Deposit Insurance Premiums and Arbitrage

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Disclaimer

- The views expressed herein are those of the authors and do not necessarily represent the views of the Federal Reserve Board or its staff.

Motivation

- Interest on excess reserves (IOER) is now the main tool to control short-term interest rates.
- When the IOER rate rises, IOER arbitrage becomes more profitable, putting upward pressure on interest rates.
- Regulatory costs may prevent banks from arbitraging away spreads.
- We must understand how these costs affect IOER arbitrage.

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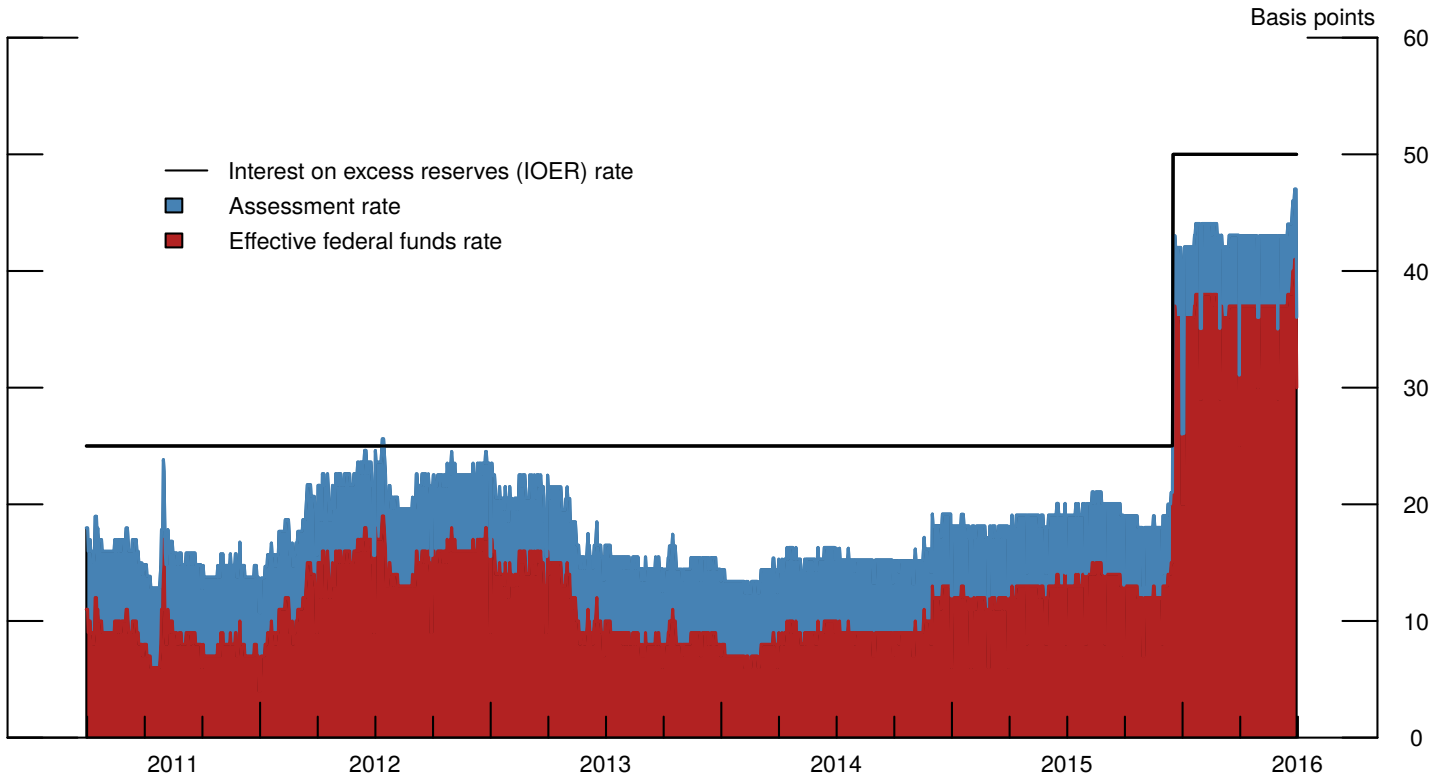
IOER Arbitrage Profitability



Motivation

- Establishing a causal effect of regulatory costs on IOER arbitrage is difficult.
- Correlation or causality?
  - These costs are correlated with unobservable bank characteristics that affect arbitrage.
- Estimates of these effects will most likely be biased.
- Solution: We use a kink in the schedule of deposit insurance premiums.

