

Hub-and-Spoke Regulation and Bank Leverage

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Motivation

- ▶ **Hub-and-spoke regulation**: a central regulator with legal power over firms, which delegates monitoring to local supervisors
- ▶ Decentralized regulatory structure can **improve information collection** on geographically dispersed firms (Laffont and Tirole, 1993)
 - ▶ Employed by many US and European regulators whose legal authority reaches across state lines
 - ▶ Banking, securities, food, medicine, ...
- ▶ But can also introduce **agency problems** when local supervisory objectives differ from those of the central regulator (Carletti-DellAriccia-Marquez, 2015) [For e.g. - owing to capture]
 - ▶ EU is currently transitioning from a decentralized hub-and-spoke supervisory structure to a centralized and uniform regulatory regime
- ▶ We provide evidence from banking to gauge this **theoretical tradeoff**

Main results

Gains from local supervision outweigh any associated agency problems

1. Following the closure of a US bank regulator's local supervisory offices, the banks they previously supervised
 - ▶ distribute cash
 - ▶ increase leverage
 - ▶ increase their risk of failuremore than similar banks in the same time and place
2. The opposite occurs for openings
3. Using physical distance and driving time between bank and its supervisory office, we establish supervisor proximity as a channel through which this effect operates

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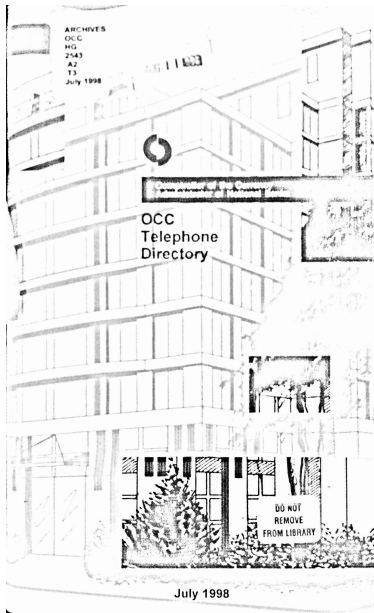
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Findings suggest **field level interaction** is an important part of regulation, and that distancing supervisors from banks to prevent capture can be costly

Novel dataset on OCC field office locations



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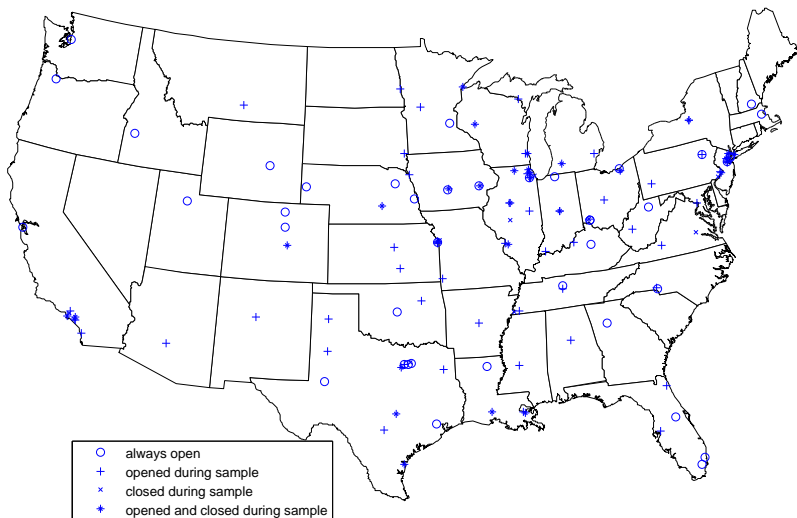
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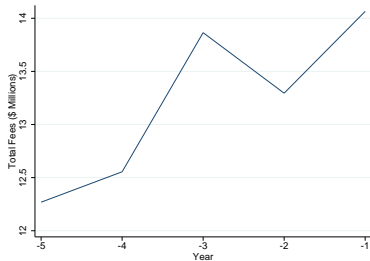
OCC field office location changes 1985–2015

Ample variation in field office locations and proximity to supervised banks



Why does the OCC **open** offices?

