1 Data and Methodology

For public banks in the U.S., we combine balance sheet and market data with data on insider ownership using public filings from the SEC.

Specifically, we combine stock return data from CRSP with quarterly bank-level data from the Call Reports.[1] For each bank, we construct our idiosyncratic volatility measure as follows. Following Panousi and Papanikolaou (2012) (PP2012), we decompose the daily return relative to the risk-free rate of bank b on business day τ within quarter t, $R_{b,\tau}$, into a market and firm-specific component using the below:

$$R_{b,\tau} = \alpha_{1,b} + \alpha_{2,b} F_{i,\tau} + \epsilon_{i,\tau}, \tag{1}$$

where $F_{b,\tau} = [R_{MKT}, R_{HML}, R_{SMB}, R_{MOM}]$, which are the Fama and French (1993) three factors plus the Carhart (1997) momentum factor.[2] We then compute bank b's idiosyncratic volatility as the natural logarithm of the volatility of the residuals from this regression:

$$\log(\sigma_{b,t}) = \log(\sqrt{(\sum_{\tau \in t} \epsilon_{i,\tau}^2)}). \tag{2}$$

Notice, total volatility can be computed similarly for the absolute return, and thus systematic volatility is the difference between the total volatility and the idiosyncratic component. Also note that we extract the β's of a given firm following a similar methodology. In our analysis, we use the market β from the four-factor model.

We combine our dataset with a measure of the insider ownership at the bank. To construct this measure, for each bank, we grab all SEC Forms 3, 4, and 5.[3] We then construct a measure of the shares directly owned by officers and directors across the bank.[4] For each day, we are interested in the shares owned following a given transaction.[5] We then fill in shares owned with that level until a form lists the next date at which a value of shares owned is reported. For a given officer, the earliest date on the first form and last date on the last form denote the beginning and end of that officer's sample. We then aggregate the shares owned for each date across officers within a bank to construct a time series of shares owned. We grab the last value for the year as our "annual" measure. We merge in the total shares available and held from CRSP to find the fraction of insider ownership at each date.

Our dataset is then combined with merger-adjusted Call Report data (FFIEC 031 and 041), aggregated to the top holder level. We then keep data as of the fourth quarter of each year. We construct a measure of year-ahead loan growth by taking the log difference in

[1] We take the list of bank top-holders (entity variable linked to permco variable) from the most recent CRSP-FRB link (as of November 15, 2018). The url to find this spreadsheet is: `https://www.newyorkfed.org/research/banking_research/datasets.html`.

[2] Note, we can use the daily return rather than the weekly return as in PP2012, as all bank stocks trade every business day (see footnote 2 on p.1119 in PP2012 for a discussion).

[3] The bank is identified by its CIK, which can be found in the CRSP data. Currently, the data we use for this analysis go back to 2003.

[4] We use the WRDS SEC analytical suite to find all forms 3,4, and 5 for a given bank. We create ownership codes following the approach of Thomson Reuters. We keep the same codes as Panousi and Papanikolaou (2012). That is, we keep codes of "O", "OD", "OE", "OB", "OP", "OS", "OT", "OX", "CEO", "CFO", "CI", "CO", "CT", "H", "GM", "M", "MD", "P", "EVP", "VP", and "SVP".

[5] In most cases, this is done by grabbing the last reported value of shares directly owned following a transaction reported for a given date. If the last value of shares owned following a transaction is zero within a date with a positive amount of shares purchases, but the prior value within a date is positive, we take the prior positive value.

total loans. We also construct additional measures in this Call Report data, used as controls, which are defined in Table 1.

When the CRSP/Call Report/SEC datasets are combined, we have a large, unbalanced panel of quarterly observations combined with the annual SEC insider ownership measure. We convert this into a balanced panel for the years 2004-2016. For our balanced panel of banks, we winsorize the inside ownership measure, loan growth, and idiosyncratic volatility at the 2% level. All remaining variables nicely exist within reasonable ranges. After balancing the panel, each year, we then group firms by their insider ownership levels.

1.1 Methodology

Our main specification is as follows:

$$gr^{l}_{b,t} = \beta(\sigma_{b,t} \times INSD_{j,t-1}) + \gamma \mathrm{X}_{b,t} + \varepsilon_{b,t}, \tag{3}$$

where $gr^{l}_{b,t}$ is year-ahead loan growth of bank b at time t. The variable $\sigma_{b,t}$ is the idiosyncratic equity volatility of the bank in a given quarter and the variable $INSD_{j,t-1}$ is a dummy variable which denotes whether the bank belongs to insider ownership grouping j in the previous year. The variable $\mathrm{X}_{b,t}$ is a vector of controls which are described in Table 1. The variable $\mathrm{X}_{b,t}$ also potentially includes bank or time fixed effects and the interaction of those fixed effects with the inside ownership dummies.

