

The Dynamics of Retail Deposit Balances

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SITE Banking and the Deposit Franchise

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Microdata-driven advances in understanding deposit behavior

- Explosion of interesting work on depositor and depository behavior (incl. here!)
 - Continued debate about size/mechanisms of Deposits Channel of Monetary Policy
 - Deposits are 25% of liquid wealth for bottom 99% (Usenko 2025)
 - Central focus is on classic theme: depositor stickiness
 - Yet still missing basic facts about retail deposit demand dynamics (including heterogeneity in stickiness)
- We use new microdata from 154 depositories to fill this void

Four Facts about Retail Deposit Balances

- Aggregate deposit flows are an average over heterogeneous households
 - Most accounts are small; a few are very large
 - The *average dollar* and the *average depositor* are different objects
- Using account-level data from 12 million accounts at 150+ institutions, we show
 1. Retail deposits are highly skewed: 10% of depositors control 70% of total deposits
 2. These high-balance accounts become large through lumpy, one-time deposits
 3. These accounts also experience lumpy, large withdrawals
 4. But those withdrawals are idiosyncratic: high-balance accounts are not sensitive to interest rates
- ▶ The average deposit dollar is much stickier than the average depositor.

Why are High-Balance Accounts *Stickier*?

- **Our Hypothesis:** holding liquid wealth has its own frictions
 - Deposits used as temporary holding bin before lumpy expenditures
 - ⇒ Low deposit duration ⇒ unlikely to cover fixed cost of switching
 - Costly attention to monitor rates and identify alternatives
 - Costly effort to open accounts and manage transfers across institutions

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 - Costly attention to monitor rates and identify alternatives
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- Consistent with Keynes (1936) notion of money demand
 - Depositors value liquidity and transactional services of money and near-money assets
 - See also Baumol 1952, Tobin 1956, Sidrauski 1967, Feenstra 1986, Lucas Stokey 1987, Lucas 2000, Lagos Wright 2005, Krishnamurthy Vissing-Jorgensen 2012, Nagel 2016

What We Add to a Rapidly Evolving Literature

- **Bank-level / aggregate stickiness**
 - Market power (DSS 2017), insurance (HSSV 2015), search (Yankov 2024), bundled services (d'Avernas et al. 2023), inattention (Adams et al. 2021)
 - All operate *across* banks → silent on within-bank heterogeneity

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 - Demonstrate unexpected facts for retail deposits that suggest MP affects small retail depositor behavior more than (moderately) large retail depositor behavior

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- **Deposits Channel of Monetary Policy**

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- **Concurrent work on depositor heterogeneity**

- [Usenko \(2025\)](#): US universe, rates for >\$250K accounts *do* respond to MP
 - Our focus is on retail deposits, his small balances = our large
- [Cirelli & Olafsson \(2025\)](#): wealthy Icelandic households are more responsive
 - Their large bank offers wealth management; US credit unions do not
- [Egan et al. \(2025\)](#); [Lu & Wu \(2025\)](#): inattention drives “sleepy” depositors
 - Locate inattention in high-balance accounts, propose deeper mechanism: *liquidity holding bins*

Outline

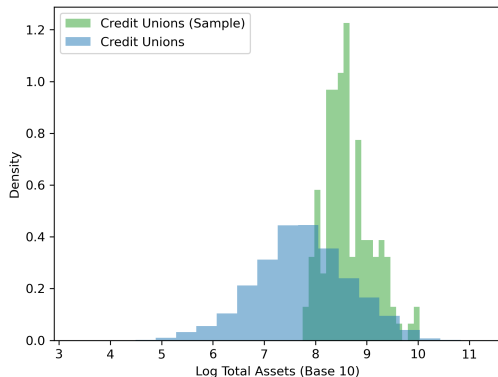
- 0. Data
- 1. Retail deposit skewness
- 2. High-balance deposit origins
- 3. High-balance deposit withdrawal behavior
- 4. Heterogeneity in deposit stickiness
- 5. Mechanisms: Services vs. Liquidity demand

Data

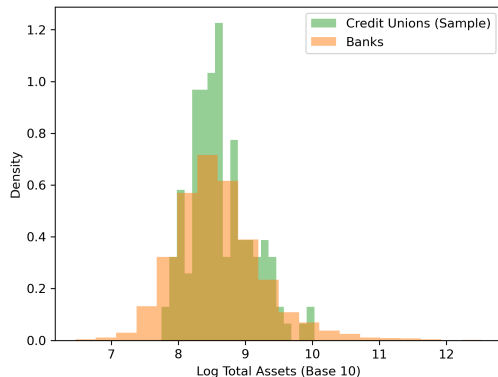
Data

- Large FinTech Business providing deposit analytics to 154 credit unions
- Monthly data on 12 million accounts from 2011–2023, including:
 - Account balances
 - Interest rates
 - Customer attributes
- We exclude business accounts and time deposits

