Banking on Inattention

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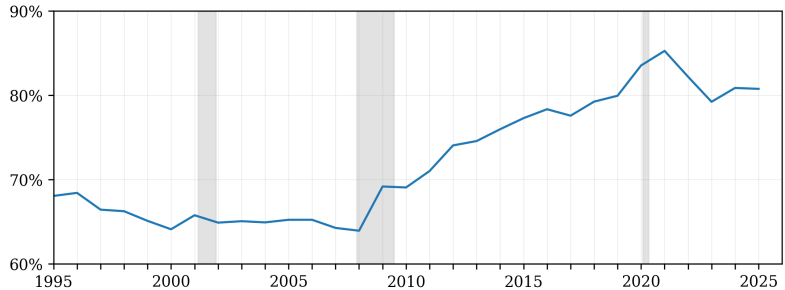
Bank deposits: massive and important, yet puzzling

Deposits are the dominant component of broad monetary aggregates & bank funding source.

- **Massive**: over $13tn bank deposits, 80%+ of total bank liabilities in 2025Q4;
- **Important**: crucial role in monetary transmission (Drechsler-Savov-Schnabl '17) and financial stability (DeMarzo-Krishnamurthy-Nagel '25, Blickle-Li-Lu-Ma '26).

Deposits / Total Liabilities, All Private Depository Institutions



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Yet key facts about deposits remain **puzzling**:

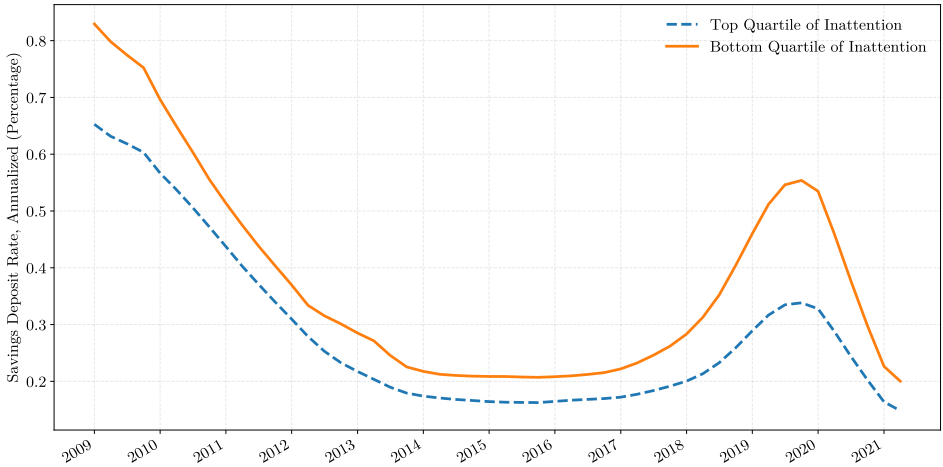
1. What makes the trillion-dollar, low-cost deposit base sustainable?
2. Why is monetary policy pass-through to deposit rates incomplete?
3. How does interest rate risk in deposits vary over the monetary cycle?

Banking on inattention offers a common explanation.

- Document new evidence on depositor inattention
- Build & test a new theory of deposit pricing

$\Longrightarrow$ Aggregate implications on monetary pass-through & interest rate risk.

Preview: banks price depositor inattention



Banks serving more inattentive depositors set lower deposit rates.