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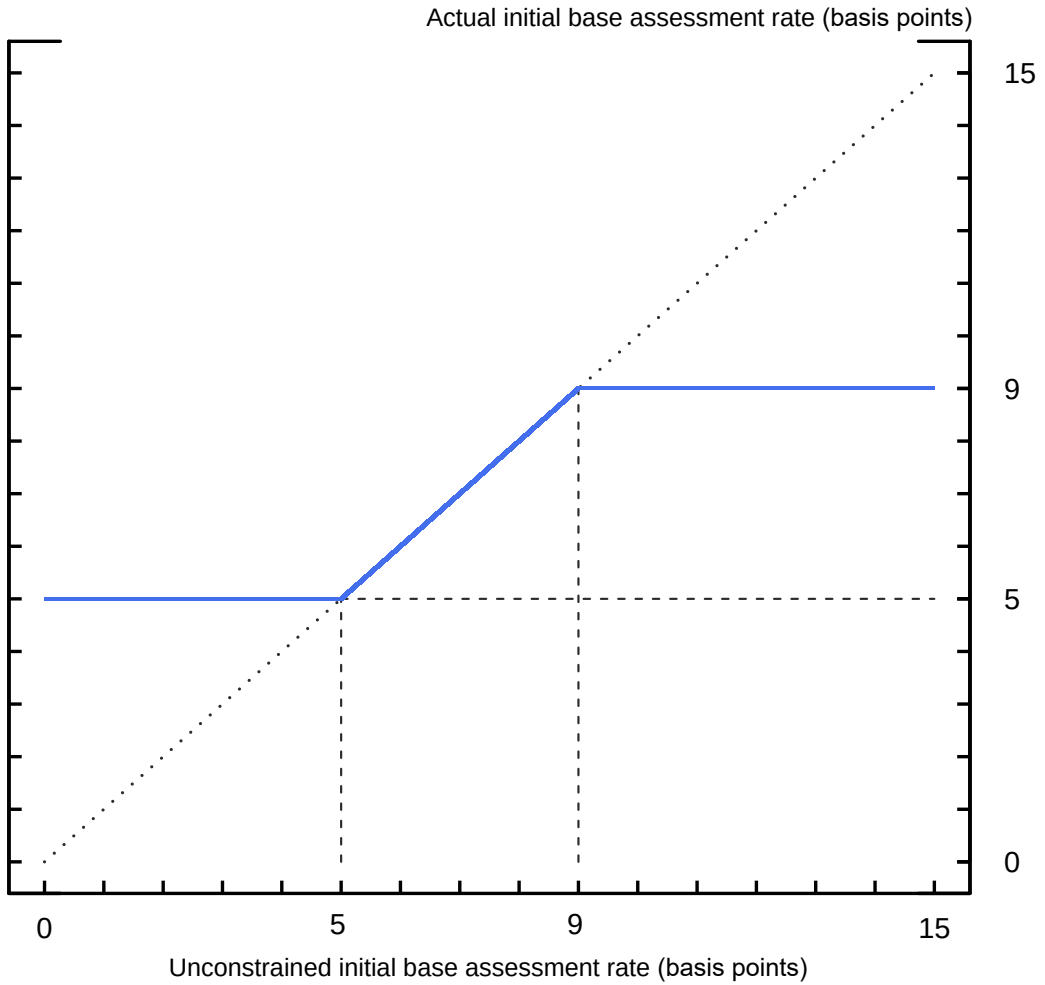
Kinks in Assessment Rate Schedule