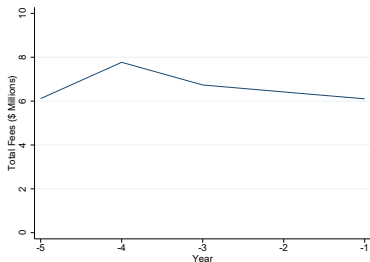
Establishes new offices in areas that experience an increase in banking assets under supervision, and therefore an increase in regulatory fee revenue - often as satellite office to a larger office



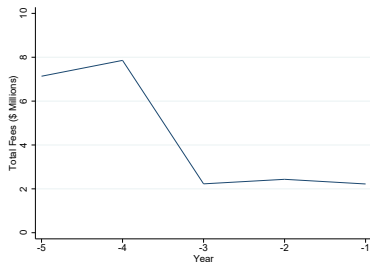
Neighboring Office

Why does the OCC **close** offices?

When a large office starts losing banking assets under supervision, the OCC consolidates the smaller neighboring office, often it's satellite office, into the larger office



Closed Office



Neighboring Office

Why does the OCC close offices?

OCC consolidates smaller offices into neighboring larger ones that start to lose banking assets under supervision

	(1) OLS	(2) OLS	(3) OLS	(4) Logit	(5) Logit	(6) Logit
$\frac{CTA_{t-2}}{CTA_{t-3}}$	0.000 (0.19)		0.153 (1.28)	-0.384 (-0.24)		-2.248 (-1.27)
$\frac{CFees_{t-2}}{CFees_{t-3}}$	-0.002 (-0.52)		-0.366 (-1.41)	-1.481 (-0.91)		1.604 (0.75)
$\frac{NTA_{t-2}}{NTA_{t-3}}$		-0.046** (-1.95)	-0.040* (-1.67)		-1.619*** (-6.30)	-1.006* (-1.68)
$\frac{NFees_{t-2}}{NFees_{t-3}}$		0.000 (0.09)	0.000 (0.20)		-0.197 (-1.19)	-0.100 (-0.62)
Office FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	302	259	258	309	269	268
R^2	0.350	0.368	0.377			

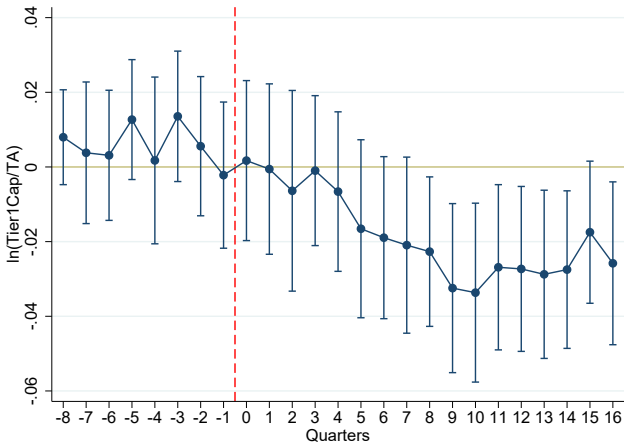
Banks increase leverage (reduce capital) after their nearest field office closes

Leverage of banks whose supervisory office closes increases by about 2% more than other similar banks at the same time

