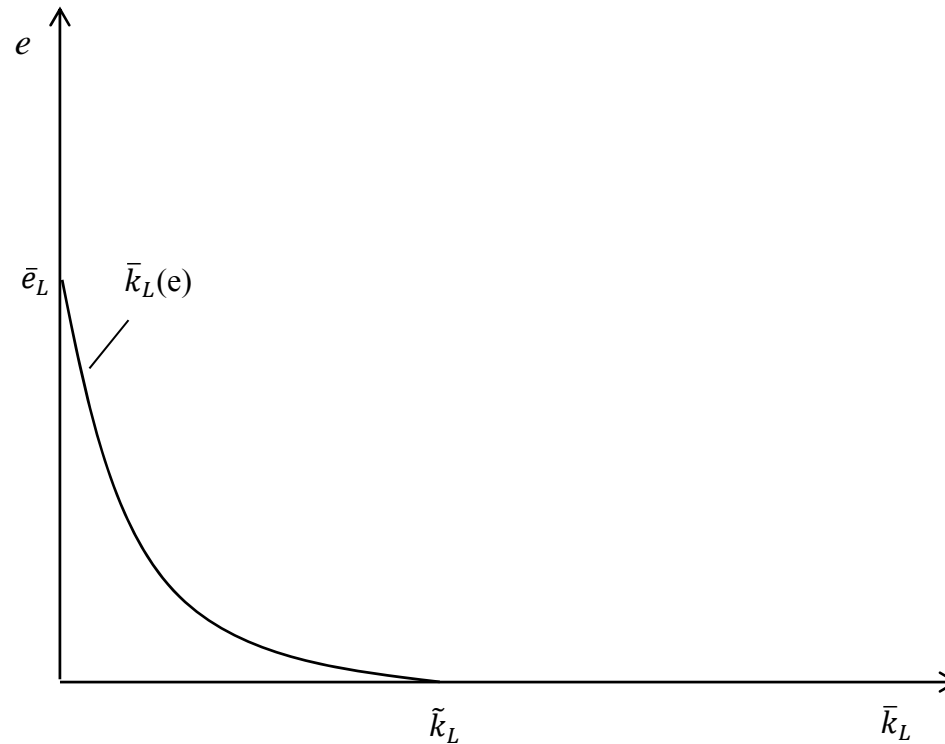
- supervisory information effort e
- aggregate banks' response \bar{k}_L

Supervisor's reaction function



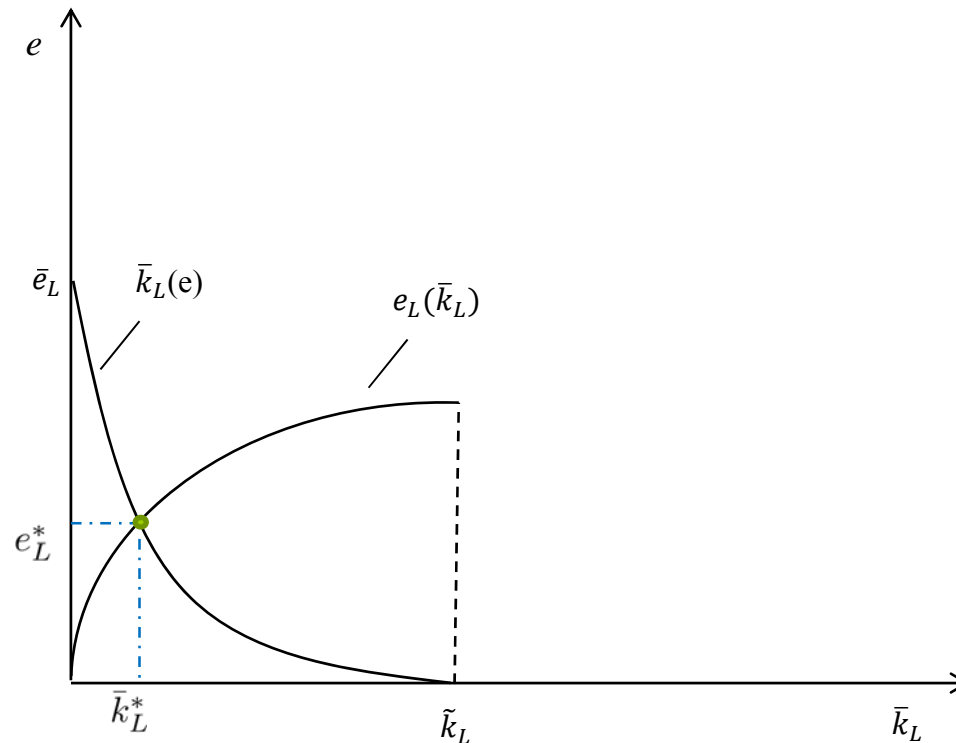
The **supervisor's reaction function** for effort is increasing in the threshold level of capital \bar{k}_L (the higher \bar{k}_L the fewer banks comply)