Data

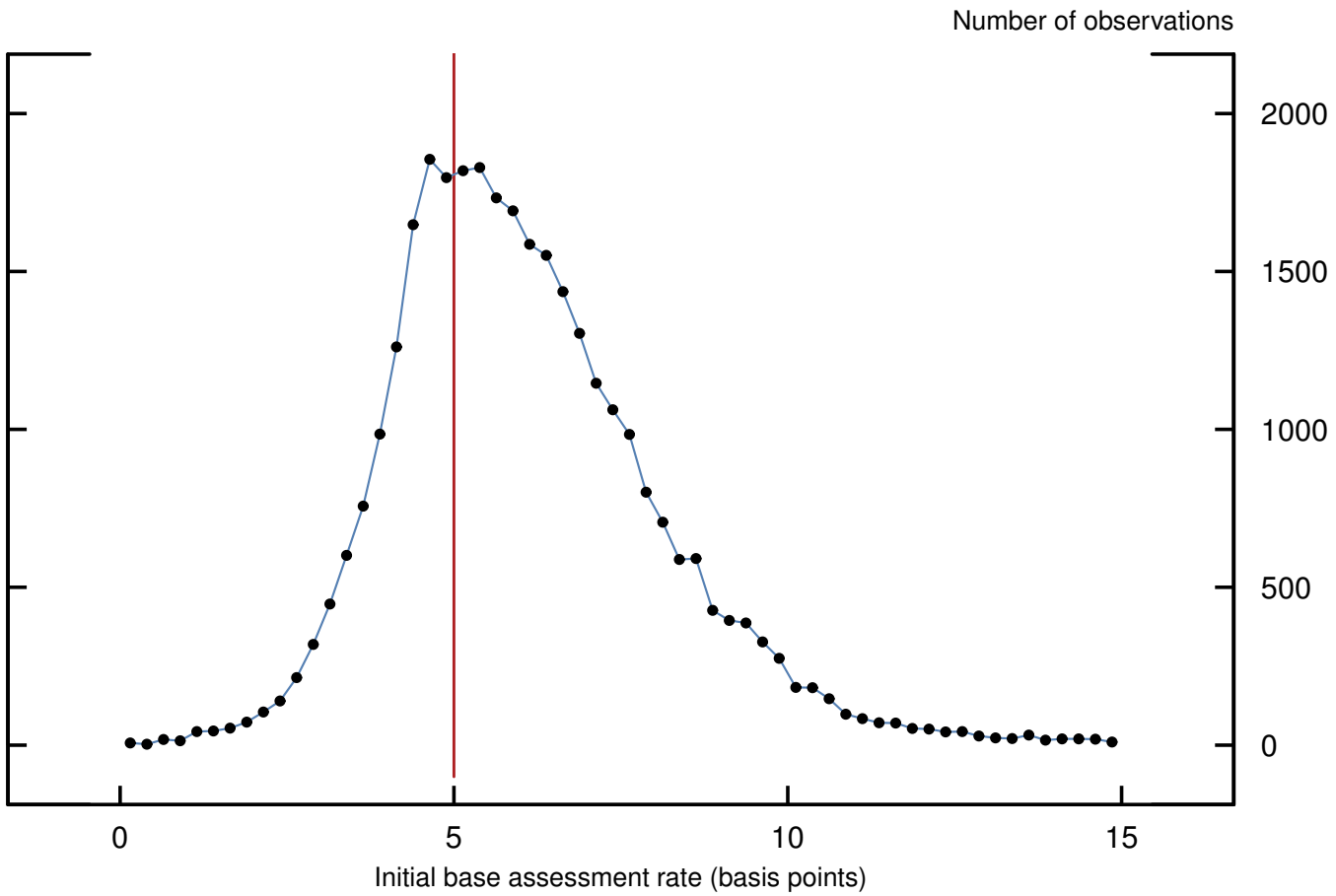


Figure: **Distribution of Unconstrained Initial Base Assessment Rates**

What We Do

- We calculate assessment rates using confidential data and the rule that determines these rates.
- We exploit a kink in the schedule of assessment rates to estimate the effects of deposit insurance premiums.
- An increase in insurance premiums weakens demand for excess reserves and strengthens the supply of interbank loans.
- We discuss the implications of our findings for monetary policy implementation and optimal deposit insurance pricing.

