

The Impact of Supervision on Bank Performance

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Supervision & Regulation

- ◆ **Regulation:** laws, rules and statements;
- ◆ **Supervision:** support both traditional efforts to ensure compliance with law and regulation as well as more modern “prudential” efforts to monitor for unsafe or unsound business practices.
- **Specific supervisory actions**
 - ✓ supervisory ratings (Cargill (1989), Cole and Gunther (1995), Hirtle and Lopez (1999), Berger, Davies, and Flannery (2000));
 - ✓ examinations (Berger and Davies (1998));
 - ✓ supervisory standards (Peek and Rosengren (1995), Swindle (1995), Krainer and Lopez (2009), Kiser, Prager, and Scott (2012), Bassett, Lee, and Spiller (2015), Bassett and Marsh (2017));
 - ✓ enforcement actions (Delis and Staikouras (2011));
- **More general supervisory actions (conversations)**
 - ✓ supervisors meet frequently with bank management,
 - ✓ discussing both specific issues related to activities at the bank and more general perspectives on the industry’s environment and outlook.

美国商业银行的监管体系

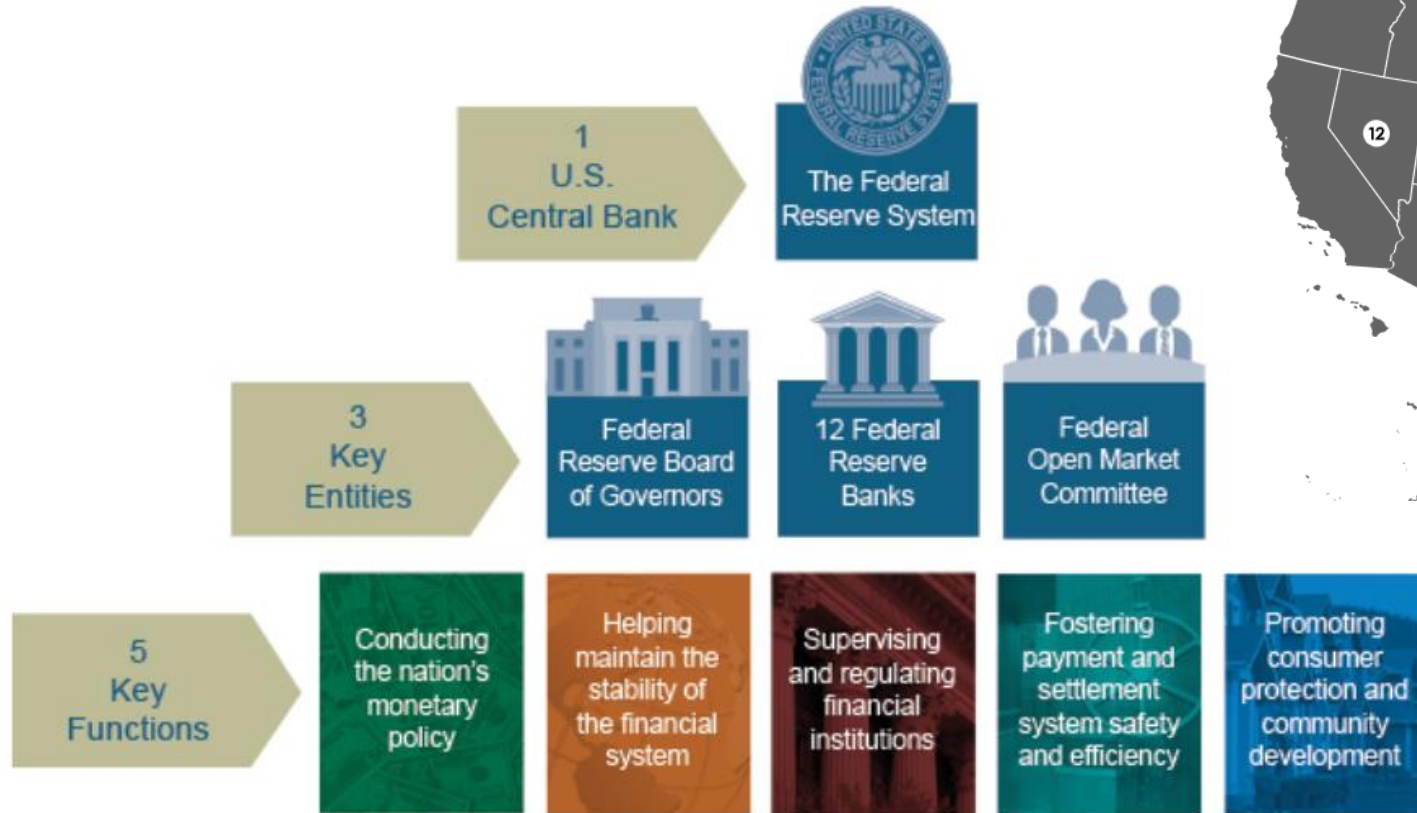
美国商业银行：

- (1) 国民银行，在联邦政府注册，所有国民银行必须在国民银行必须是联邦储备体系的成员银行，受财政部货币监理署、美国联邦储备体系和联邦存款保险公司的监督管理。
- (2) 地方性州/属地银行，在州政府注册，可以选择成为联邦储备体系的会员，但这不是强制性的。如果州银行选择成为联邦储备体系的会员，则必须接受联邦和州银行监管当局的双重监管。

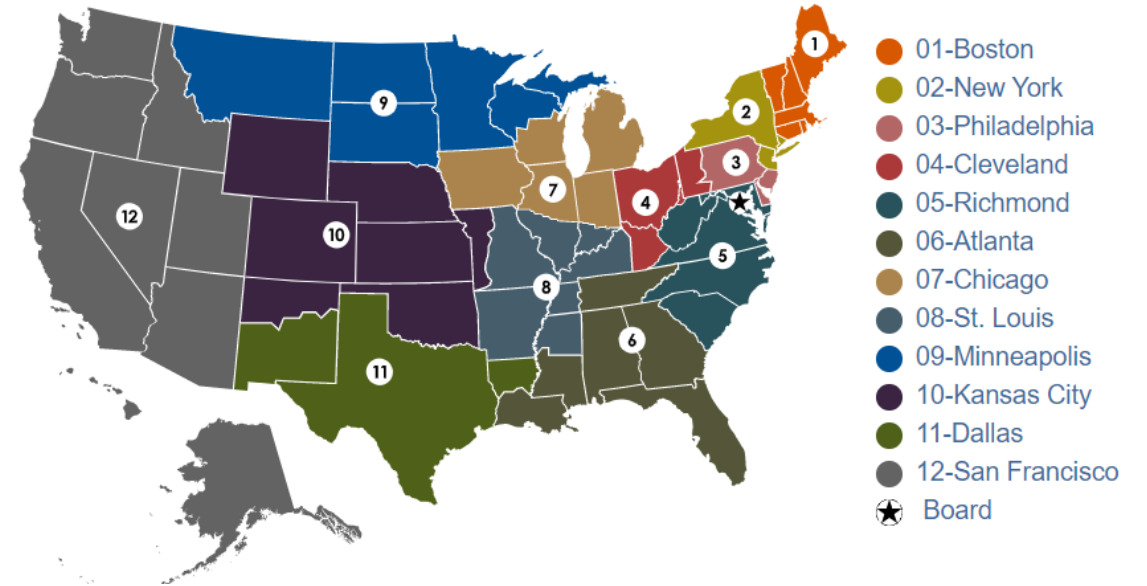
美国监管机构：

- (1) 联邦储备体系（Federal Reserve System），是美国银行监控体系的伞形监管部分，负责监督和定期检查所有由州/美属属地授权成立的会员银行及在美国营业的银行控股公司。
- (2) 货币监理署（Comptroller of the Currency, OCC），是美国最早成立的联邦政府金融监管机构，隶属于财政部，它是国民银行的监管机构。
- (3) 州/属地金融机构委员会，授权成立新的州立/属地银行，监督和检查所属管辖范围内的州立银行。
- (4) 联邦存款保险公司（Federal Deposit Insurance Corporation, FDIC），为银行存款提供保险，审核所有投保银行的财务报告。
- (5) 国家信贷联盟署（Created National Credit Union Administration, NCUA），负责授权成立信用合作社，对信用合作社进行监督等。