Contributions to literature

- **Liability-side theories of banking:** e.g., Diamond-Dybvig '83; Gorton-Pennacchi '90; Calomiris-Kahn '91; Diamond-Rajan '01; Kashyap-Rajan-Stein '02; Goldstein-Pauzner '05
  → *A new deposit-pricing model linking depositor behavior to financial stability.*
- **Depositor behavior:** e.g., Lu-Song-Zeng '25; Argyle-Iverson-Kotter-Nadauld-Palmer '25; Cirelli-Ólafsson '25; Egan-Hortaçsu-Kaplan-Sunderam-Yao '25; Benetton-Hébert-McQuade '26
  → *Novel evidence of depositor inattention.*
- **Bank deposit pricing puzzles:** e.g., Diebold-Sharpe '90; Hannan-Berger '91; Neumark-Sharpe '92; Driscoll-Judson '13; Duffie-Krishnamurthy '16; Yankov '24
  → *Rationalizing banks' incomplete pass-through, and sluggish & asymmetric rate adjustments.*
- **Aggregate implications on interest rate risk and monetary transmission** e.g., Drechsler-Savov-Schnabl '17, '21; Begenau-Stafford '19; Drechsler-Savov-Schnabl-Wang '25; DeMarzo-Krishnamurthy-Nagel '25
  → *Generating state-dependent monetary transmission and sign-switching interest rate risk.*

Model of banking on inattention: setup

- $t \in [0, \infty)$. Deposit demand M_t decays from M_0 as

$$\dot{M}_t / M_t = - \underbrace{\tau^{-1}}_{\text{(inverse of) inattention}} \cdot P(\underbrace{\overbrace{\rho_t}^{\text{policy rate}} - \overbrace{r_t}^{\text{deposit rate}}}_{\text{deposit spread}})$$

  Decay $\uparrow$ in deposit spread and $\downarrow$ in inattention.

  - Poisson rate of managing account τ^{-1}; convex withdrawal fraction $P(\rho_t - r_t) = a + \left(\frac{\rho_t - r_t}{b}\right)^{\gamma}$.

- With $\rho_t = \rho$, **bank** sets $r \geq 0$ to maximize deposit franchise value (DFV)

$$V_0(r; \rho, \tau, M_0) = \int_0^{\infty} e^{-\rho t} \cdot \overbrace{(\rho - r)}^{\text{profit margin}} \cdot \overbrace{M_t}^{\text{demand}} \, \mathrm{d}t = \frac{\overbrace{\rho - r}^{\text{profit margin}}}{\underbrace{\tau^{-1} P(\rho - r)}_{\text{decay rate}} + \underbrace{\rho}_{\substack{\text{discount rate} \\ = \text{policy rate}}}} M_0.$$

▸ Deposit acquisition ▸ Time-varying policy rate

Bank's optimal rate setting

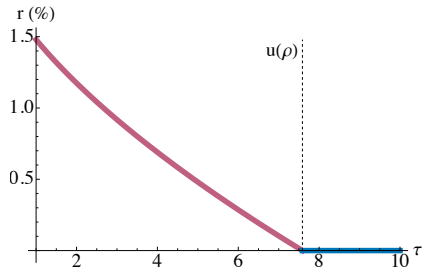
Bank chooses *deposit spread* $x \equiv \rho - r \in [0, \rho]$ to maximize

$$V_0(x; \rho, \tau, M_0) = \frac{\overbrace{x}^{\text{current profit margin}}}{\underbrace{\tau^{-1} P(x)}_{\text{future quantity (decay rate)}} + \rho} M_0.$$

▸ Flow sensitivity

Two cases:

1. Corner pricing ($\tau \geq u(\rho)$): bank sets $r = 0$.
2. Interior pricing ($\tau < u(\rho)$): bank sets $r \in (0, \rho)$, with
   - More inattentive depositors → lower rates, $\frac{\partial r}{\partial \tau} < 0$



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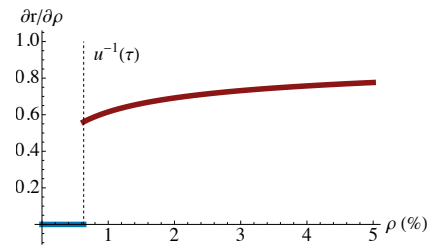
   - Pass-through $\varepsilon = \frac{\partial r}{\partial \rho} < 1$ & ↑ with policy rate $\frac{\partial \varepsilon}{\partial \rho} > 0$



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   - More inattentive depositors $\rightarrow$ less pass-through, $\frac{\partial \varepsilon}{\partial \tau} < 0$