Our sample of credit unions is similar sized to banks

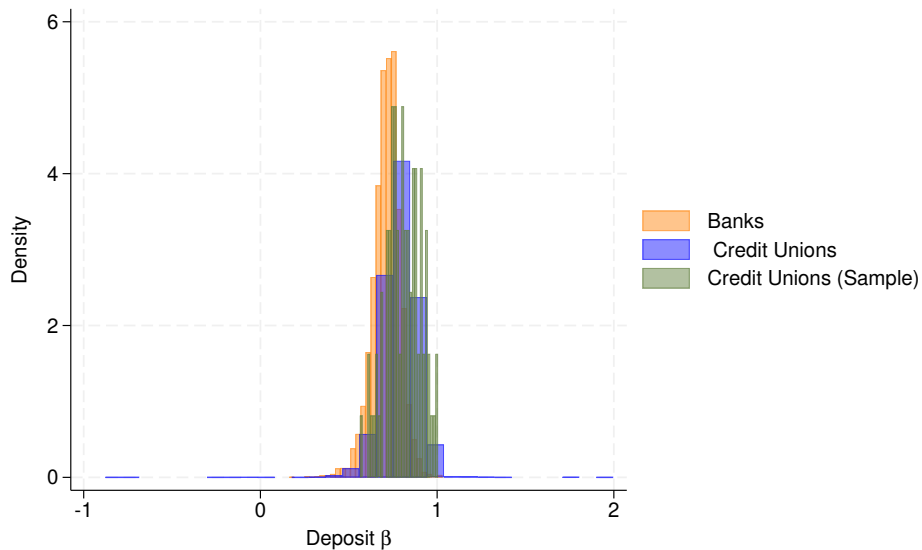


NCUA Credit Unions vs Data Sample



Data Sample vs Commercial Banks

Deposit Betas are also similar

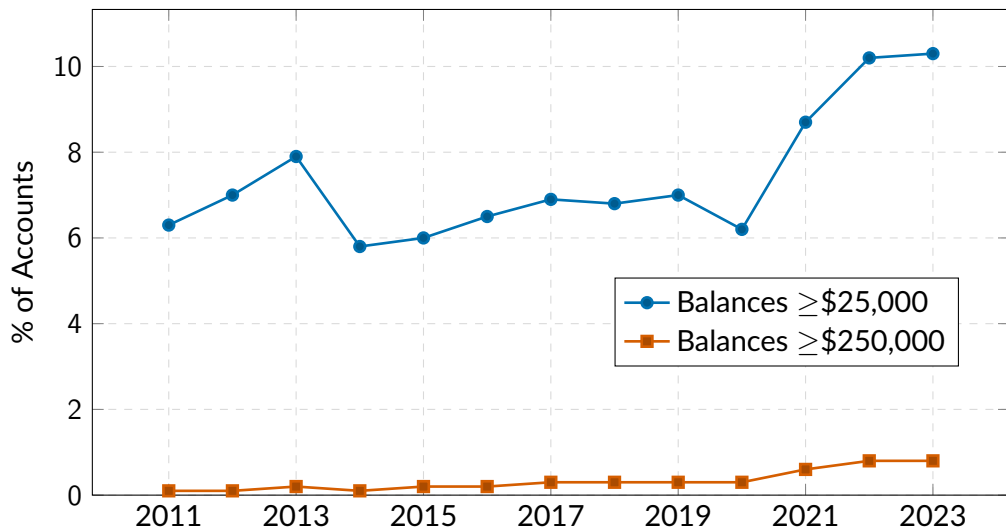


Fact #1

Demand Deposits are Highly Skewed

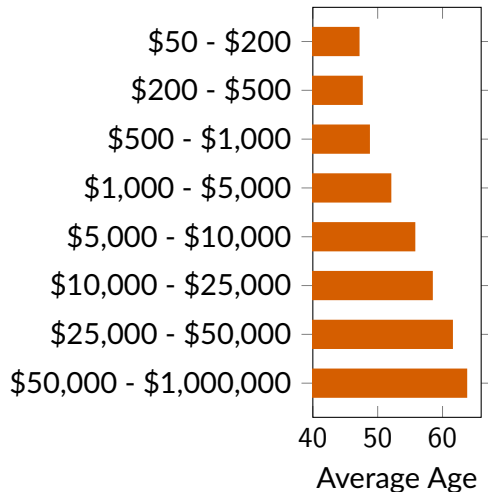
10% of accounts hold 70% of deposits