Federal Reserve System



Federal Reserve Banks



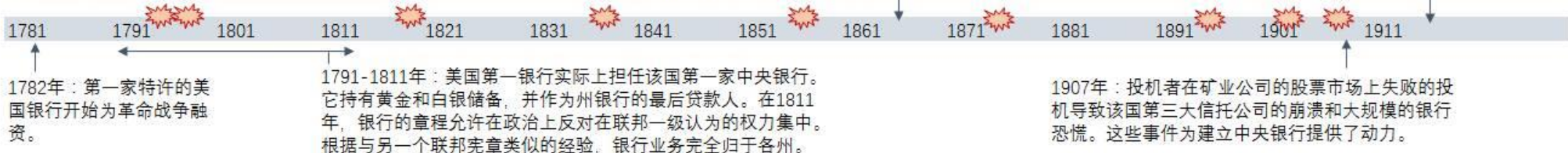
Supervisory Development in US

1782-1913年：“野猫银行”与频繁的危机

经济衰退和银行恐慌频繁发生。在19世纪30年代至1864年间，美国银行监管非常宽松，各州之间差异很大。此后，在联邦和州级别产生了监管和特许的双重体系。

1863-64年：在内战期间，政府面临着新的融资压力。国会创立了单一的全国性货币。美国货币监管署的设立是为了处理联邦特许令、执行常规银行检查和从银行更频繁地收集数据。

1913年：美联储成立，其监管权力覆盖属于美联储的成员的联邦特许银行以及州银行。

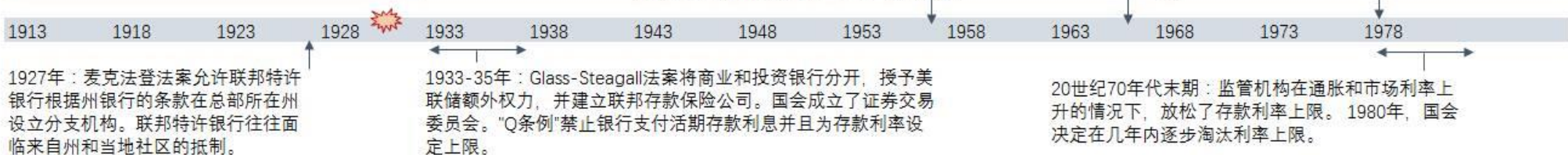


1913-1980年：新的规则、限制和报告

银行监管变得更加严格，特别是在大萧条之后。美联储的权力扩大。银行危机变得不那么频繁。限制银行分支和活动，尽管存在重大漏洞。

1956年：银行控股公司（BHC）法案授予美联储新一轮监管权力以控制BHC的地域扩张。BHC被要求剥离非银行业务。然而，银行利用了该法案的漏洞，直到这些漏洞在1970年和1987年被关闭。

1966年：利率上限适用于存款机构。
1978年：国际银行法案允许国内银行法规适用于任何在美国经营的外国银行。



20世纪80年代至今：监管摇摆

放松管制为储贷危机铺平了道路。旧规则的放宽带来行业整合。2008年的危机促成了新一波改革。监管不断适应于证券化和全球化。

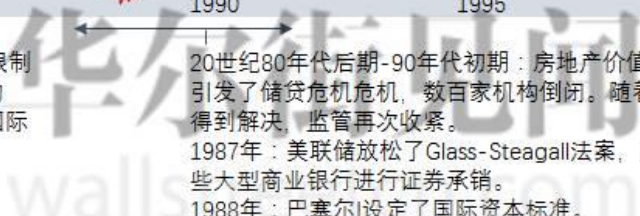
1994年：Riegle-Neal法案消除了对州际银行/分支机构的剩余限制，为并购增加敞开大门。

1999年：Gramm-Leach-Bliley法案删除了Glass-Steagall法案中的商业和投资银行分离制度。

2004年：BASEL II鼓励银行增长和多元化经营。

2007-2008年：次贷危机。贝尔斯登纾困。雷曼兄弟倒闭。全球金融危机。

2017年：财政部发布监管放松建议。



Supervisory Development in US

- ◆ 1933年，**格拉斯-斯蒂格尔法案**，也称作《1933年银行法》。在1930年代大萧条后的美国立法，将投资银行业务和商业银行业务严格地划分开，保证商业银行避免证券业的风险。该法案禁止银行包销和经营公司证券，只能购买由美联储批准的债券。该法案令美国金融业形成了银行、证券分业经营的模式。
- ◆ 2010年，**多德-弗兰克法案**，被认为是“大萧条”以来最全面、最严厉的金融改革法案，在2008年次贷危机后，主要包括：扩大监管机构权力，破解金融机构“大而不能倒”的困局；设立新的消费者金融保护局，赋予其超越监管机构的权力，全面保护消费者合法权益；
 - ✓ 采纳所谓的“**沃克尔规则**”，即禁止商业银行从事高风险的自营交易，将商业银行业务和其他业务分隔开来；反对商业银行拥有对冲基金和私人股权基金，限制衍生品交易；对金融机构的规模施以严格限制。
- ◆ 2018年5月24日,特朗普签署《**经济增长、监管放松与消费者保护法案**》,正式修改了《多德-弗兰克法案》。本文概括分析了主要修改的五个方面:对抵押贷款的监管放松,对社区银行的监管放松,对大型银行的监管放松,对证券市场的监管放松,加强金融消费者权益保护。

Literatures

(1) Compliance costs reduce banks' profitability and growth.

- ✓ Tougher supervisory standards are associated with slower loan growth and/or higher origination standards (Peek and Rosengren, 1995; Swindle, 1995; Krainer and Lopez, 2009; Kiser, Prager, and Scott, 2012; Bassett, Lee, and Spiller, 2015; Bassett and Marsh, 2017).
- ✓ Cross-country analysis suggests that supervision can reduce bank efficiency (Barth et al., 2013).

(2) Investments in superior technology and information systems may allow banks to make better risk-return decisions or identify operational inefficiencies.

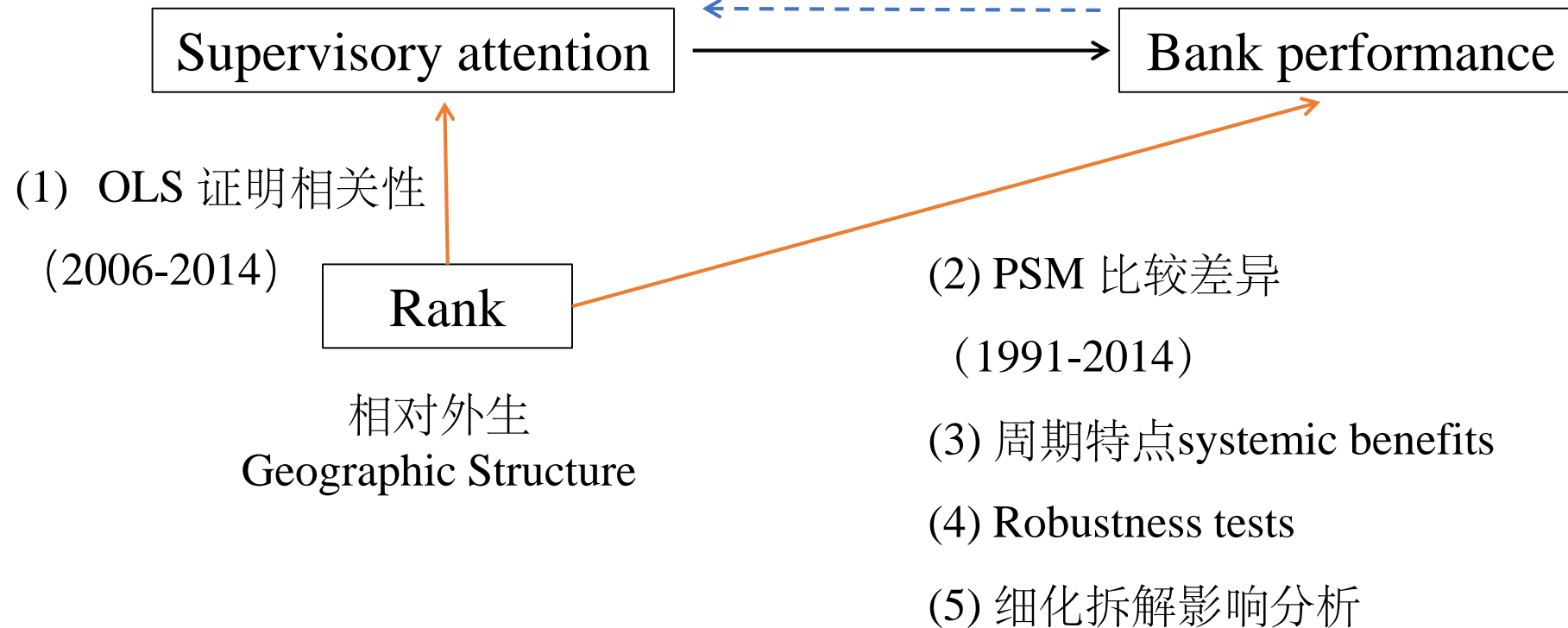
- ✓ Supervisory expectations of CCAR program have resulted in large banks making significant improvements to their information and risk management systems (Tarullo, 2016).
- ✓ Consolidated risk management systems can allow banks to make better business decisions by incorporating risk-return considerations in pricing, product development, and relationship management (Lam, 1999).
- ✓ The removal of nearby supervisors results in greater risk and lower profitability (Gopalan, Kalda, and Manela, 2017; Hagendorff, Lim, and Armitage, 2017).