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Institutional Background

- The FDIC maintains the Deposit Insurance Fund charging assessments from banks.
- Each bank's quarterly assessment is equal to its assessment rate times its assessment base.
  - The assessment base is broadly defined as total assets minus equity.
  - The assessment rate of a safe small bank is a linear function of risk measures.

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Table: **Risk Measures and Coefficients**

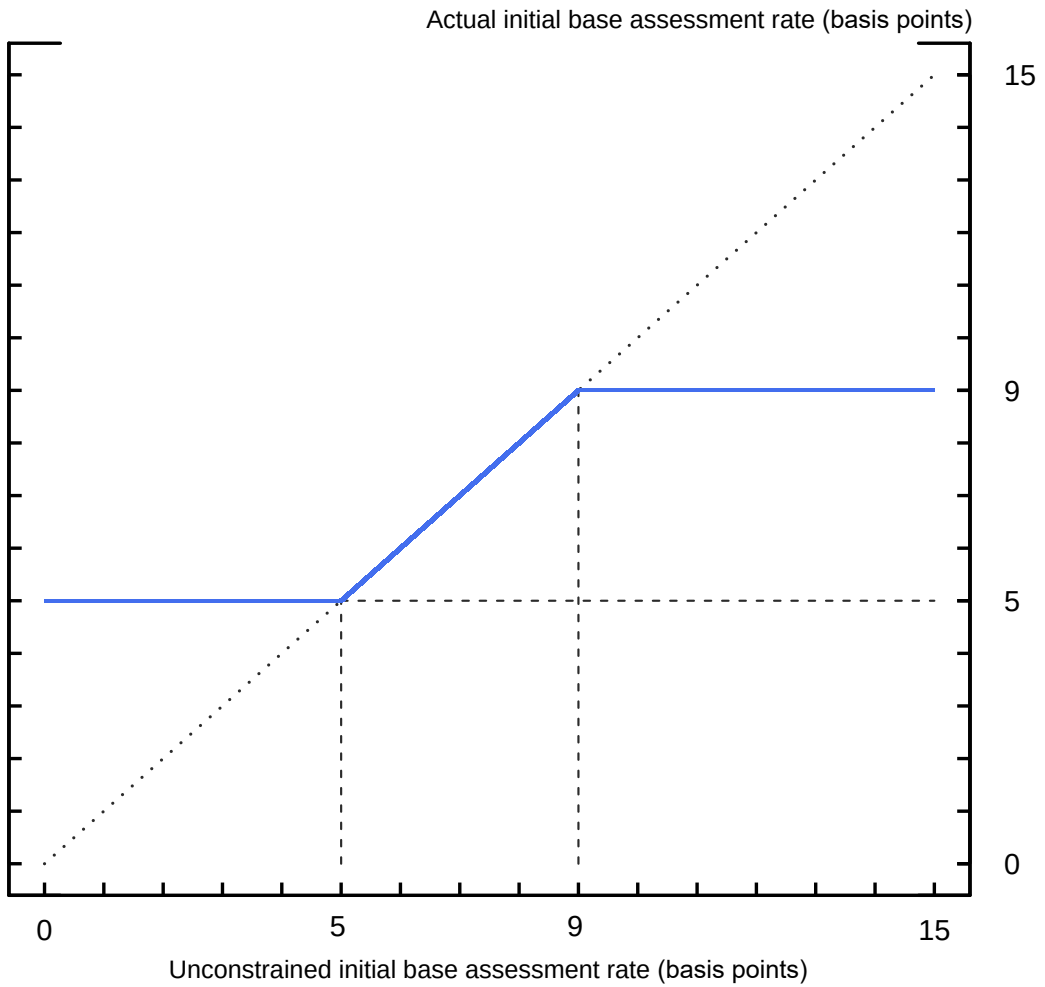
Risk measures	Coefficients
Tier 1 leverage ratio	-0.056
Loans past due 30-89 days / gross assets	0.575
Nonperforming assets / gross assets	1.074
Net loan charge-offs / gross assets	1.210
Net income before taxes / risk-weighted assets	-0.764
Adjusted brokered deposit ratio	0.065
Weighted average CAMELS component rating	1.095