Fraction of Accounts with High-Balances

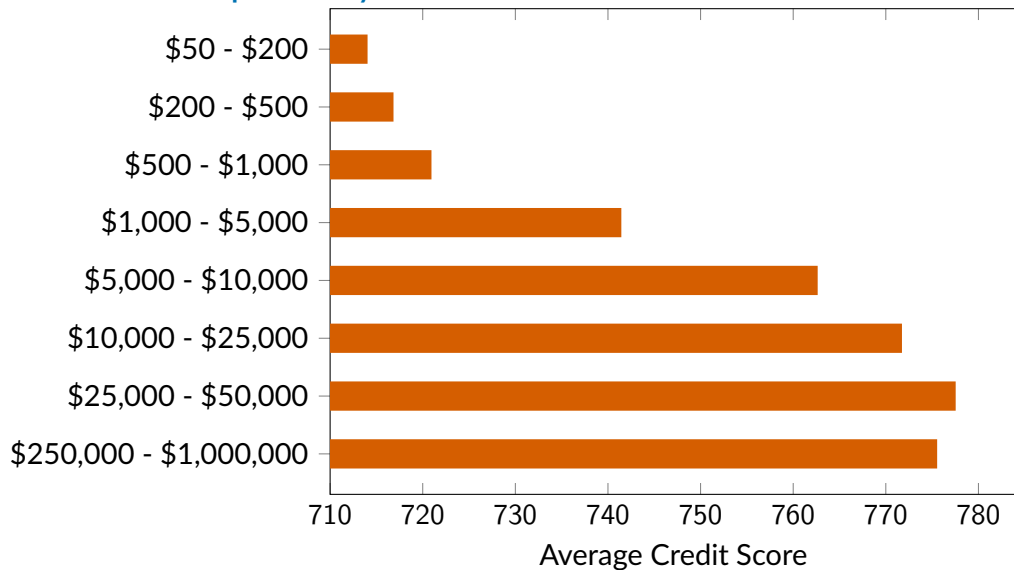


What do these high-balance accounts look like?

Balance Bin	Balance (\$)
\$50 - \$200	106.8
\$200 - \$500	331.9
\$500 - \$1,000	711.3
\$1,000 - \$5,000	2,356.1
\$5,000 - \$10,000	7,011.4
\$10,000 - \$25,000	15,594.1
\$25,000 - \$50,000	34,901.9
\$50,000 - \$1,000,000	156,370.3