Findings

- ◆ Using data on **supervisors' time use**, we demonstrate that the top-ranked banks by size within a supervisory district receive more attention from supervisors, even after controlling for size, complexity, risk, and other characteristics.
- ◆ Using a matched sample approach, we find that these top-ranked banks that receive **more supervisory** attention hold **less risky** loan portfolios, are less volatile, and are **less sensitive to industry downturns**, but **do not** have lower growth or profitability. Better risk-return decision.

Methodology

互为因果的内生性问题*



Identification Strategy

1. Geographic structure of district-level supervision

Table I
Asset Size by Rank across Federal Reserve Districts

This table summarizes the asset size of the largest BHCs within each Federal Reserve district. Dollars are in billions. The sample consists of FR Y-9C filers in 2014Q4.

Reserve District	Size Rank (Mean)						Sample	
	1 st	2 nd	3 rd	4 th	5 th	6 th to 10 th	Median	<i>N</i>
1	274.1	133.0	118.4	22.5	9.5	6.2	1.1	82
2	2,572.8	1,842.2	856.3	801.5	515.6	291.3	3.2	92
3	248.1	115.9	25.0	18.7	17.1	6.2	1.0	61
4	345.2	138.7	93.9	66.3	24.9	10.0	1.0	57
5	2,106.8	309.1	186.8	30.1	12.3	5.8	1.0	89
6	190.4	119.9	27.1	24.3	21.6	15.2	0.9	136
7	151.8	109.9	83.1	26.8	20.0	11.4	1.0	157
8	25.7	24.0	15.0	13.3	11.6	7.9	0.9	98
9	402.5	19.4	9.2	8.6	8.3	2.6	0.9	63
10	29.1	24.0	17.5	17.5	14.5	7.7	0.9	89
11	130.4	83.2	69.5	28.3	21.5	10.6	1.2	100
12	1,687.2	154.6	89.8	57.2	39.4	27.9	1.5	98

- ✓ Day-to-day oversight of BHCs is conducted by the 12 regional Reserve Banks, under delegated authority from the Board.
- ✓ Exclude very largest and most complex BHCs (2012 LISCC Program).

Identification Strategy

2. All else equal the largest BHCs in a district receive more supervisory attention.

- ✓ Attention constraints (Bolton and Dewatripont, 1994; Garicano, 2000; Geanakoplos and Milgrom, 1991; Radner, 1993).
- ✓ Large bank failures have large negative externalities.

3. Measuring the Relation between Size Rank and Supervisory Attention

- ✓ Construct variables
 - **supervisory attention**—the total number of hours spent by Federal Reserve Banks supervisors directly examining a particular BHC and its subsidiaries. (self-report time use; quarterly; 2006-2014)
 - **rank**—calculate the asset size rank of each BHC within its geographic Federal Reserve district. The financials are based on FR Y-9C reports submitted to the Federal Reserve quarterly.
- ✓ Final sample comprises 14,909 BHC-quarters over the 2006 to 2014 period.

Identification Strategy

$$\log(hours_{it}) = \Gamma BankCharacteristics_{it} + \Pi_{dt} + \varepsilon_{it}, \quad (1)$$

Table II
Ordinary Least Squares: Log of Supervisory Hours on Bank Characteristics

This table reports results from regressions of the log of supervisory hours on potential bank-level determinants of supervisory activity. Observations are BHC-quarters from 2006Q1 to 2014Q4. *% SMB Assets* is the ratio of state members bank assets to total assets, where the SMB is either above or below \$10bn. *% National Bank Share* is the share of assets in a Nationally chartered bank. *Public* is an indicator for publicly traded banks. *HHI of Assets* is based on asset shares for credit card loans, residential real estate loans, commercial real estate loans, commercial and industrial loans, investment securities, and trading assets. *Deposit Market Share* is estimated using a weighted average of county-level deposit shares. *ROA* is annualized. *Asset Growth* is year-over-year asset growth. *NPL Share* is given as nonperforming loans divided by total loans. *SD ROA* is the standard deviation of ROA over the next eight quarters. Rating categories are based on supervisory CAMEL ratings where 1 is considered the best rating and 5 the worst. Columns (1) to (6) include quarter fixed effects; column (7) includes district-quarter fixed effects. Column (6) uses a best-fit fractional polynomial in assets (a): a^{-1} , $a^{-1} \ln(a)$, $a^{-1}(\ln(a))^2$. Standard errors are clustered by BHC. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
log(Assets)	0.911*** (0.07)	0.885*** (0.07)	0.953*** (0.06)	0.956*** (0.07)	0.962*** (0.06)		0.957*** (0.05)
log(Entities)	0.412*** (0.08)	0.438*** (0.07)	0.379*** (0.06)	0.360*** (0.07)	0.353*** (0.05)	0.314*** (0.05)	0.345*** (0.05)
% SMB (>\$10b) Assets	0.022*** (0.00)	0.022*** (0.00)	0.023*** (0.00)	0.021*** (0.00)	0.022*** (0.00)	0.018*** (0.00)	0.022*** (0.00)
% SMB (\leq \$10b) Assets	0.034*** (0.00)	0.034*** (0.00)	0.034*** (0.00)	0.033*** (0.00)	0.034*** (0.00)	0.034*** (0.00)	0.034*** (0.00)
% National Bank Assets	-0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	-0.000 (0.00)	-0.000 (0.00)	-0.000 (0.00)	0.001 (0.00)
Public	0.086 (0.10)	0.110 (0.09)	0.075 (0.09)	0.025 (0.09)	0.090 (0.08)	0.129 (0.08)	0.084 (0.08)
Loans/Assets (%)		0.002 (0.00)			0.003 (0.00)	0.004 (0.00)	0.001 (0.00)
Deposit/Liabilities (%)		0.004 (0.01)			0.007 (0.00)	0.008 (0.01)	0.001 (0.00)
HHI of Assets		-0.414 (0.51)			-1.212*** (0.42)	-1.161*** (0.43)	-0.265 (0.37)

(Continued)

Identification Strategy

$$\log(hours_{it}) = \Gamma BankCharacteristics_{it} + \Pi_{dt} + \varepsilon_{it}, \quad (1)$$

Table II—Continued

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Deposit Market Share		-0.332 (0.39)			0.401 (0.32)	0.406 (0.31)	-0.094 (0.29)
ROA (%)			-0.138*** (0.04)		-0.069** (0.03)	-0.060* (0.03)	-0.088*** (0.03)
Asset Growth (%)			-0.006*** (0.00)		-0.001 (0.00)	-0.000 (0.00)	-0.002 (0.00)
Tier 1 Ratio (%)			-0.007 (0.01)		0.024** (0.01)	0.029** (0.01)	0.022* (0.01)
NPL (%)			0.097*** (0.02)		0.044*** (0.02)	0.047*** (0.02)	0.018 (0.02)
SD ROA			0.150*** (0.05)		0.050 (0.04)	0.060 (0.04)	0.035 (0.04)
Rating of 2				0.368*** (0.08)	0.340*** (0.08)	0.341*** (0.08)	0.280*** (0.08)
Rating of 3				1.393*** (0.11)	1.332*** (0.11)	1.301*** (0.11)	1.219*** (0.10)
Rating of 4				1.900*** (0.16)	1.711*** (0.18)	1.686*** (0.19)	1.686*** (0.18)
Rating of 5				2.241*** (0.28)	2.024*** (0.28)	1.996*** (0.29)	1.896*** (0.23)
Asset Polynomial	No	No	No	No	No	Yes	No
Quarter FEs:	Yes	Yes	Yes	Yes	Yes	Yes	No
District-Quarter FEs:	No	No	No	No	No	No	Yes
Observations	14,909	14,785	13,575	14,909	13,489	13,489	13,489
R ²	0.47	0.48	0.51	0.51	0.53	0.54	0.58