Banks' reaction function



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^*, \bar{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

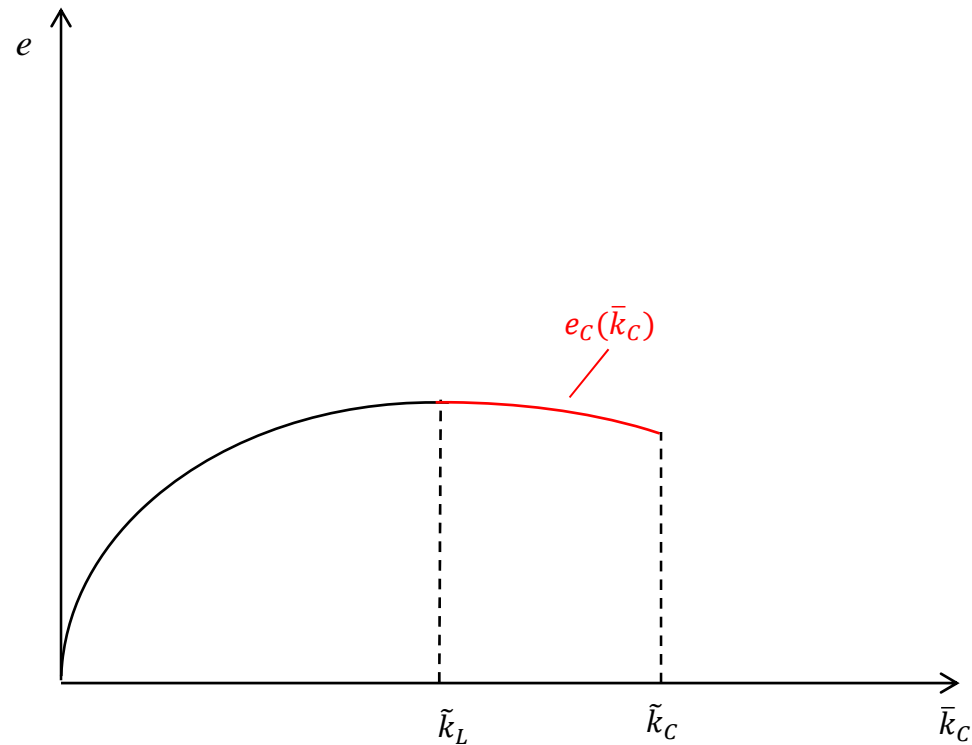
- In either case ($A_C < A_L$ or $\psi_C > \psi_L$) the central supervisor is **tougher** in his **intervention policy**: $\tilde{q}_L(k) < \tilde{q}_C(k)$
 - Higher intervention threshold
 - So that now banks with $k < \tilde{k}_C$ are intervened, where $\tilde{k}_L < \tilde{k}_L$
- If $\psi_C > \psi_L$,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

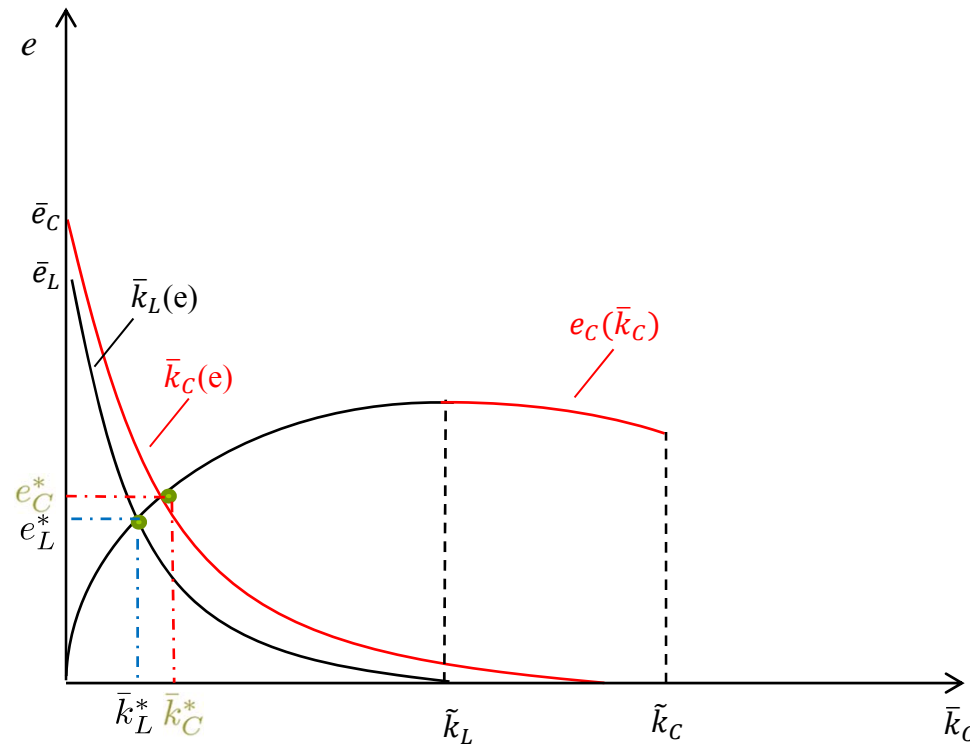
- **Result:** For given supervisory effort, fewer banks will comply with supervisory standards
 - The tougher standards make it more costly for banks to comply