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$\ln\left(\frac{\text{Tier1Cap}}{\text{TA}}\right)$	$\ln\left(\frac{\text{BEquity}}{\text{TA}}\right)$	$\ln\left(\frac{\text{Tier1Cap}}{\text{RWA}}\right)$	$\ln\left(\frac{\text{TotCap}}{\text{RWA}}\right)$	$\ln\left(\frac{\text{Tier1Cap}}{\text{TA}}\right)$	$\ln\left(\frac{\text{BEquity}}{\text{TA}}\right)$	$\ln\left(\frac{\text{Tier1Cap}}{\text{RWA}}\right)$	$\ln\left(\frac{\text{TotCap}}{\text{RWA}}\right)$
Closure	-0.023*** (-2.74)	-0.024*** (-2.92)	-0.029** (-2.58)	-0.025** (-2.37)	-0.037*** (-2.63)	-0.038*** (-2.70)	-0.048*** (-2.83)	-0.042*** (-2.67)
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes	No	No	No	No
Office FE	Yes	Yes	Yes	Yes	No	No	No	No
MSA x Quarter FE	No	No	No	No	Yes	Yes	Yes	Yes
Office x Quarter FE	No	No	No	No	Yes	Yes	Yes	Yes
Observations	314315	313344	222624	222624	279809	279022	194982	194982
R ²	0.572	0.597	0.712	0.711	0.665	0.684	0.784	0.783

Banks increase leverage (reduce capital) after their nearest field office closes

Parallel leverage trends before office closures. Effect occurs a year later and lasts for over four years



Banks increase leverage (reduce capital) after their nearest field office closes

Results are potentially surprising

- ▶ OCC headquarters can observe leverage ratios through call reports
 - ▶ Riskiness of assets and their mismatch with liabilities may not be fully captured by reported accounting measures
 - ▶ Large literature documents that banks avoid capital regulation by exploiting weaknesses of risk-weighting rules, shifting activities into softer regulatory environments, and using reporting loopholes
- ▶ Local supervisors may not have leeway on determining bank capital over and above the minimum regulatory requirement
 - ▶ Not the case as local supervisors often require banks to hold much higher capital (e.g. Integra bank's IMCR)
 - ▶ We find that these effects operate through CAMELS ratings

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Banks actively distribute dividends to increase leverage

Not about passive changes to leverage due to charge-offs or losses

	(1) <i>Dividend</i> <i>LaggedEquity</i>	(2) <i>NetEquityIss</i> <i>LaggedEquity</i>	(3) <i>NetChargeOff</i> <i>LaggedEquity</i>	(4) <i>LLP</i> <i>LaggedEquity</i>	(5) <i>Dividend</i> <i>LaggedEquity</i>	(6) <i>NetEquityIss</i> <i>LaggedEquity</i>	(7) <i>NetChargeOff</i> <i>LaggedEquity</i>	(8) <i>LLP</i> <i>LaggedEquity</i>
Closure	0.001* (1.91)	-0.006 (-0.70)	-0.008 (-1.21)	-0.001 (-0.23)	0.001* (1.96)	-0.013 (-1.51)	-0.007 (-0.96)	0.001 (0.31)
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes	No	No	No	No
Office FE	Yes	Yes	Yes	Yes	No	No	No	No
MSA x Quarter FE	No	No	No	No	Yes	Yes	Yes	Yes
Office x Quarter FE	No	No	No	No	Yes	Yes	Yes	Yes
Observations	322868	307828	308919	307827	287024	274176	275081	274176
R ²	0.157	0.065	0.069	0.079	0.317	0.217	0.148	0.171

- ▶ Increase in dividends for banks whose supervisory office closes is 10% higher than other similar banks at the same time

Consequences of higher risk

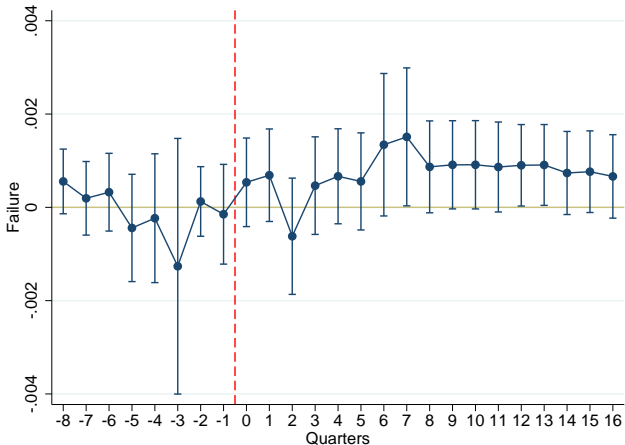
Increase in failure rate following office closure