Identification Strategy

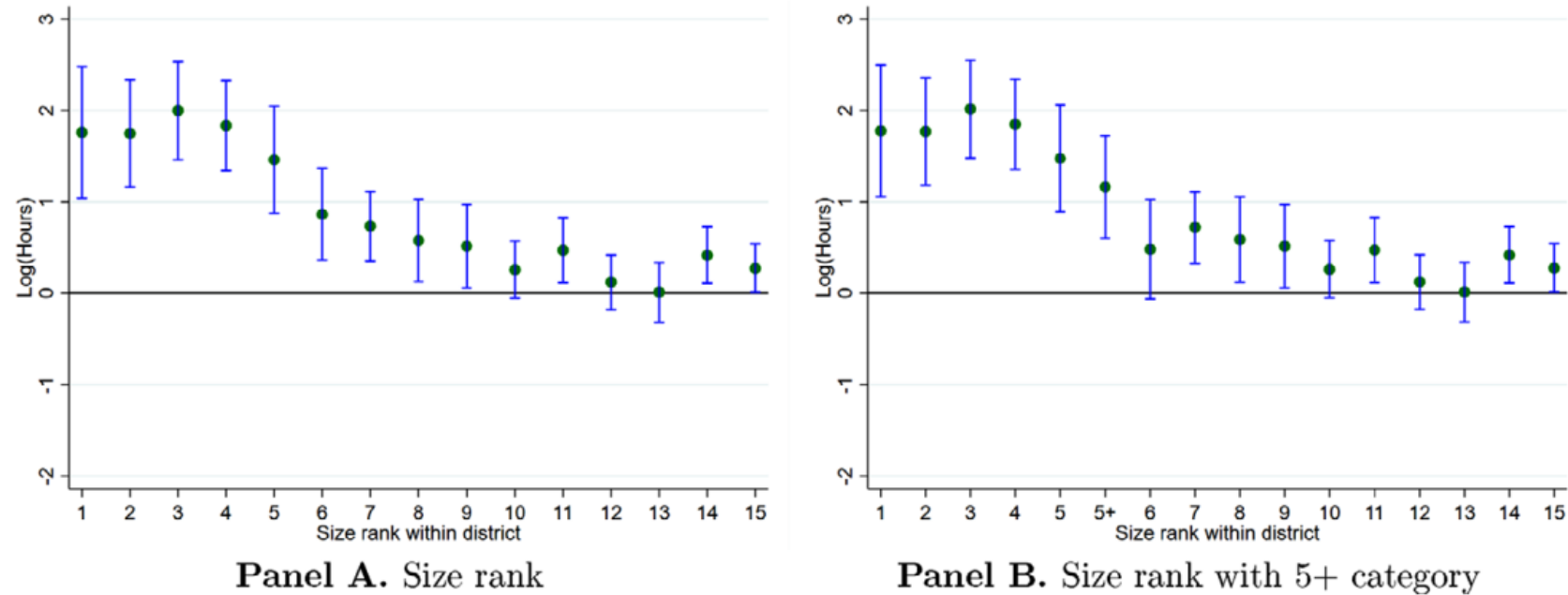


Figure 1. Variation in supervisory hours by asset size rank. This figure plots estimated coefficients from a regression of the log of supervisory hours on dummy variables indicating the asset size rank of a bank in a district. Additional explanatory variables include those in the benchmark model of supervisory time allocation (Table II, column (5)) and proxies for size, complexity, charter asset mix, recent performance, and riskiness. The 5+ category in Panel B includes banks ranked 6 to 15 but within 25% of the asset size of the fifth ranked bank in their district. Banks included in 5+ are excluded from rank categories 6 through 15. Lines depict 95% confidence intervals, where standard errors have been adjusted to correct for clustering within banks. (Color figure can be viewed at wileyonlinelibrary.com)

Identification Strategy

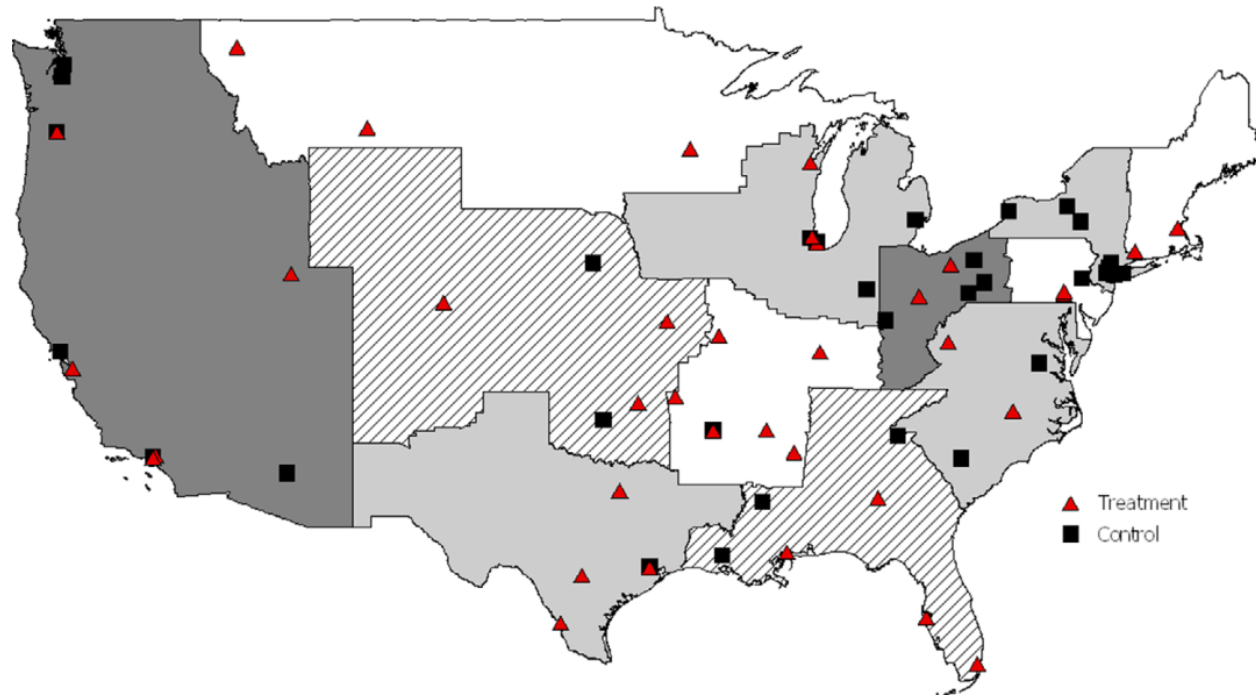
Table III
Ordinary Least Squares: Log of Supervisory Hours on *Top* Indicator

This table reports results from regressions of the log of supervisory hours on bank-level determinants of supervisory activity and an indicator for top ranked BHCs. Observations are BHC-quarters from 2006Q1 to 2014Q4. *Top* BHCs are those within the top five in a Reserve Bank district-quarter based on assets or within 25% of the top five. Size & Charter controls include log of assets, log of legal entities, SMB shares (<\$10bn and >\$10bn), National bank share, and a public indicator. Business controls include loan-to-assets, deposit-to liabilities, HHI of assets, and deposit-based market share. Performance controls include ROA, asset growth, Tier 1 ratio, NPL share, and the standard deviation of ROA. Rating controls include an indicator for the most recent CAMELs rating. Columns (4) to (6) exclude banks that are larger than the largest nontreatment bank. Column (7) further excludes District 2 banks. Columns (8) and (9) only include banks ranked in the Top 15. Columns (1) to (5), (7), and (8) include quarter fixed effects. Column (5) uses a best-fit fractional polynomial in assets as in Table II (and excludes log of assets from size controls). Columns (6) and (9) include district-quarter fixed effects. Standard errors are clustered by BHC. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Variables	(1)	(2)	(3)	Ex. Large			Ex. Large & 2 nd District	Top 15 Only	
				(4)	(5)	(6)	(7)	(8)	(9)
<i>Top</i> Rank	1.050*** (0.19)	1.169*** (0.18)	1.175*** (0.18)	1.158*** (0.18)	0.828*** (0.19)	0.779*** (0.16)	0.930*** (0.17)	0.823*** (0.17)	0.891*** (0.19)
Top 15			0.308*** (0.10)	0.295*** (0.11)	0.490*** (0.11)	-0.025 (0.10)	0.090 (0.10)		
Controls:									
Size & Charter	Yes	Yes	Yes	Yes	Ex. assets	Yes	Yes	Yes	Yes
Business	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Performance	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rating	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Asset Polynomial	No	No	No	No	Yes	No	No	No	No
Fixed Effects:									
Quarter	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
District-Quarter	No	No	No	No	No	Yes	No	No	Yes
Observations	14,909	13,489	13,489	13,343	13,343	13,343	12,541	4,364	4,364
R^2	0.48	0.54	0.54	0.52	0.53	0.56	0.53	0.56	0.63

Measuring the Impact of Supervision

1. Matching



- ✓ For each Top BHC-quarter, we have two other BHCs with similar characteristics that are not among the Top of another district.