Credit Score Spread by Balance Bin

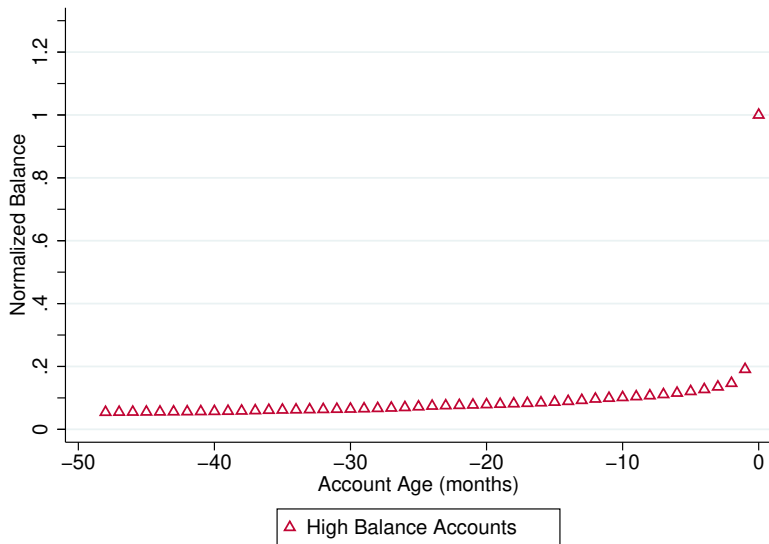


Fact #2

High-balance accounts form after large,
one-time inflows

High-balance: at some point in sample, balances $>$ \$25,000

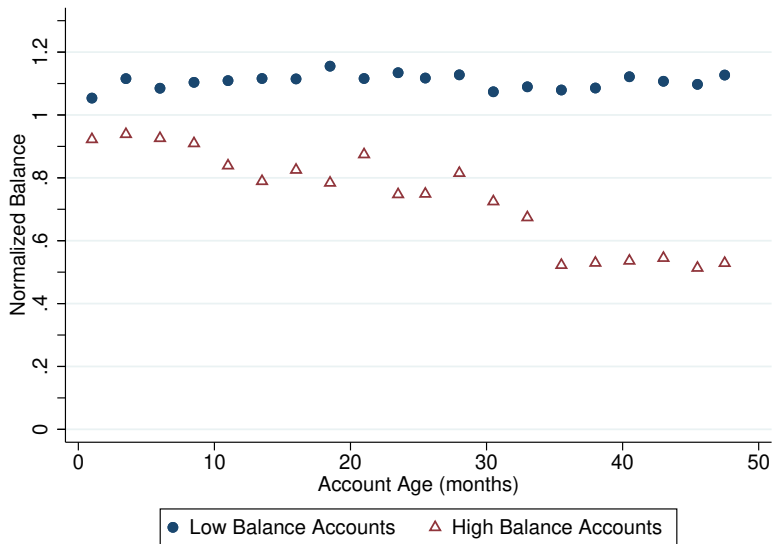
Genesis of a High-Balance Account



Fact #3

High-balance accounts more likely to experience substantial withdrawals

Normalized Average Account Balance Over Time



Likelihood of 1-month Drawdown of Small vs. Large Account

	Account Type		Diff
	Low Balance	High Balance	
Drawdown of 75%	0.28 (0.45)	0.33 (0.47)	0.05***
Drawdown of 80%	0.23 (0.43)	0.30 (0.46)	0.06***
Drawdown of 90%	0.12 (0.33)	0.22 (0.42)	0.09***
Drawdown of 95%	0.05 (0.23)	0.16 (0.37)	0.10***

Fact #4

Rate insensitivity is concentrated in
high-balance accounts

Method 1: Deposit spread elasticities by balance

Estimating deposit demand elasticities

$$\ln \text{Deposits}_{ijt} = \beta \text{Deposit Spread}_{ijt} + \alpha_{q(t)} + \gamma_i + \varepsilon_{ijt}$$

Estimated for account i at bank j in month t .

Deposit Spread $\equiv$ (2-year Treasury rate) - (account interest rate)

Concerns:

- Unobserved bank attributes that determine spreads also influence deposit velocities

Solution:

- Instrument: Surprise Shocks to Interest Rates

OLS Deposit Elasticity Estimates

Sample	Full (1)	Low Balance (2)	High Balance (3)	Full (4)
Deposit Spread	-0.02*** (0.01)	-0.02*** (0.01)	-0.001 (0.004)	-0.02*** (0.01)
High Balance Dummy (HBD) × Deposit Spread				0.02*** (0.01)
Year-Quarter FEs	✓	✓	✓	✓
Depositor FEs	✓	✓	✓	✓
Observations	39,653,997	34,140,354	5,405,767	39,547,519

- For small accounts, a 100 b.p. ↑ spreads → a 2% decrease in deposits
- For large accounts, a 100 b.p. ↑ spreads → an 0.1% insignificant decrease in deposits

First Stage: Fed Funds Surprises

Instrument: Fed Funds Surprises

- Calculated based on changes in 30-day Fed Funds futures around FOMC announcements
- Following Kuttner (JME 2001), Indarte (RFS 2023), and others

Exclusion Restriction:

- Fed Funds surprises around FOMC announcements are uncorrelated with economic changes affecting deposit behavior.

First Stage Estimate:

$$\text{Deposit Spread}_{ijt} = \pi \text{ FF Surprise}_t + \delta_{q(t)} + \eta_i + v_{ijt}$$

First Stage Deposit Betas: FFR Surprises Increase Spreads

	(1)	(2)	(3)	(4)
FF Surprise	5.85*** (1.35)	2.25*** (0.22)	2.32*** (0.22)	2.34*** (0.22)
Year-Quarter FEs		✓	✓	✓
Institution FEs			✓	
Depositor FEs				✓
Observations	40,260,190	40,260,190	40,260,190	39,653,997
R-squared	0.04	0.94	0.95	0.96
Partial <i>F</i> -stat	110.7	113.2	85.6	42.7

- A 100 basis point surprise → a 2.3 basis point rise in spreads

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- A 100 basis point surprise → a 2.3 basis point rise in spreads
- Don't see differential pass through by account size, but note that above \$250k threshold, Usenko (2025) sees higher pass-through