2 Tables

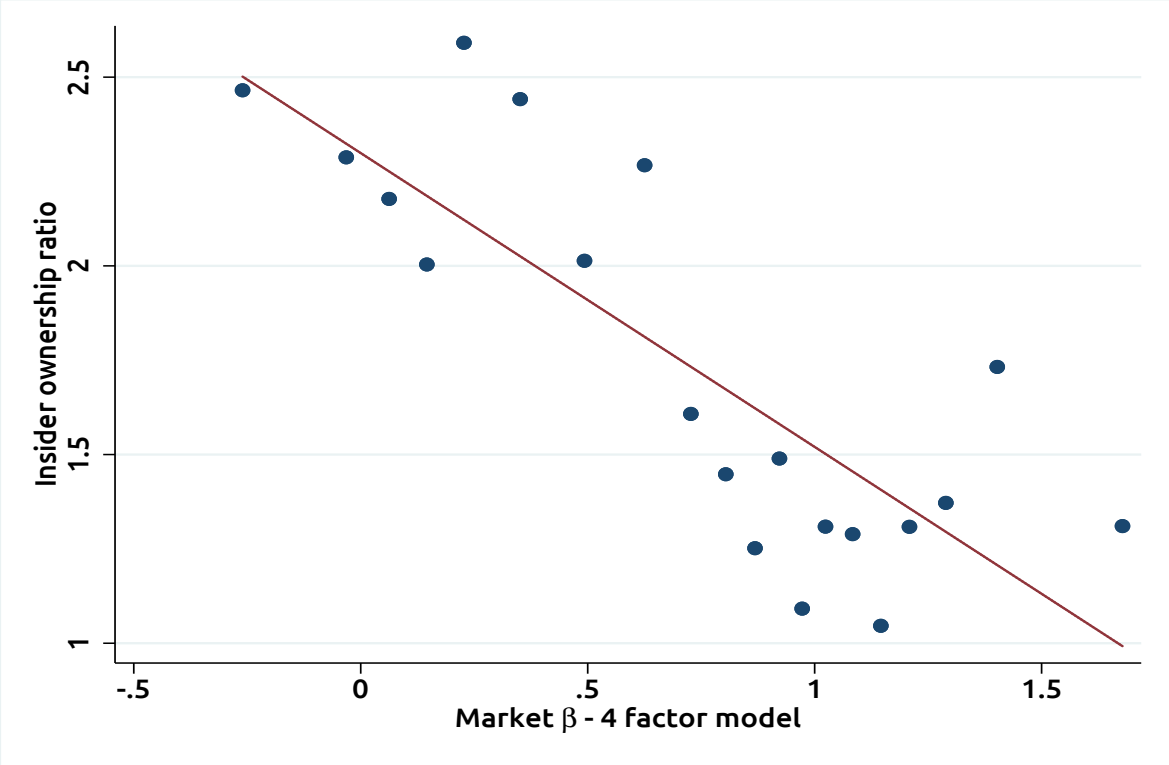

Figure 1: This binned scatter plot (20 bins) shows the insider ownership ratio vs. market β from the 4-factor model with each measured demeaned by year.