Figure 2. Top and matched BHCs by Federal Reserve district. This figure shows the headquarters location of *Top* BHCs and their matches in 2014. Treatment firms are *Top* BHCs, which include the top 5 ranked with respect to book assets in a district-quarter plus BHCs ranked 6 to 15 but within 25% of the asset size of the fifth ranked bank in their district. Control are matches to the treatment BHCs. Borders and shading delineate Federal Reserve districts. (Color figure can be viewed at wileyonlinelibrary.com)

Measuring the Impact of Supervision

1. Matching

Table IV
Summary Statistics for *Top* Sample and Matches

This table compares sample means between the *Top* BHCs (treatment) and their matches. *Top* BHCs are those within the top five in a Reserve Bank district quarter based on assets or within 25% of the top five. Matching chooses the two nearest neighbors for each treatment observation based on the listed control variables (rows 1–10). The difference in means is the treatment less the matches. *p*-Values are calculated using standard errors clustered by BHC. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Variable	<i>Top</i> Ranked				Matches				Δ Means	<i>p</i> -Value
	Mean	Median	<i>SD</i>	<i>N</i>	Mean	Median	<i>SD</i>	<i>N</i>		
Log(Assets)	16.06	16.11	0.85	2,959	16.11	16.2	0.9	5,918	−0.05	0.69
Log(Entities)	3.13	3.22	0.80	2,959	3.20	3.22	0.86	5,918	−0.08	0.47
% SMB (>\$10B) Assets	5.85	0.00	22.72	2,959	5.42	0.00	21.82	5,918	0.43	0.87
% SMB (\leq \$10B) Assets	7.28	0.00	22.40	2,959	8.73	0.00	24.37	5,918	−1.45	0.64
% National Bank Assets	40.15	8.67	44.14	2,959	40.48	10.37	44.73	5,918	−0.33	0.96
Loans/Assets (%)	61.19	63.68	12.70	2,959	61.98	64.46	10.69	5,918	−0.79	0.63
Deposits/Liabilities (%)	83.90	85.33	9.11	2,959	83.13	85.27	10.15	5,918	0.77	0.59
HHI of Assets	0.19	0.17	0.07	2,959	0.19	0.17	0.08	5,918	0.00	0.98
Public	0.84	1.00	0.37	2,959	0.85	1.00	0.36	5,918	−0.01	0.84
Deposit Market Share	0.17	0.17	0.08	2,959	0.16	0.16	0.09	5,918	0.01	0.25
District Rank	4.30	4.00	1.72	2,959	10.63	9.00	5.34	5,918	−6.33	0.00
Log(hours)	5.84	6.17	1.92	1,131	5.16	5.68	2.43	2,253	0.67	0.04

Measuring the Impact of Supervision

2. Financial Outcome Measures—Top firms experience less volatile earnings and better loan performance.

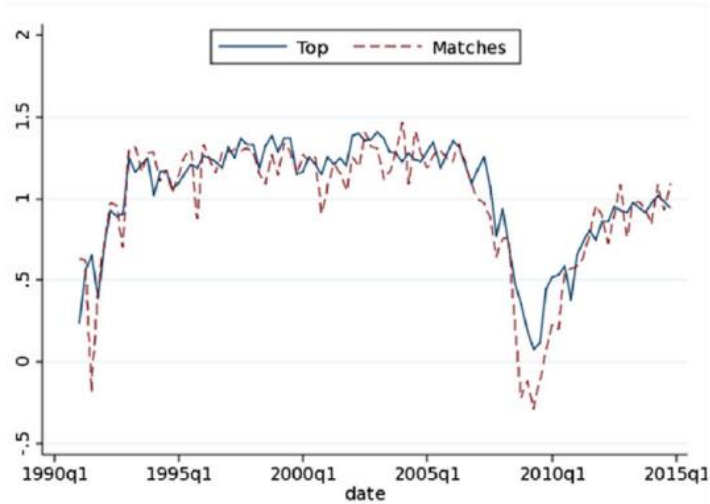
Table V
Difference in Means Between *Top* and Matches

This table compares sample means between the *Top* BHCs (treatment) and their matches. *Top* BHCs are those within the top five in a Reserve Bank district-quarter based on assets or within 25% of the top five. Standard deviations of accounting variables are calculated on a rolling basis using eight quarters (forward). Growth is one year (forward). Tail measures are calculated at the top or bottom 5th percentile. Further details on variable construction can be found in Section I of the Internet Appendix. The difference in means is the treatment less the matches. *p*-Values are calculated using standard errors clustered by BHC. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

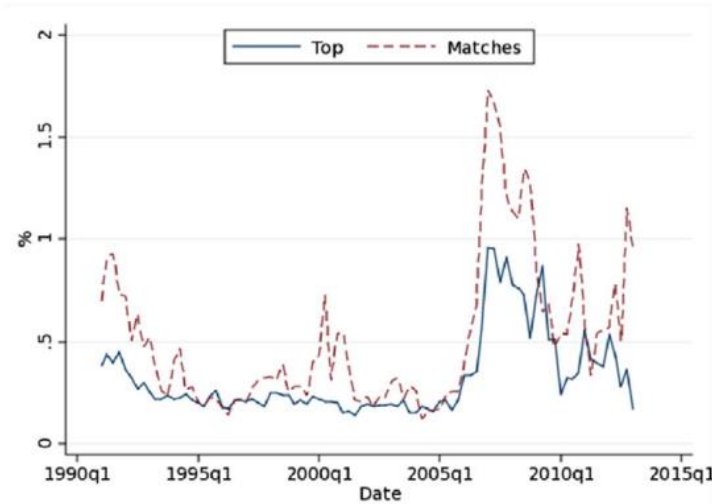
Variable	<i>Top</i> Ranked				Matches				Δ Means	<i>p</i> -Value
	Mean	Median	<i>SD</i>	<i>N</i>	Mean	Median	<i>SD</i>	<i>N</i>		
Balance Sheet										
RWA Assets (%)	71.20	71.71	11.93	2,221	70.98	71.84	12.71	4,442	0.22	0.91
Tier 1 Ratio (%)	11.76	11.48	2.92	2,221	12.14	11.32	3.94	4,442	-0.38	0.38
NPL (%)	1.43	0.94	1.52	2,959	1.90	1.06	2.48	5,918	-0.48*	0.08
NPL Top Tail	0.03	0.00	0.16	2,959	0.08	0.00	0.28	5,918	-0.06**	0.03
SD NPL (%)	0.32	0.18	0.40	2,430	0.44	0.22	0.57	4,817	-0.11**	0.05
Loan Loss Reserves (%)	1.74	1.54	0.75	2,957	1.78	1.56	1.00	5,913	-0.04	0.70
SD LLR/Loans	0.15	0.09	0.16	2,399	0.16	0.09	0.19	4,836	-0.02	0.40
Asset Growth (%)	10.99	7.81	13.84	2,902	10.72	7.00	14.75	5,632	0.27	0.77
Asset Growth Bottom Tail	0.03	0.00	0.17	2,661	0.09	0.00	0.28	5,365	-0.06**	0.02
Loan Growth (%)	12.46	8.82	19.69	2,940	11.76	7.96	25.90	5,879	0.7	0.68
NPL % by Loan Type										
Residential RE	1.22	0.75	1.45	2,945	1.81	0.81	2.76	5,855	-0.59	0.12
Commercial RE	2.21	1.14	2.78	2,936	3.05	1.17	5.28	5,895	-0.84	0.11
C&I	1.28	0.93	1.27	2,950	1.79	1.08	2.83	5,779	-0.50**	0.01
Consumer	0.67	0.46	1.30	2,792	0.64	0.45	0.70	5,144	0.03	0.75

(Continued)