Second Stage: Deposit Elasticity Estimates

Sample	Full (1)	Low Balance (2)	High Balance (3)	Full (4)
Deposit Spread	-0.06*** (0.01)	-0.07*** (0.01)	-0.004 (0.002)	-0.07*** (0.01)
High Balance Dummy (HBD) × Deposit Spread				0.07*** (0.01)
Year-Quarter FEs	✓	✓	✓	✓
Depositor FEs	✓	✓	✓	✓
Observations	39,653,997	34,140,354	5,405,767	39,547,519

- For small accounts, a 100 b.p. ↑ spreads → a 7% decrease in deposits
- For large accounts, a 100 b.p. ↑ spreads → an 0.4% insignificant decrease in deposits

Robustness Checks

- ✓ Define high/low balance based on lagged balance
- ✓ Define high/low balance based on max balance
- ✓ Use depositor-level FEs instead of account-level FEs
- ✓ Include disappearing accounts as complete withdrawal

High-balance flows mostly idiosyncratic

1. Low correlation between account-level high-balance flows and institution-level flows
 - ▶ Jack-knife institution-level flows economically and statistically insignificant
 - ▶ 1% higher in/outflow predicts 6-11 *bp* larger account-level flow
2. High-balance flows time fixed effects show little variability, explain little
 - ▶ Partial R^2 of time FEs is 0.003-0.006
 - ▶ Exception: Covid
3. High-balance flows uncorrelated with macro factors
 - ▶ Macro factors economically small, mostly insignificant coefficients
 - ▶ Main exception: SVB

High-balance flows low correlation with macro factors

Dependent Variable:	Month Fixed Effects	
	(1) Outflows	(2) Inflows
Inflation	-0.004** (0.001)	-0.010** (0.004)
Unemployment Rate	-0.001 (0.001)	0.001 (0.003)
Equity Returns	0.0002 (0.0001)	-0.0003 (0.0003)
Consumer Confidence	-0.0003 (0.0003)	0.002* (0.001)
SVB Failure	-0.044*** (0.012)	-0.078* (0.045)
Observations	72	72
R^2	0.40	0.61

The average deposit *dollar*
is sticky.

The average *depositor*
is not.

- 90% of retail accounts hold 30% of deposits and have a semi-elasticity of -7% .
- 10% of retail accounts hold 70% of deposits and have a semi-elasticity of ≈ 0 .
- Very large account r respond more to MP $\Rightarrow$ sticky deposits, too (Usenko 2025)

Method 2: Differential bunching by balance

Testing for Bunching: Deposit Rate Discontinuities



Rates as of December 13, 2024

Savings Rates

Vehicle Loans

Home Loans

Consumer Loans

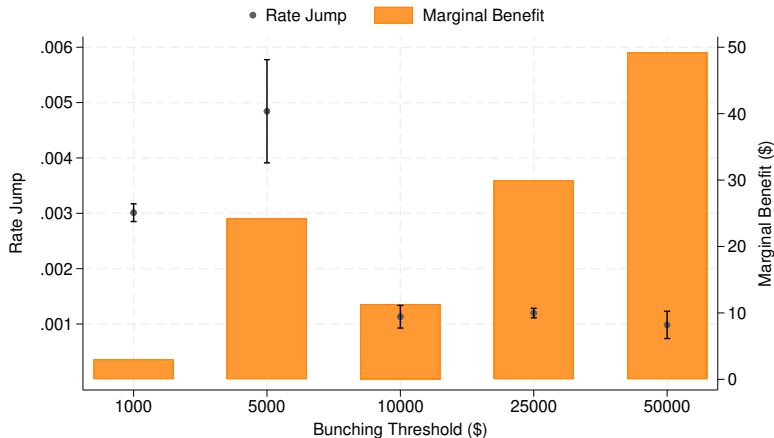
Savings Rates

Dividend Rates

Account Name	Min. Balance to Earn Dividends	Dividend Rate	APY ¹
Money Market Tier I ²	\$1,000.00	0.15%	0.15%
Money Market Tier II ²	\$20,000.00	0.30%	0.30%
Money Market Tier III ²	\$50,000.00	0.50%	0.50%
Money Market Tier IV ²	\$100,000.00	1.00%	1.00%