NOTE: Ratios are expressed as percentages and pricing multipliers are rounded to three decimal places.

Institutional Background

- Assessment rates of safe small banks are subject to a minimum of 5 basis points and a maximum of 9 basis points.

FDIC schedule of assessment rates for Risk Category I banks



Data

- Sample:
  - Period: 2011Q2 - 2016Q2.
  - Domestically chartered commercial banks classified as Risk Category I and with total assets <$5 billion.
  - Not a newly-insured institution (five years).
  - Not subject to any adjustments to assessment rates.
- Data:
  - We construct assessment rates using:
    - Bank characteristics: Call Reports.
    - CAMELS Ratings: FRS.
    - Assessment Rate Calculator: FDIC.
  - Outcome variables:
    - Excess reserves: FRS.
    - Federal funds sold: Call Reports.
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Empirical Strategy

- We use a regression kink design (RKD) to study how...
  - Excess reserves
  - Federal funds sold
  - Federal funds purchased
- ...change as the slope of assessment rates increases at the 5 b.p. minimum.

Empirical Strategy

- We estimate the following parameter:

$$\tau = \frac{\lim_{x \to 5^+} \frac{dE[Y|X=x]}{dx} - \lim_{x \to 5^-} \frac{dE[Y|X=x]}{dx}}{\lim_{x \to 5^+} \frac{drate(x)}{dx} - \lim_{x \to 5^-} \frac{drate(x)}{dx}} \quad (1)$$

- where
  - Y is an outcome.
  - X is the unconstrained assessment rate.
  - $rate(.)$ is the actual assessment rate as a function of the unconstrained rate.
- Of note, the RKD denominator is deterministic and, in this case, equal to 1.