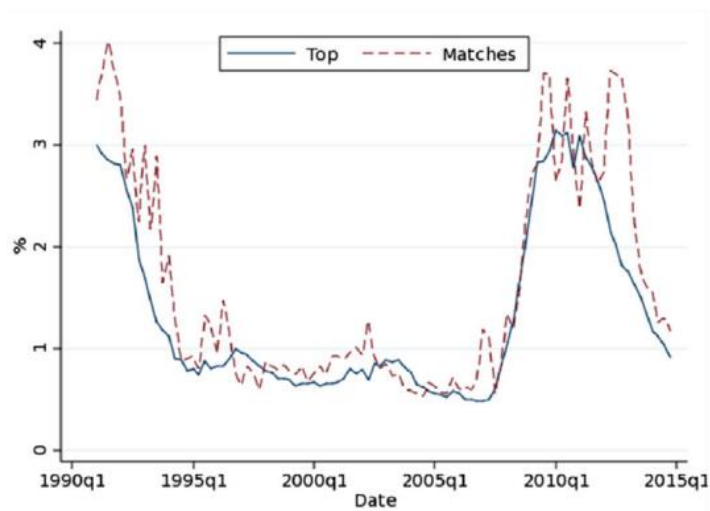
Measuring the Impact of Supervision



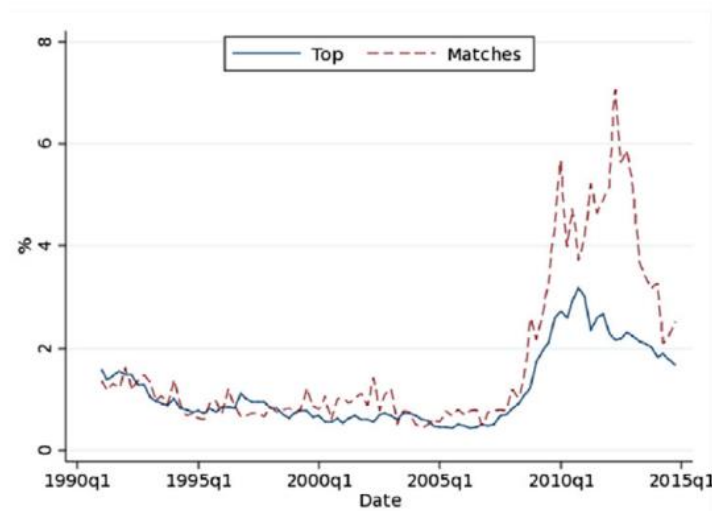
Panel A. ROA



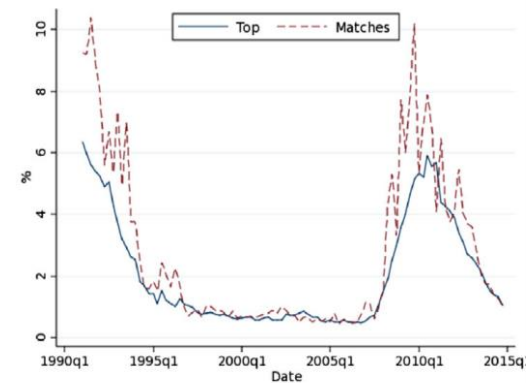
Panel B. Std. Dev. ROA



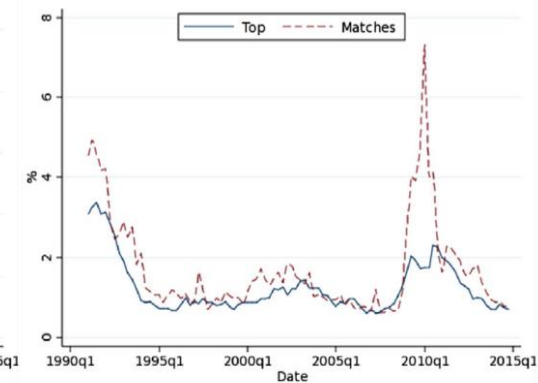
Panel C. Total NPL %



Panel D. RRE NPL %



Panel E. CRE NPL %



Panel F. C&I NPL %

3. Systemic Benefits of Supervisory Attention

Supervisory attention appears to reduce bank risk, particularly during industry downturns.

Figure 3. Time-series comparison of Top and matched samples. This figure plots the average for treatment banks (*Top*) and their matches over the sample period. Standard deviations are calculated using an eight-quarter horizon (forward). The sample is described in Table IV. (Color figure can be viewed at wileyonlinelibrary.com)

Measuring the Impact of Supervision

3. Systemic Benefits of Supervisory Attention

A downturn quarter is determined by whether a symmetric five-quarter moving window has at least three quarters that are above (or below in the case of ROA) the median for the entire sample period. We do not use official recession timing.

Table VI
Difference in Means between *Top* and Matches during Downturns

This table reports estimates from regressions of bank outcome variables on a *Top* BHC indicator, a dummy indicating an industry downturn for that variable, and the interaction between *Top* status and the downturn dummy. The coefficient on the interaction estimates the differential performance of top banks during downturns. The sample is *Top* BHCs and their matches as summarized in Table IV. *Top* BHCs are those within the top five in a Reserve Bank district-quarter based on assets or within 25% of the top five. Industry downturns for each variable are defined using industry aggregates. A downturn is defined for a quarter if its symmetric five-quarter moving window has at least three quarters that are above (or below) the median. Examples of these designations can be found in Internet Appendix Figure IA.2. Standard deviations of accounting variables are calculated on a rolling basis using eight quarters (forward). Further details on variable construction can be found in Section I of the Internet Appendix. The difference in means is the treatment less the matches. *p*-Values are calculated using standard errors clustered by BHC. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Dependent Variable	<i>Top</i> Coefficient	Standard Error	<i>p</i> -Value	<i>Top</i> × Downturn		<i>p</i> -Value	<i>N</i>	<i>R</i> ²	Sample Means	
				Coefficient	Standard Error				Full	Downturn
ROA (%)	0.016	(0.04)	0.69	0.074	(0.072)	0.31	8,725	0.22	0.98	0.70
SD ROA	-0.087**	(0.037)	0.02	-0.19	(0.133)	0.16	7,192	0.05	0.46	0.62
NPL (%)	-0.115	(0.072)	0.11	-0.677*	(0.370)	0.07	8,877	0.281	1.74	2.58
RRE NPL (%)	-0.099	(0.090)	0.27	-0.898*	(0.462)	0.05	8,800	0.278	1.61	2.34
CRE NPL (%)	-0.051	(0.067)	0.45	-1.431**	(0.723)	0.05	8,831	0.254	2.77	4.38
C&I NPL (%)	-0.179**	(0.072)	0.01	-0.619*	(0.318)	0.05	8,729	0.159	1.62	2.24
Consumer NPL (%)	0.048	(0.083)	0.57	-0.057	(0.065)	0.38	7,936	0.111	0.65	0.68

Robustness Check

1. Controlling for District Effects

Time-varying district-level differences may lead to unbalanced sample across districts and bias.

- construct a **larger sample of BHCs** that allows us to specify an empirical model that includes **district-quarter fixed effects**.
- matching non-Top BHCs of size rank 6 through 15 to banks not among the Top of another district, then the sample grows to include **each top 15 bank that we can match to two other banks in another district**.

$$Y_{ijt} = \Pi_{dt} + \alpha_{jt} + \beta Top_{it} + \varepsilon_{ijt}. \quad (2)$$

- i indexes the BHC; j indexes each “match group”;
 - Π_{dt} contains district-quarter fixed effects;
 - α_{jt} control match group fixed effects;
- β estimates the within-district-quarter difference between a BHC and its matches for a Top firm relative to a top 15 firm.

Robustness Check

1. Controlling for District Effects

Table VII

Ordinary Least Squares: *Top* Status Controlling for District

This table reports estimates from regressions of bank outcome variables on a *Top* BHC indicator, a dummy indicating the matching group, and district-quarter fixed effects. The sample comprises top 15 BHCs and their matches. Standard deviations of accounting variables are calculated on a rolling basis using eight quarters (forward). Growth is one year (forward). Tail measures are calculated at the top or bottom 5th percentile. The coefficient on *Top* can be interpreted as the differential impact of being a top-ranked BHC within a district-quarter. Standard errors are clustered by BHC. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Dependent Variable	<i>Top</i> Coefficient	Standard Error	<i>p</i> -Value	<i>N</i>	<i>R</i> ²	Sample Mean
Balance Sheet						
RWA Assets (%)	-0.565	(1.491)	0.71	23,943	0.26	71.18
Tier 1 Ratio (%)	-0.421	(0.367)	0.25	23,933	0.16	12.54
NPL (%)	-0.223	(0.157)	0.16	29,544	0.30	1.68
NPL Top Tail	-0.034*	(0.018)	0.06	29,544	0.21	0.06
SD NPL (%)	-0.106***	(0.039)	0.01	23,883	0.35	0.40
Loan Loss Reserves (%)	-0.115	(0.071)	0.11	29,517	0.30	1.72
SD LLR/Loans	-0.013	(0.014)	0.34	23,823	0.30	0.15
Asset Growth (%)	-0.551	(0.782)	0.48	28,460	0.16	11.08
Asset Growth Bottom Tail	-0.039**	(0.017)	0.02	26,550	0.13	0.06
Loan Growth (%)	-0.634	(1.373)	0.65	29,233	0.15	12.65
NPL % by Loan Type						
Residential RE	-0.289*	(0.160)	0.07	29,366	0.29	1.41
Commercial RE	-0.680*	(0.378)	0.07	29,412	0.37	2.38
C&I	-0.093	(0.143)	0.52	29,045	0.24	1.67
Consumer	0.061	(0.060)	0.31	26,047	0.18	0.59
Earnings						
ROA (%)	-0.015	(0.046)	0.75	28,946	0.27	0.95
ROA Bottom Tail	-0.011	(0.012)	0.349	29,544	0.20	0.05
SD ROA	-0.147**	(0.064)	0.02	23,755	0.19	0.47
SD ROA Top Tail	-0.019	(0.020)	0.328	24,350	0.15	0.07
Sharpe Ratio of ROA	1.280**	(0.585)	0.03	23,599	0.22	7.40
Log <i>Z</i> -Score	0.223**	(0.101)	0.03	23,530	0.22	3.76
Stock Market						
Market Cap/Equity	0.175***	(0.052)	0.00	21,050	0.55	1.64
Excess Return (%)	0.001	(0.005)	0.77	20,408	0.41	0.01
SD Daily Return	-0.002***	(0.001)	0.00	20,891	0.67	0.02
Sharpe Ratio	0.003	(0.004)	0.36	21,154	0.51	0.04
Bottom Return Decile	-0.028*	(0.016)	0.072	20,840	0.15	0.09

Robustness Check

2. Robustness to Alternative Explanations

Other unobservable heterogeneity that explains the stronger performance of Top banks, which makes Top status not randomly assigned.