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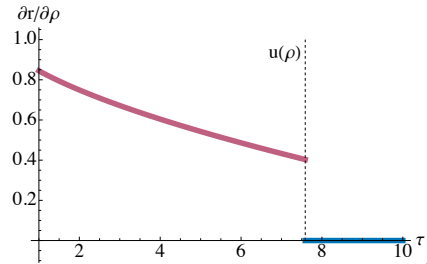
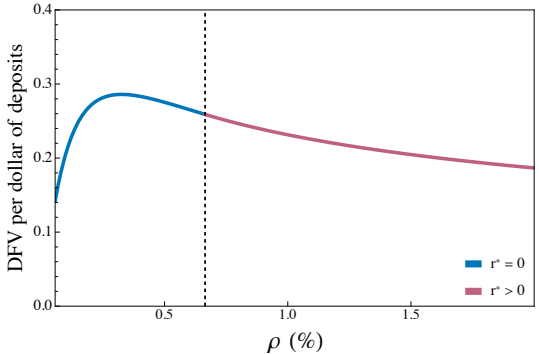


Deposit franchise value, inattention, and interest rate risk

Deposit franchise value (DFV) depends on three terms

$$V_0 = \frac{\overbrace{x}^{\text{profit margin}}}{\underbrace{\tau^{-1}P(x)}_{\text{decay rate}} + \underbrace{\rho}_{\text{discount rate}}} M_0.$$

- DFV increases with higher inattention.
- DFV $\uparrow$ in ρ when $\rho \in [0, u^{-1}(0)]$ $(r^* = 0)$, and $\downarrow$ in ρ when $\rho \in (u^{-1}(0), \infty)$.
  1. low ρ: $r = 0 \to V_0 = \frac{\rho}{\tau^{-1}P(\rho)+\rho} M_0 \uparrow$ in ρ
     $\to$ Deposits as hedge of interest rate risk;
  2. high ρ: env. thm. $\frac{dV_0(x^*(\rho),\rho)}{d\rho} = \frac{-x^* M_0}{(\tau^{-1}P(x^*)+\rho)^2} < 0$
     $\to$ Deposits as source of interest rate risk.



Empirical implications

I. Inattentive depositors

Depositors do not manage accounts frequently and are less rate sensitive.

II. Depositor inattention is priced by banks and shapes bank funding

More inattentive deposit base $\rightarrow$ lower rates & pass-through, and less rate-sensitive flows.

III. Aggregate monetary pass-through and funding stability

Calibrating the level of DFV and its comparative statics using the empirical estimates.

Empirics: data

I. Inattentive depositors

(i) Bank data for >26mn U.S. depositors ('14–'22).

- Linked accounts across depository institutions with balances;
- Transaction-level details: date, amount, location, and *text description*.

II. Price and quantity predictions across banks

(ii) Call reports;

(iii) FDIC summary of deposits;

(iv) Census;

(v) IRS zipcode-level tax filings;

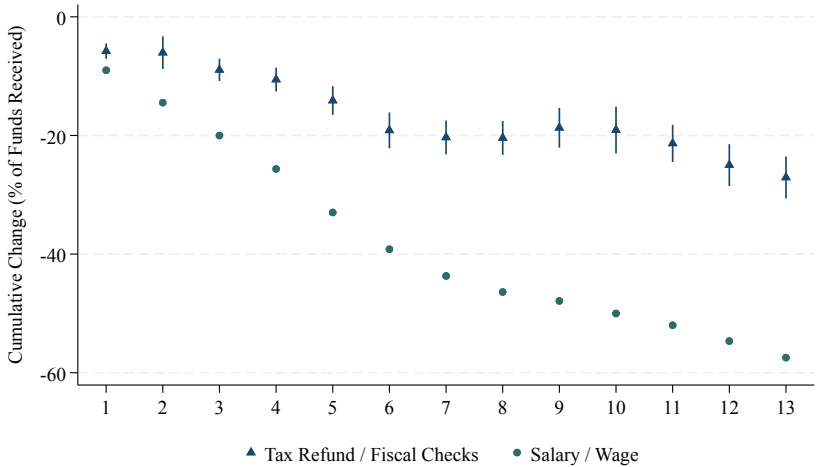
(vi) RateWatch.