Results

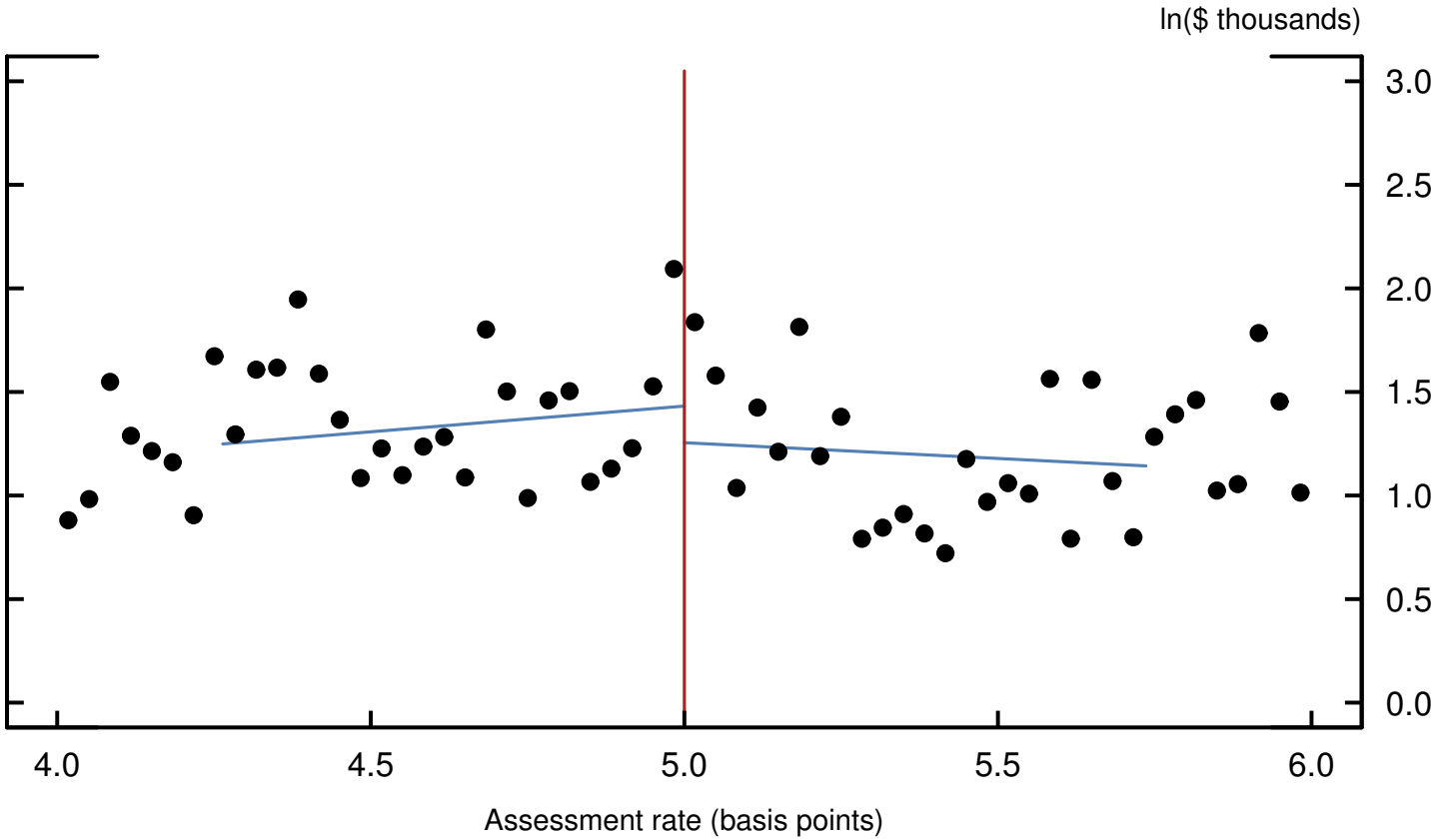

Figure: **Assessment Rates and Excess Reserves**

Effects of Assessment Rates on Excess Reserves

	Local linear		Local quadratic	
	Quarter-end excess reserves (1)	Average excess reserves (2)	Quarter-end excess reserves (3)	Average excess reserves (4)
RKD treatment effect	-1.579	-1.694	-2.680	-2.814
Robust 95% CI	[-4.084, -0.296]	[-4.182, -0.452]	[-6.094, -0.301]	[-6.231, -0.488]
Robust p-value	0.023	0.015	0.030	0.022
N_-	3,131	3,082	4,523	4,456
N_+	3,300	3,244	5,607	5,483
h	0.736	0.727	1.307	1.281