	(1) Failure	(2) Enforcement Action	(3) $\frac{NCL}{LaggedLoans}$	(4) Failure	(5) Enforcement Action	(6) $\frac{NCL}{LaggedLoans}$
Closure	0.0005** (2.02)	0.0005 (0.69)	-0.0375 (-0.60)	0.0003* (1.79)	-0.0009 (-0.54)	-0.0694 (-0.78)
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	No	No	No
Office FE	Yes	Yes	Yes	No	No	No
MSA × Quarter FE	No	No	No	Yes	Yes	Yes
Office × Quarter FE	No	No	No	Yes	Yes	Yes
Observations	322868	322868	313453	287024	287024	279052
R^2	0.071	0.033	0.418	0.156	0.184	0.555

- ▶ Banks whose supervisory office closes are more likely to fail than other similar banks at the same time

Delayed consequences of higher risk

Increase in failure rate 2-3 years later



Supervisor proximity as a channel for the effect of office closure on bank leverage

The effect of office closure on bank leverage is increasing in the percentage change in driving time between bank and supervisory office owing to closure

	(1) $\ln\left(\frac{Tier1Cap}{TA}\right)$	(2) $\ln\left(\frac{Tier1Cap}{TA}\right)$	(3) $\ln\left(\frac{Tier1Cap}{TA}\right)$	(4) $\ln\left(\frac{Tier1Cap}{TA}\right)$	(5) $\ln\left(\frac{Tier1Cap}{TA}\right)$	(6) $\ln\left(\frac{Tier1Cap}{TA}\right)$
Closure	-0.0238*** (-2.89)	-0.0225** (-2.62)	0.0059 (0.22)	-0.0351** (-2.59)	-0.0370** (-2.61)	0.0385 (0.87)
Closure*%Δ(Distance)	-0.0002 (-1.57)	-0.0004* (-1.87)	-0.0002** (-2.37)	0.0001 (0.70)	0.0000 (0.11)	-0.0003*** (-3.33)
Sample	All Banks	Size ≥ \$ 1B	Size < \$ 1B	All Banks	Size ≥ \$ 1B	Size < \$ 1B
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	No	No	No
Office FE	Yes	Yes	Yes	No	No	No
MSA × Quarter FE	No	No	No	Yes	Yes	Yes
Office × Quarter FE	No	No	No	Yes	Yes	Yes
Observations	261694	243010	17763	229881	212638	10085
R ²	0.561	0.565	0.681	0.662	0.666	0.855

Alternative Mechanisms

- ▶ Supervisory Relationships
 - ▶ Find inconsistent results - banks that had longer relationships with closed office react less
- ▶ Supervisory Competence/Inconsistent Supervision
 - ▶ Control for time varying unobserved heterogeneity across offices
- ▶ Supervisory Resources/Cost of Regulation
 - ▶ Compare banks supervised by same office (thus keeping the resources at the office level constant)
 - ▶ Cost of regulation or distribution of resources may be different
- ▶ Adjustment Costs
 - ▶ Effects last for over four years

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Robustness & Other Results

- ▶ Banks decrease leverage when a field office opens nearby
 - ▶ The magnitudes are similar to the magnitudes for the effect of office closures
- ▶ Treatment effects are consistent throughout the sample
 - ▶ Advances in IT, which may allow for a greater distance between banks and supervisors, may simultaneously reduce information asymmetries between OCC headquarters and supervisors in the field
 - ▶ With such two-sided moral hazard, even today, the net effect of distancing supervisors from banks is an increase in bank risk
- ▶ Placebo: No effect on state chartered banks located in the same place and time

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