Centralization and the local supervisor's effort decision with $A_C < A_L$



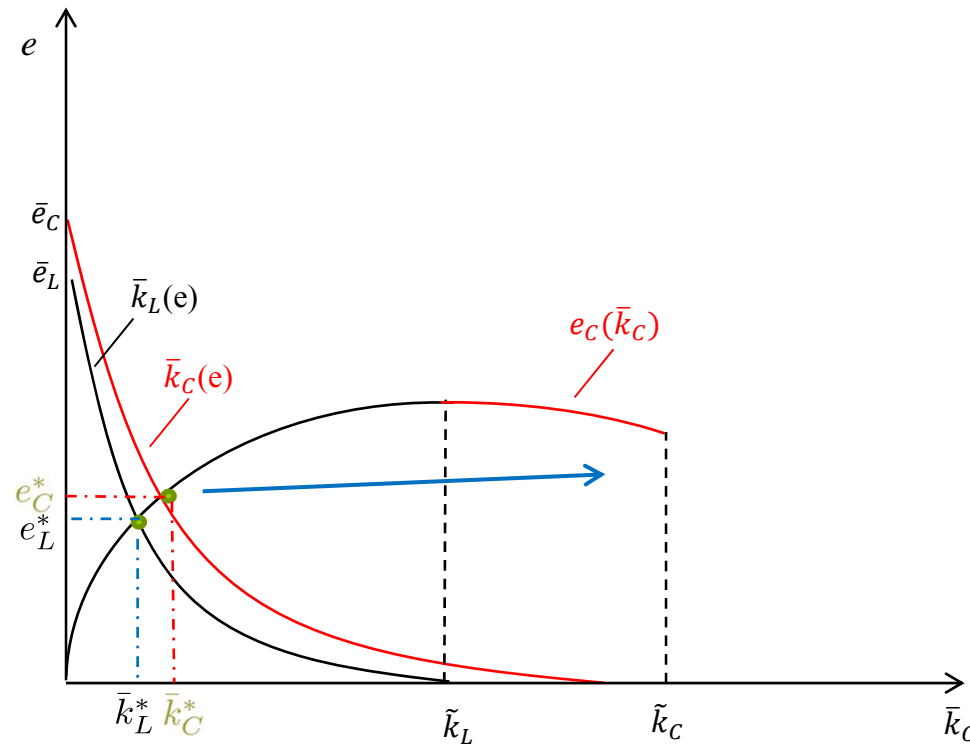
Supervisory effort becomes decreasing in the banks' threshold level of capital beyond \tilde{k}_L