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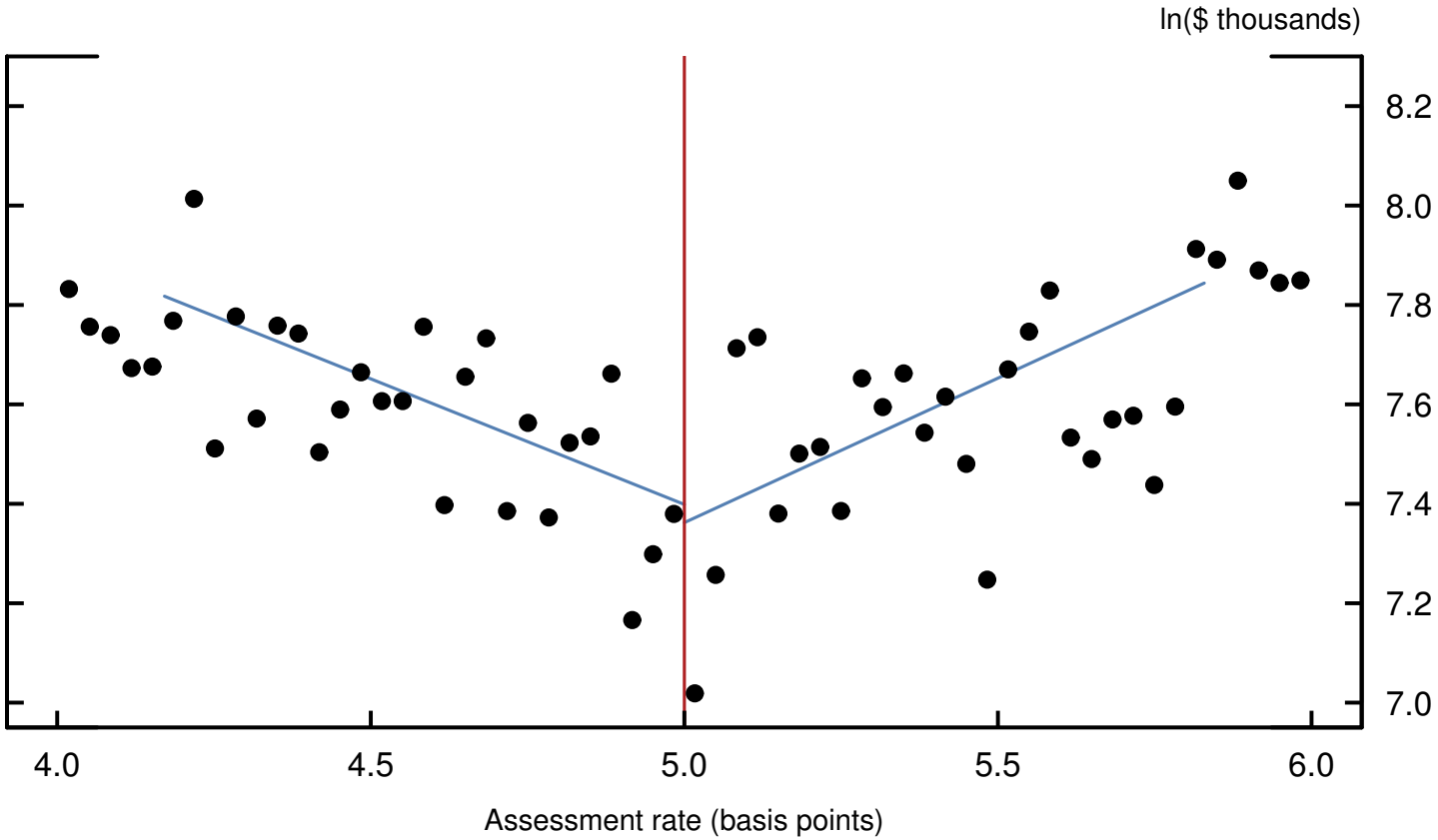