Inferring inattention from transaction data

▸ details

- Deposit decay is modulated by τ, the frequency at which depositors manage their accounts.
- How do we back out inattention from large scale observational data?
- Kahneman '03 & '11: reactions to routine tasks are fast, whereas reactions to non-routine tasks require attention.
- **Empirical design**: compare depositors' reactions to scheduled income (salary and social security) vs. unscheduled (tax refunds and fiscal checks).
  - **Full-attention frictionless benchmark**: once funds arrive in a low-interest transaction account, scheduled and unscheduled inflows should generate similar responses.
- **Inattentive depositors**: unscheduled income remain longer than scheduled income.
  - Possible mechanisms include adjustment costs (Duffie-Sun '90, Abel-Eberly-Panageas '07, '13), procratination (Maxted-Laibson-Moll '25), uncertainty about optimal action (Enke et al. '24).

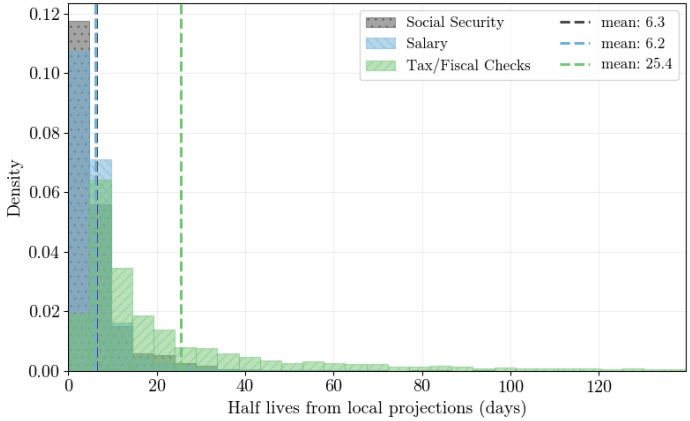
Unscheduled income stays longer in bank accounts



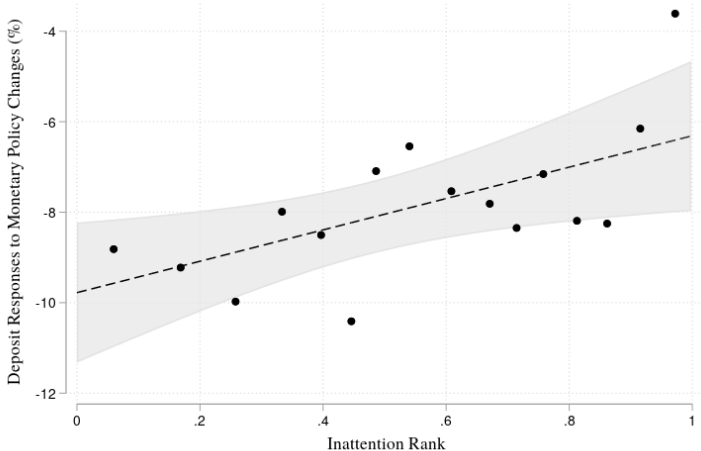
▸ Consumption responses ▸ Adjustment costs ▸ Prearranged transfers

Measuring inattention at the depositor level

- Substantial heterogeneity in the half-lives of unscheduled income. ▸ Local projections
- Inattention: the difference in half-lives between unscheduled and scheduled income.