Centralization and the local supervisor's effort decision with $A_C < A_L$



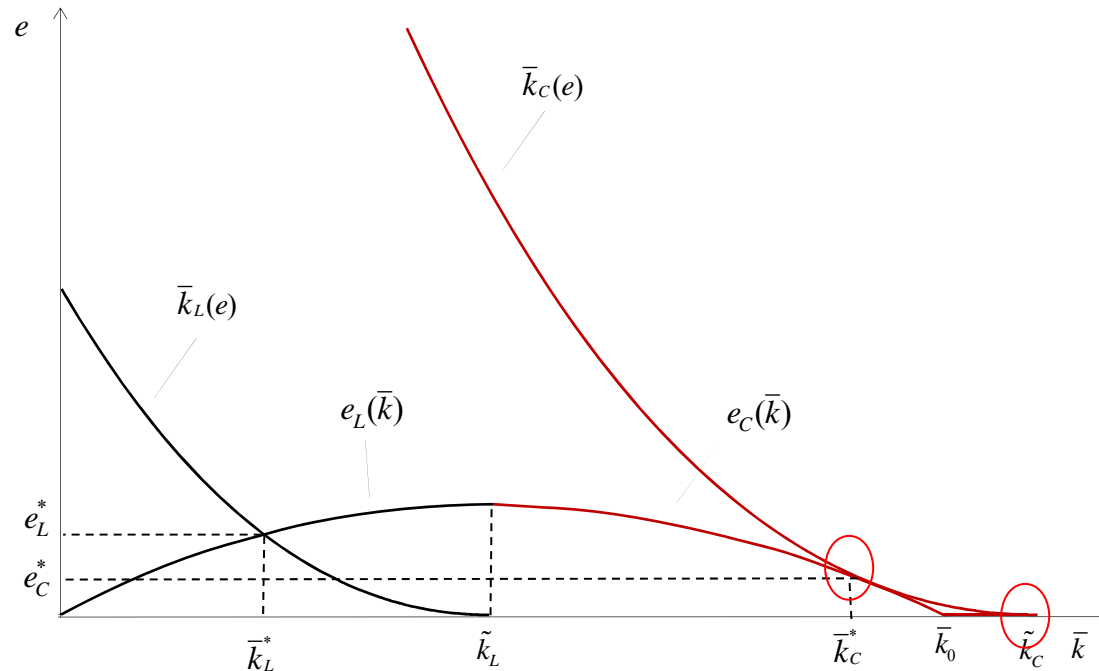
Banks' reaction function shifts up, leading to an increase in supervisory effort in equilibrium

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 $A_C < A_L$

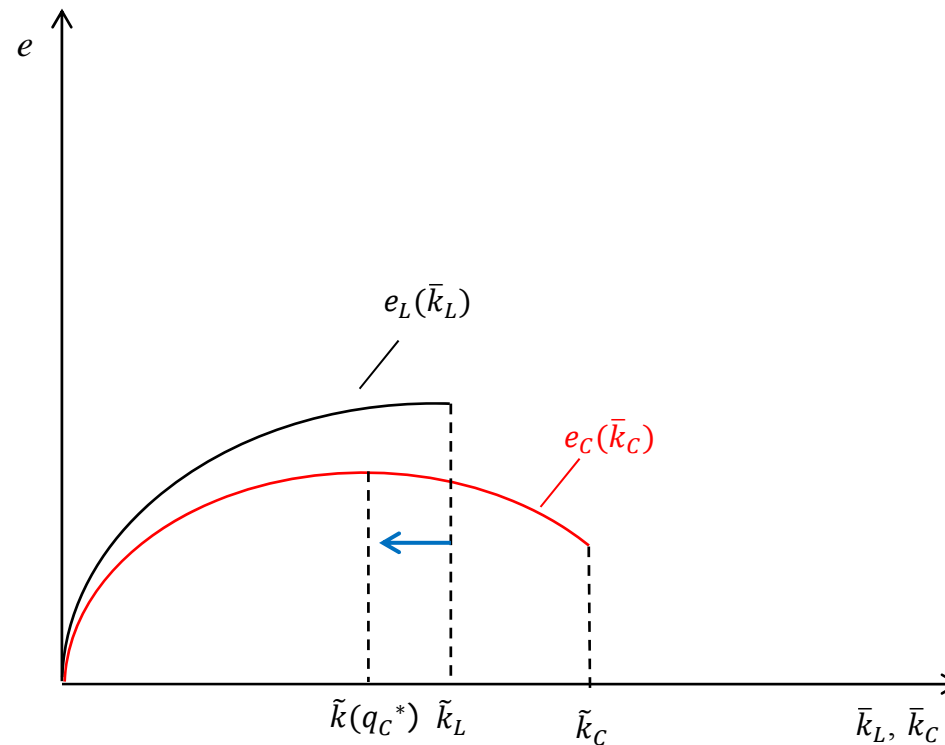


Result: If $A_L - A_C$ is large enough,

- There are equilibria with **lower** (but positive) regulatory effort under centralization