Figure: **Assessment Rates and Federal Funds Sold**

Results

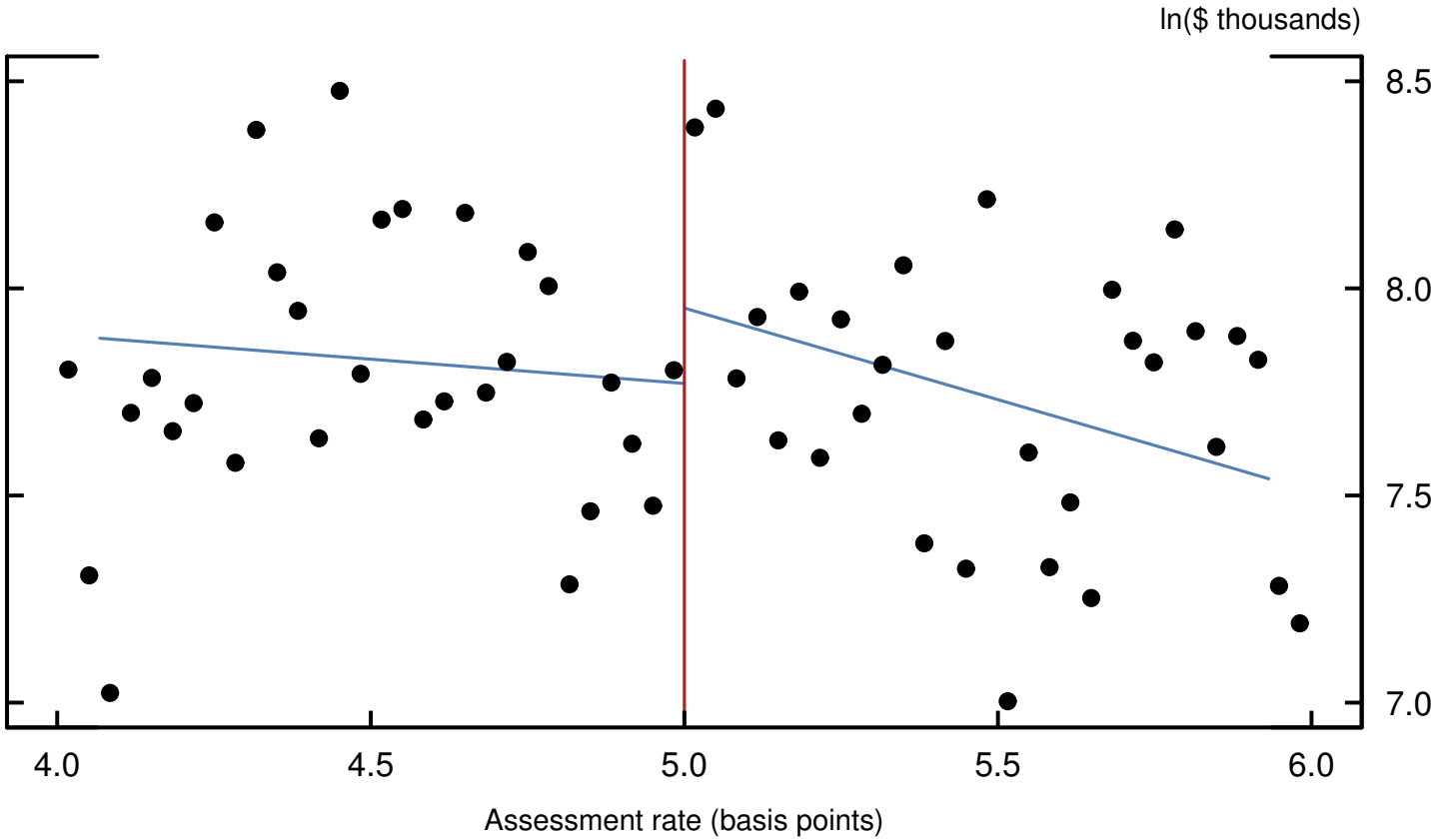

Figure: **Assessment Rates and Federal Funds Purchased**

Effects of Assessment Rates on Interbank Lending

	Local linear		Local quadratic	
	Federal funds sold (1)	Federal funds purchased (2)	Federal funds sold (3)	Federal funds purchased (4)
RKD treatment effect	0.949	-0.093	1.212	0.079
Robust 95% CI	[0.260, 1.638]	[-1.554, 1.652]	[0.170, 2.413]	[-2.261, 3.126]
Robust p-value	0.007	0.932	0.024	0.753
N_-	2,606	724	4,057	887
N_+	2,862	652	6,096	860
h	0.829	0.932	1.903	1.304

Conclusion

- We show that deposit insurance premiums reduce demand for reserves and increase the supply of federal funds by banks.
- These findings have important implications for:
  - Monetary policy implementation.
  - Optimal deposit insurance pricing.

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