- Omitted variable bias: managerial talent, firm culture, or franchise value, may be accounted for in our size match.
- include firm-level fixed effects to exploit entry and exit from Top ranked status or to conduct an event study around changes in status.
- An expanded set of matching criteria that include recent firm performance. Consistent results.

Robustness Check

3. Two-Stage Least Squares

Table X

2SLS: *Top* as an Instrument for Supervisory Hours, 2006 to 2014

This table reports estimates from two-stage least squares regressions of various dependent variables on the log of supervisory hours, where the instrument is the *Top* BHC indicator. Controls include log assets, log entities, asset share by charter type, loans/assets, deposits/liabilities, HHI of assets, a public indicator, and deposit market share (see Table II, column (2)). The regressions include quarter fixed effects. The sample comprises 2006Q1 to 2014Q4 BHCs excluding BHCs larger than the largest non-*Top* bank (consistent with the sample in Table III, columns (4) to (6)). For details on variable construction, see Section I of the Internet Appendix. *F*-Stats are tests for weak instruments. Standard errors are clustered by BHC. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Dependent Variable	$\log(hours)$ Coefficient	Standard Error	<i>F</i> -Statistic	<i>N</i>	Sample Mean
Balance Sheet					
RWA Assets (%)	1.23	(1.09)	29.63	14,617	73.47
Tier 1 Ratio (%)	-0.92**	(0.46)	29.58	14,615	12.77
NPL (%)	-0.75*	(0.39)	29.63	14,617	2.49
SD NPL (%)	-0.11	(0.09)	22.62	10,324	0.7
Loan Loss Reserves (%)	-0.04	(0.11)	29.62	14,612	1.74
SD LLR/Loans	-0.00	(0.03)	21.36	10,419	0.22
Asset Growth (%)	-0.68	(1.24)	29.83	14,524	8.29
Loan Growth (%)	-0.90	(1.40)	29.83	14,524	7.96
NPL % by Loan Type					
Residential RE	-0.62	(0.38)	29.80	14,509	2.17
Commercial RE	-0.85	(0.54)	29.61	14,582	3.25
C&I	-0.56**	(0.25)	28.27	14,465	1.68
Consumer	0.09	(0.17)	23.31	10,797	0.62
Earnings					
ROA (%)	0.01	(0.07)	30.86	14,105	0.66
SD ROA	-0.37**	(0.19)	19.82	10,346	0.76
Sharpe Ratio of ROA	1.87*	(1.11)	21.98	10,286	4.08
Log Z-Score	0.40*	(0.24)	20.90	10,092	3.31
Stock Market					
Market Cap/Equity	-0.04	(0.08)	27.09	7,601	1.25
Excess Return (%)	-0.00	(0.00)	27.65	7,281	0.0
SD Daily Return	-0.00	(0.00)	26.41	7,518	0.03
Sharpe Ratio	-0.00	(0.00)	26.78	7,757	0.02
Bottom Return Decile	0.00	(0.02)	28.17	7,630	0.10

Further Explore the Nature of the Differences

Table VIII
Ordinary Least Squares: *Top* Status and Earnings Volatility
Controlling for District

This table reports estimates from regressions of bank outcome variables on a *Top* BHC indicator, a dummy indicating the matching group, and district-quarter fixed effects. The sample comprises top 15 BHCs and their matches. Tail risk indicators are based on being in the top or bottom 5th percentile of the full sample over the entire time period. Standard deviations of accounting variables are calculated on a rolling basis using eight quarters (forward). For further details on variable construction, see Section I of the Internet Appendix. The coefficient on *Top* can be interpreted as the differential impact of being a top-ranked BHC within a district-quarter. Standard errors are clustered by BHC. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Dependent Variable	<i>Top</i> Coefficient	Standard Error	<i>p</i> -Value	<i>N</i>	R^2	Sample Mean
Earnings Volatility						
SD NIM/Assets	-0.006*	(0.003)	0.09	23,687	0.15	0.05
SD Nonint. Income/ Assets	-0.017***	(0.007)	0.01	23,916	0.13	0.06
SD LLP/Assets	-0.012*	(0.007)	0.09	23,945	0.29	0.07
SD NIE less Comp. & FA/Assets	-0.004	(0.010)	0.69	23,816	0.12	0.07
Discretionary Earnings						
Disc. LLP %	-0.008**	(0.004)	0.05	27,977	0.21	0.06
Disc. Security Gains	-0.002*	(0.001)	0.08	25,101	0.14	0.01
Discretionary Earnings	-0.002	(0.003)	0.47	23,995	0.11	0.00
Disc. Earnings	-0.003	(0.002)	0.29	23,995	0.22	0.04

1. Understanding Earnings Volatility

To identify the sources of lower earnings volatility for Top BHCs.

Further Explore the Nature of the Differences

Table IX

Ordinary Least Squares: *Top* Status, Governance, and Supervisory Tools Controlling for District

This table reports estimates from regressions of bank outcome variables on a *Top* BHC indicator, a dummy indicating the matching group, and district-quarter fixed effects. The sample comprises top 15 BHCs and their matches. For further details on variable construction, see Section I of the Internet Appendix. The coefficient on *Top* can be interpreted as the differential impact of being a top-ranked BHC within a district-quarter. Standard errors are clustered by BHC. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Dependent Variable	<i>Top</i> Coefficient	Standard Error	<i>p</i> -Value	<i>N</i>	<i>R</i> ²	Sample Mean
Off Balance Sheet						
Net Securitiz. Inc./Assets	-0.000	(0.001)	0.73	29,544	0.08	0.00
Unused Commitments/Assets	0.003**	(0.001)	0.03	29,544	0.10	0.02
Noninterest Inc./Assets	0.021	(0.025)	0.40	29,124	0.14	0.33
Governance						
Risk Committee	-0.033	(0.094)	0.73	7,206	0.28	0.26
Risk Manager	0.030	(0.097)	0.76	7,206	0.29	0.46
Supervisory						
Total MRA/MRIAs	-0.370	(2.022)	0.86	8,163	0.07	3.16
New MRA/MRIAs	0.059	(0.482)	0.90	8,163	0.12	0.68
Closed MRA/MRIAs	0.493	(0.311)	0.11	8,163	0.06	0.42
Enforcement Actions	0.095	(0.084)	0.26	29,544	0.16	0.27
Rating	0.006	(0.059)	0.92	29,483	0.29	1.82
Rating Change Dummy	-0.004	(0.006)	0.47	29,483	0.09	0.03

2. Other Risks

To identify whether banks substitute for other risks that are more difficult to observe.

3. Governance and Supervisory Outcomes

Conclusions

1. We demonstrate that the largest BHCs in a Federal Reserve district receive greater supervisory attention in the form of more dedicated supervisory hours, even after controlling for factors such as the size, complexity, and market share of the institution.
2. Our results are consistent with increased supervisory attention resulting in lower bank risk as indicated by less risky lending, lower earnings volatility, and more conservative accounting practices. The risk-return trade-off appears better at more closely supervised firms.
3. The magnitudes we document suggest a role for supervision to reduce banking losses in downturns and to help similarly capitalized banks avoid default.



Thanks

A. Variable Definitions and Sources

A.1

VARIABLE	DEFINITION	SOURCE	TIME PERIOD
Balance Sheet:			
Log(Assets)	Log of total assets (BHCK2170).	FR-Y9C	1991Q1- 2014Q4
Loans/Assets (%)	Percentage ratio of total loans (BHCK2122) to total assets (BHCK2170).	FR-Y9C	1991Q1- 2014Q4
Deposit/Liabilities (%)	Percentage ratio of deposits (BHDM6631 + BHDM6636 + BHFN6631 + BHFN6636) to total liabilities (BHCK2948).	FR-Y9C	1991Q1- 2014Q4
HHI of Assets	HHI of credit card loans (BHCKB538), residential real estate loans (BHDM5367 + BHDM5368 + BHDM1797), commercial real estate loans (BHCKf158 + BHCKf159 + BHDM1460 + BHCKf160 + BHCKf161), commercial and industrial loans (BHCK1763 + BHCK1764), investment securities (BHCK1754 + BHCK1773), and trading assets (BHCK3545).	FR-Y9C	1991Q1- 2014Q4
RWA Assets (%)	Percentage of risk-weighted assets (BHCAA223) to total assets (BHCK2170).	FR-Y9C	1996Q1- 2014Q4
Tier 1 Ratio (%)	Percentage of Tier 1 Capital (BHCA8274) to risk-weighted assets (BHCAA223).	FR-Y9C	1996Q1- 2014Q4
NPL (%)	Percentage ratio of nonperforming loans (BHCK5525 + BHCK5526 - BHCK3506 - BHCK3507) to total loans (BHCK2122).	FR-Y9C	1991Q1- 2014Q4
NPL Top Tail	Indicator for top 5th percentile of NPL (%) over the entire period.	FR-Y9C	1991Q1- 2014Q4
SD NPL (%)	Standard deviation of the percentage ratio of nonperforming loans to total loans over the next eight quarters. Trimmed at top and bottom 1%.	FR-Y9C	1991Q1- 2014Q4
Loan Loss Reserves (%)	Percentage ratio of loan loss reserves (BHCK3123) to total loans (BHCK2122).	FR-Y9C	1991Q1- 2014Q4
SD LLR/Loans	Standard deviation of the percentage ratio of loan loss reserves to total loans over the next eight quarters. Trimmed at top and bottom 1%.	FR-Y9C	1991Q1- 2013Q4