Table 1

Summary Statistics for Bank Variables

	Distribution of Controls Across Banks							
	Mean	Std	min	p10	p50	p90	max	N
$\log(\sigma_{b,E})$	0.53	0.61	-0.43	-0.13	0.40	1.48	2.15	4472
β - 4 factor model	0.69	0.54	-1.35	-0.01	0.77	1.35	2.88	4282
log(Total Assets)	14.84	1.58	10.69	13.25	14.48	16.89	21.52	4472
Market Cap to Total Assets	0.21	1.21	0.00	0.04	0.13	0.23	38.79	4472
Leverage Ratio	0.12	0.11	-0.02	0.08	0.10	0.15	1.00	4472
Profitability	0.01	0.03	-0.27	-0.00	0.01	0.01	0.89	4472
Deposit Ratio	0.76	0.16	0.00	0.65	0.79	0.87	1.01	4472
Real Estate Ratio	0.74	0.18	0.00	0.53	0.78	0.91	1.01	4397
Loans to Assets	0.67	0.16	0.00	0.51	0.70	0.83	1.05	4472
C&I Loan Ratio	0.15	0.11	0.00	0.05	0.13	0.29	0.84	4397
Tier 1 Ratio	0.17	0.38	-0.03	0.09	0.12	0.17	6.93	4472
	Distribution of Controls - Low Insider Ownership Banks							
	Mean	Std	min	p10	p50	p90	max	N
$\log(\sigma_{b,E})$	0.49	0.62	-0.43	-0.18	0.33	1.44	2.15	1897
β - 4 factor model	0.83	0.52	-1.17	0.06	0.92	1.42	2.88	1878
log(Total Assets)	15.38	1.78	11.35	13.50	14.99	17.95	21.52	1897
Market Cap to Total Assets	0.16	0.31	0.00	0.04	0.13	0.22	6.19	1897
Leverage Ratio	0.13	0.12	-0.02	0.08	0.11	0.15	1.00	1897
Profitability	0.01	0.05	-0.27	-0.00	0.01	0.02	0.89	1897
Deposit Ratio	0.75	0.17	0.00	0.65	0.79	0.87	1.01	1897
Real Estate Ratio	0.72	0.19	0.00	0.49	0.76	0.90	1.00	1849
Loans to Assets	0.66	0.17	0.00	0.51	0.69	0.81	1.05	1897
C&I Loan Ratio	0.16	0.11	0.00	0.06	0.14	0.30	0.83	1849
Tier 1 Ratio	0.19	0.42	-0.03	0.09	0.12	0.17	6.93	1897
	Distribution of Controls - High Insider Ownership Banks							
	Mean	Std	min	p10	p50	p90	max	N
$\log(\sigma_{b,E})$	0.61	0.61	-0.43	-0.04	0.47	1.59	2.15	1856
β - 4 factor model	0.61	0.53	-1.33	-0.04	0.65	1.30	2.30	1820
log(Total Assets)	14.54	1.20	10.69	13.27	14.29	16.26	21.00	1856
Market Cap to Total Assets	0.27	1.82	0.00	0.04	0.12	0.22	38.79	1856
Leverage Ratio	0.11	0.09	-0.01	0.08	0.10	0.14	1.00	1856
Profitability	0.01	0.02	-0.25	-0.00	0.01	0.01	0.47	1856
Deposit Ratio	0.77	0.14	0.00	0.67	0.80	0.87	0.98	1856
Real Estate Ratio	0.76	0.17	0.00	0.55	0.80	0.92	1.01	1840
Loans to Assets	0.69	0.15	0.00	0.52	0.71	0.84	0.96	1856
C&I Loan Ratio	0.15	0.11	0.00	0.04	0.12	0.28	0.70	1840
Tier 1 Ratio	0.16	0.35	-0.01	0.09	0.12	0.17	5.75	1856

This table reports the distribution of the bank-level variables used in our analysis across years in our sample. It shows summary statistics for all banks, for just low insider ownership banks, and for just high insider ownership banks. Total assets is RCFD2170. Market cap comes from multiplying shares outstanding times share price in CRSP. The leverage ratio is total book equity (RCFDG105) relative to total assets. Profitability is defined as net income after adjustments (RIAD4340) relative to total assets. The deposit ratio is defined as deposits in foreign and domestic offices (RCON2200 + RCFN2200) over total assets. The real estate ratio is defined as the share of real estate loans relative to total loans and leases held for sale (RCFD1410/RCFD2122). The share of loans to assets is total loans to total assets. The C&I loan ratio is the share of C&I loans (RCFD1763+RCFD1764) to total loans. The Tier 1 ratio is the share of Tier 1 capital to risk-weighted assets (RCFA7206). N is the number of nonmissing observations for that variable.

Table 2

Within-Firm Transitions - Unbalanced Panel

		$INSD_{b,t}$	
		L	H
$INSD_{b,t-1}$	L	1,710	187
	H	216	1,640

This table shows a count of the number of transitions a firm makes from being a low insider ownership share firm in one year to either a low or high insider ownership share firm in the next year, and vice versa.

Table 3

Effect of Insider Ownership (2 Groupings)

	Effect on Loan Growth (percentage points)			
	(1)	(2)	(3)	(4)
$\log(\sigma_{b,E})xINSD_L$		-2.909***		-2.330***
		(0.375)		(0.380)
$\log(\sigma_{b,E})xINSD_H$		-1.621***		-1.401***
		(0.287)		(0.308)
$\log(\sigma_{b,E})$	-5.763***		-5.544***	
	(0.693)		(0.719)	
Controls			X	X
Time FE	X	X	X	X
Time FE x $INSD$ DUMMIES		X		X
Bank FE	X	X	X	X
Bank FE x $INSD$ DUMMIES		X		X
R^2_a	0.340	0.226	0.393	0.267
No. banks	457	382	456	381
No. loans	3356	2769	3294	2710

For a balanced panel of banks using data from 2004-2016, this table reports coefficients from (3). The variable $\sigma_{b,t}$ is the idiosyncratic equity volatility of the bank in a given quarter and the variable $INSD_{j,t-1}$ is a dummy variable which denotes whether the bank belongs to insider ownership grouping j in the previous year. The baseline controls are as noted in Section 1. The variable specification also includes bank or time fixed effects and the interaction of those fixed effects with the inside ownership dummies, when denoted in the table. Standard errors, in parentheses, are clustered at the bank level. *,**,*** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 4