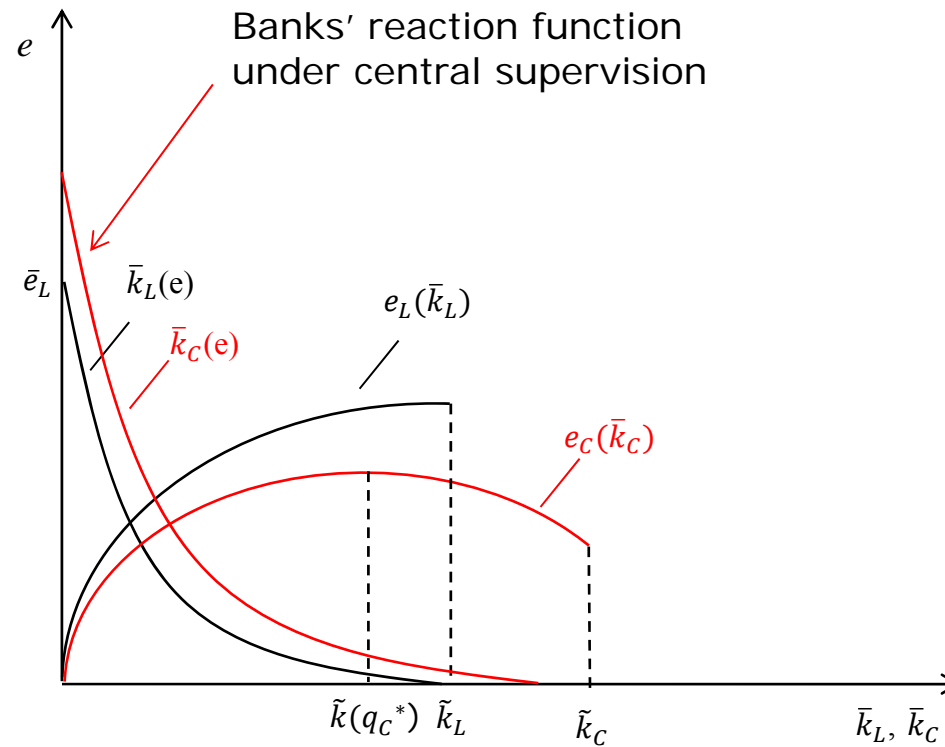
- These equilibria can entail **more** overall risk in the banking sector²⁴

Centralization and the local supervisor's effort decision with $\psi_C > \psi_L$

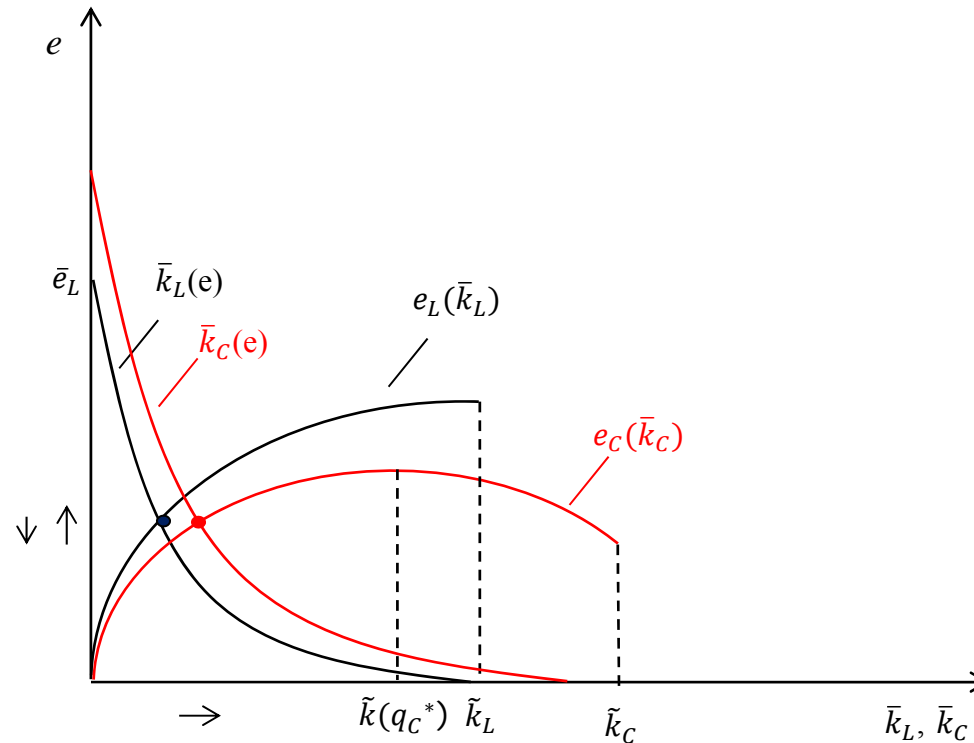


Local supervisor's reaction function for effort shifts down (i.e., is lower) when central supervisor has a lower cost of funds

Agency conflicts in supervisory effort



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