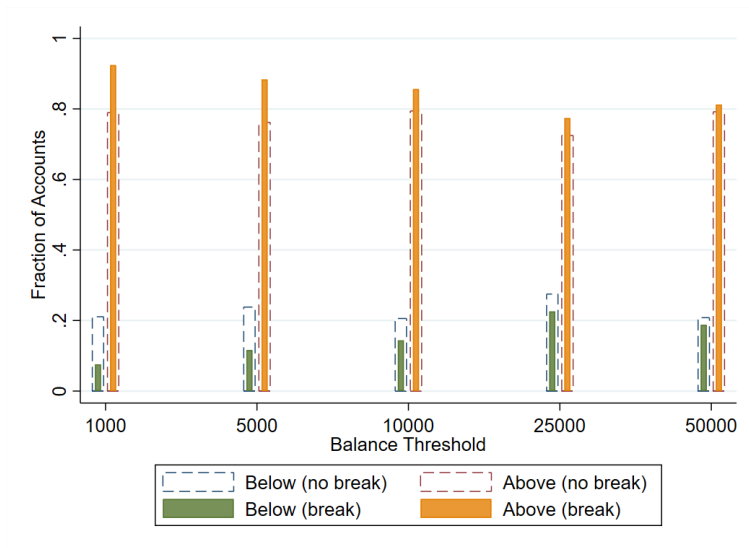
- About 5% of savings products have discontinuous rate jumps
- Examine bunching to right of these thresholds
- Compare to products with no jump

The Benefit of Bunching Increases with Threshold



If depositors care about interest rates, should bunch just above rate breaks

Excess Bunching for low thresholds, but not for high thresholds



Deposit Balance Bunching

Threshold	\$1,000 (1)	\$5,000 (2)	\$10,000 (3)	\$25,000 (4)	\$50,000 (5)
Has Break	0.11*** (0.01)	0.09*** (0.02)	0.05*** (0.01)	0.04*** (0.01)	-0.0007 (0.01)
Month FEs	✓	✓	✓	✓	✓
Observations	94	69	96	114	113
R-squared	0.85	0.65	0.50	0.67	0.58

- At \$1,000, 11% more accounts just above threshold
- At \$50,000, 0.07% fewer accounts (insignificant) just above threshold

Sticky Deposits, Not Depositors.
Why?

What drives sticky deposits?

- Traditional mechanisms operate either across banks or across people
- Account FEs $\Rightarrow$ these cannot explain our heterogeneity
 - Market concentration (Drechsler, Savov, and Schnabl, 2017)
 - Search costs (Duffie and Krishnamurthy, 2016; Yankov, 2022)
 - Bundled services (d'Avernas et al, 2023)
 - Deposit insurance (Hanson et al., 2015)
 - Inattention (Kahn, Pennacchi, and Sopranzetti, 1999)
 - Pessimistic beliefs (Adams et al., 2021)
- Our results need a within-bank, within person driver of stickiness

Two Candidate Explanations Remain

- **Differentiated services**

- When depositors have high balances, get better services from *this* institution
- Predicts: rate insensitivity disappears if we strip out service-tier products
- Predicts: bunching at thresholds where services jump

- **Liquidity holding bins**

- Balances are parked temporarily before redeployment to other uses
- Predicts: accounts form via lumpy inflows, exit via lumpy outflows
- Predicts: no bunching, because earning interest isn't the point

The Evidence Points to Liquidity Holding Bins

- What we'd expect from **services**:
 - Excess bunching at higher thresholds ✗ Bunching *declines* with threshold
 - Rate insensitivity driven by service-tier accounts ✗ Dropping them changes nothing

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- What we'd expect from **liquidity bins**:
 - Lumpy account formation ✓ 80% of high balances arrive in one month
 - Lumpy account drawdowns ✓ Hazard of 95% drawdown 3× higher
 - Gradual balance decline on average ✓ ~50% drawdown over 48 months
 - No bunching at higher thresholds ✓ Insignificant at \$50K

High-balance retail deposits look like **cash held for an imminent use**, not savings being optimized for yield to generate interest income

Conclusion

- Sticky deposits play an important role in bank business model
- But something of a puzzle as to why deposits are so sticky
- We provide new evidence on stickiness and propose a new mechanism:
 - Small \$ retail accounts are reasonably responsive to rate changes
 - Moderately large \$ retail accounts are not
 - Why? Deposits used as liquidity pools
- Given this heterogeneity + massive skewness in deposit concentration:
 - Aggregate deposit dollars are sticky
 - But most individual depositors are not
 - ⇒ Average depositor likely more responsive to monetary tightening than understood
 - Extra incentive for banks to locate around higher balances

Elasticity Estimates with "service" Products Removed