Effect of Insider Ownership (2 Groupings) - Balanced Panel

	Effect on Loan Growth (percentage points)			
	(1)	(2)	(3)	(4)
$\log(\sigma_{b,E})xINSD_L$		-3.225***		-1.462**
		(0.613)		(0.641)
$\log(\sigma_{b,E})xINSD_H$		-1.771***		-0.656
		(0.586)		(0.560)
$\log(\sigma_{b,E})$	-5.589***		-3.114***	
	(1.062)		(1.112)	
Controls			X	X
Time FE	X	X	X	X
Time FE x $INSD$ DUMMIES		X		X
Bank FE	X	X	X	X
Bank FE x $INSD$ DUMMIES		X		X
R_a^2	0.312	0.248	0.372	0.306
No. banks	112	112	112	112
No. loans	1344	1220	1300	1177

For a balanced panel of banks using data from 2004-2016, this table reports coefficients from (3). The variable $\sigma_{b,t}$ is the idiosyncratic equity volatility of the bank in a given quarter and the variable $INSD_{j,t-1}$ is a dummy variable which denotes whether the bank belongs to insider ownership grouping j in the previous year. The baseline controls are as noted in Section 1. The variable specification also includes bank or time fixed effects and the interaction of those fixed effects with the inside ownership dummies, when denoted in the table. Standard errors, in parentheses, are clustered at the bank level. *,**,*** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 5

Within-Firm Transitions

		$\beta_{b,t}$	
		L	H
$\beta_{b,t-1}$	L	1,441	297
	H	272	1,619

This table shows a count of the number of transitions a firm makes from being a low insider ownership share firm in one year to either a low or high insider ownership share firm in the next year, and vice versa.

Table 6

Effect of β's (2 Groupings)

	Effect on Loan Growth (percentage points)			
	(1)	(2)	(3)	(4)
$\log(\sigma_{b,E})x\beta_L$		-1.262***		-1.096***
		(0.268)		(0.267)
$\log(\sigma_{b,E})x\beta_H$		-3.172***		-2.666***
		(0.407)		(0.427)
$\log(\sigma_{b,E})$	-5.763***		-5.544***	
	(0.693)		(0.719)	
Controls			X	X
Time FE	X	X	X	X
Time FE x β DUMMIES		X		X
Bank FE	X	X	X	X
Bank FE x β DUMMIES		X		X
R_a^2	0.340	0.232	0.393	0.273
No. banks	457	375	456	374
No. loans	3356	2669	3294	2613

For a balanced panel of banks using data from 2004-2016, this table reports coefficients from (3). The variable $\sigma_{b,t}$ is the idiosyncratic equity volatility of the bank in a given quarter and the variable $\beta_{j,t-1}$ is a dummy variable which denotes whether the bank belongs to insider ownership grouping j in the previous year. The baseline controls are as noted in Section 1. The variable specification also includes bank or time fixed effects and the interaction of those fixed effects with the inside ownership dummies, when denoted in the table. Standard errors, in parentheses, are clustered at the bank level. *,**,*** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 7

Effect of β's (2 Groupings) - Balanced Panel

	Effect on Loan Growth (percentage points)			
	(1)	(2)	(3)	(4)
$\log(\sigma_{b,E})x\beta_L$		-1.367*		-0.399
		(0.714)		(0.606)
$\log(\sigma_{b,E})x\beta_H$		-3.109***		-1.707**
		(0.620)		(0.653)
$\log(\sigma_{b,E})$	-5.589***		-3.114***	
	(1.062)		(1.112)	
Controls			X	X
Time FE	X	X	X	X
Time FE x β DUMMIES		X		X
Bank FE	X	X	X	X
Bank FE x β DUMMIES		X		X
R^2_a	0.312	0.246	0.372	0.298
No. banks	112	112	112	112
No. loans	1344	1195	1300	1155

For a balanced panel of banks using data from 2004-2016, this table reports coefficients from (3). The variable $\sigma_{b,t}$ is the idiosyncratic equity volatility of the bank in a given quarter and the variable $\beta_{j,t-1}$ is a dummy variable which denotes whether the bank belongs to insider ownership grouping j in the previous year. The baseline controls are as noted in Section 1. The variable specification also includes bank or time fixed effects and the interaction of those fixed effects with the inside ownership dummies, when denoted in the table. Standard errors, in parentheses, are clustered at the bank level. *,**,*** indicate significance at the 10%, 5%, and 1% levels, respectively.

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