A.2

VARIABLE	DEFINITION	SOURCE	TIME PERIOD
Asset Growth (%)	Percentage year-over-year total asset (BHCK2170) growth. Trimmed at top and bottom 1%.	FR-Y9C	1991Q1- 2014Q4
Asset Growth Bottom Tail	Indicator for bottom 5th percentile of Asset Growth (%) over the entire period.	FR-Y9C	1991Q1- 2014Q4
Loan Growth (%)	Percentage year-over-year total loan (BHCK2122) growth. Trimmed at top and bottom 1%.	FR-Y9C	1991Q1- 2014Q4
NPL by Loan Type:			
Residential RE	Percentage ratio of nonperforming residential real estate loans (BHCK5399 + BHCKC237 + BHCKC239 + BHCK5400 + BHCKC229 + BHCKC230) to total residential real estate loans (BHDM5367 + BHDm5368 + BHDm1797). Exclude BHCs where the category is <1% of total loans.	FR-Y9C	1991Q1- 2014Q4
Commercial RE	Percentage ratio of nonperforming commercial real estate loans (BHCKF174 + BHCKF175 + BHCKF176 + BHCKF177 + BHCK3500 + BHCK3501 + BHCKF180 + BHCKF181 + BHCKF182 + BHCKF183) to total commercial real estate loans (BHCKf158 + BHCKf159 + BHDm1460 + BHCKf160 + BHCKf161). Exclude BHCs where the category is <1% of total loans.	FR-Y9C	1991Q1- 2014Q4
C&I	Percentage ratio of nonperforming commercial and industrial loans (BHCK1607 + BHCK1608) to total commercial and industrial loans (BHCK1763 + BHCK1764). Exclude BHCs where the category is <1% of total loans.	FR-Y9C	1991Q1- 2014Q4
Consumer	Percentage ratio of nonperforming consumer loans (BHCKB576 + BHCKK214 + BHCKK217 + BHCKB577 + BHCKK218 + BHCKK215) to total consumer loans (BHCKB538 + BHCKB539 + BHCKK137 + BHCKK207). Exclude BHCs where the category is <1% of total loans.	FR-Y9C	1991Q1- 2014Q4
Structure:			
Log(Entities)	Log of the total number of subsidiaries.	FR-Y6, FR-Y10	1991Q1- 2014Q4
% SMB (>\$10b) Assets	Share of assets of state member bank subsidiaries for state member banks that are above \$10B.	FR-Y6, FR-Y10, Call Report, FR-Y9C	1991Q1- 2014Q4
% SMB (\leq \$10b) Assets	Share of assets of state member bank subsidiaries for state member banks that are below \$10B.	FR-Y6, FR-Y10, Call Report, FR-Y9C	1991Q1- 2014Q4

A.3

VARIABLE	DEFINITION	SOURCE	TIME PERIOD
% National Bank Assets	Share of assets in a national bank.	FR-Y6, FR-Y10, Call Report, FR-Y9C	1991Q1- 2014Q4
Public	Indicator for publicly traded bank.	FRBNY - PERMCO Match	1991Q1- 2014Q4
Deposit Market Share	Weighted-average share of deposits in counties, weighted by BHC deposit levels in each county (BHCK2170).	Summary of Deposits	1991Q1- 2014Q4
Earnings:			
ROA (%)	Annualized percentage ratio of net income (BHCK4340) to total assets (BHCK2170). Trimmed at top and bottom 1%.	FR-Y9C	1991Q1- 2014Q4
ROA Bottom Tail	Indicator for bottom 5th percentile of ROA (%) over the entire period.	FR-Y9C	1991Q1- 2014Q4
ROA LTM (%)	Average ROA (%) over past four quarters.	FR-Y9C	1991Q1- 2014Q4
SD ROA	Standard deviation of ROA over the next eight quarters. Trimmed at top and bottom 1%.	FR-Y9C	1991Q1- 2014Q4
SD ROA Top Tail	Indicator for top 5th percentile of SD ROA (%) over the entire period.	FR-Y9C	1991Q1- 2014Q4
Sharpe Ratio of ROA	Ratio of the next eight quarters' average ROA to the standard deviation of the next eight quarters' ROA. Trimmed at top and bottom 1%.	FR-Y9C	1991Q1- 2014Q4
Log Z-Score	Z-Score is defined as the ratio of the sum of the average of the next eight quarters' ROA and the average of the next eight quarters' ratio of equity (BHCK3210 + BHCK3000) to assets (BHCK2170) to the standard deviation of the next eight quarters' ROA. Trimmed at top and bottom 1%.	FR-Y9C	1991Q1- 2014Q4
Stock Market:			
Market Cap/ Equity	Ratio of the product of stock price (PRC) and shares outstanding (SHROUT) to book equity (BHCK3210 + BHCK3000). Trimmed at top and bottom 1%.	CRSP, FR-Y9C	1991Q1- 2014Q4
Excess Return (%)	Excess return based on a three-factor model (Market, SMB, HML). Betas calculated using daily returns over rolling 12-month period. Trimmed at top and bottom 1%.	CRSP, Ken French's Website	1991Q1- 2014Q4
SD Daily Return	Standard deviation of daily returns in a quarter. Trimmed at top and bottom 1%.	CRSP	1991Q1- 2014Q4
Sharpe Ratio	Next quarter's ratio of the average daily return minus the risk-free rate to the standard deviation of the daily excess return. Trimmed at top and bottom 1%.	CRSP, Ken French's Website	1991Q1- 2014Q4

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VARIABLE	DEFINITION	SOURCE	TIME PERIOD
Bottom Return Decile	Indicator equal to one if the observation's value of quarterly excess return is in the quarter's bottom 10th percentile.	CRSP, Ken French's Website	1991Q1- 2014Q4
Earnings Volatility:			
SD NIM/Assets	Standard deviation of the percentage of net interest income (BHCK4074) to total assets (BHCK2170) over the next eight quarters. Trimmed at top and bottom 1%.	FR-Y9C	1991Q1- 2013Q4
SD Nonint. Income/Assets	Standard deviation of the percentage of noninterest income (BHCK4079) to total assets (BHCK2170) over the next eight quarters. Trimmed at top and bottom 1%.	FR-Y9C	1991Q1- 2013Q4
SD LLP/Assets	Standard deviation of the percentage of loan loss provision (BHCK4230) to total assets (BHCK2170) over the next eight quarters. Trimmed at top and bottom 1%.	FR-Y9C	1991Q1- 2013Q4
SD NIE less Comp. and FA/Assets	Standard deviation of the percentage noninterest expense less compensation and fixed assets (BHCK4093 - BHCK4135 - BHCK4217) to total assets (BHCK2170) over the next eight quarters. Trimmed at top and bottom 1%.	FR-Y9C	1991Q1- 2013Q4
Disc. LLP %	Absolute value of the discretionary loan loss provision. Discretionary LLP is calculated as the residual from a regression of loan loss provisions to average loans (BHCK2122) on district-quarter fixed effects, the change in nonperforming loans (BHCK5525 + BHCK5526 - BHCK3506 - BHCK3507) to loans, the change in net charge-offs (BHCK4635 - BHCK4605) to loans, and the level of loan loss reserves (BHCK3123) to loans.	FR-Y9C	1991Q1- 2014Q4
Disc. Security Gains	Absolute value of the discretionary realized security gains/losses. Discretionary gains/losses are calculated as the residual from a regression of realized securities gains/losses (BHCK3521 + BHCK3196) over average assets (BHCK2170) on quarter fixed effects and the unrealized gains/losses on AFS securities (BHCKA221) over average assets.	FR-Y9C	1994Q1- 2014Q4
Disc. Earnings	Absolute value of the sum of discretionary realized security gains/losses and discretionary loan loss provisions (normalized by assets).	FR-Y9C	1994Q1- 2014Q4
Discretionary Earnings	Sum of discretionary realized security gains/losses and discretionary loan loss provisions (normalized by assets).	FR-Y9C	1994Q1- 2014Q4