Outflows respond less to FOMC announcements for inattentive depositors

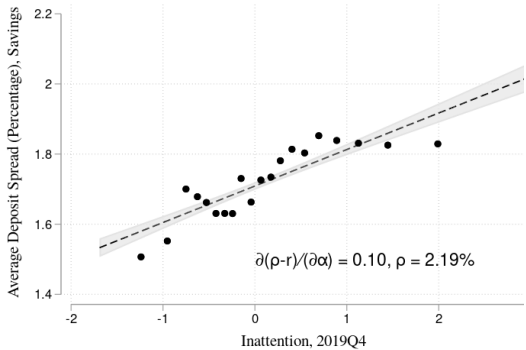


Inattentive depositors withdraw less when the Fed hikes.

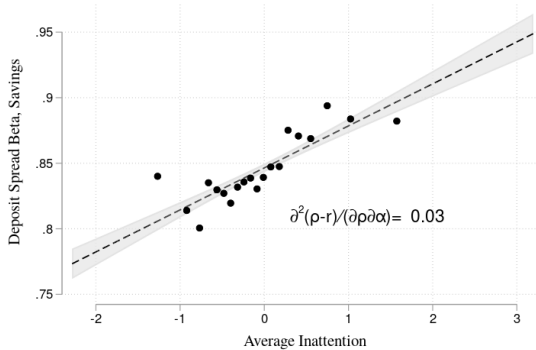
... and they are also less likely to cancel subscriptions when prices increase (DellaVigna-Malmendier '06, Einav-Klopack-Mahoney '25) ▸ Subscription inertia

Inattention is priced by banks: deposit rates and pass-through

(a) Spread v. inattention



(b) Spread beta v. inattention



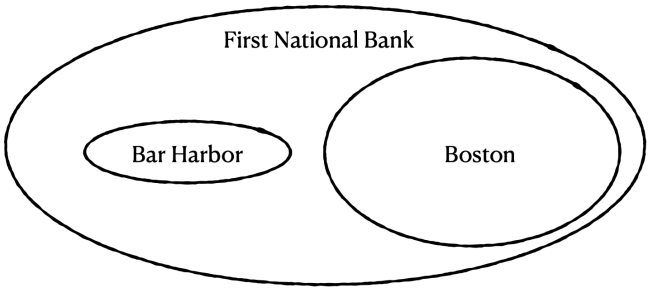
- More inattentive banks have larger spreads and higher spread betas.
  - Relationships plateau at high inattention.

Estimating the spread sensitivity for inattentive deposit outflows

details

OLS is biased because unobserved demand shocks shift both demand and rates.

The LOO instrument: deposit spread faced by depositors in a small county can be proxied by spread set in other counties if the bank have uniform pricing (DellaVigna-Gentzkow '19).



FNB's deposit rate is set by deposit-weighted inattention α:

$$r_{FNB,t} = f(\alpha_{FNB,t}) = f(\frac{Dep_{Boston,t}\alpha_{Boston,t} + Dep_{BarHarbor,t}\alpha_{BarHarbor,t}}{Dep_{Boston,t} + Dep_{BarHarbor,t}}).$$

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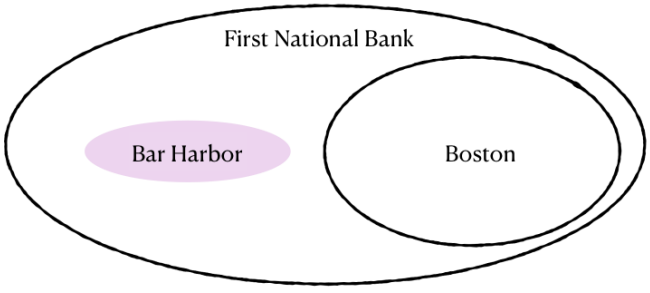


FNB's deposit rate in Bar Harbor can be proxied by Boston depositors' inattention:

$$r_{FNB,BarHarbor,t} = f(\alpha_{FNB,t}), \quad \alpha_{FNB,t} \approx \alpha_{FNB,-BarHarbor,t} = \frac{Dep_{Boston,t}\alpha_{Boston,t}}{Dep_{Boston,t}}.$$

Deposit flow sensitivity: the leave-one-out instrument

With the LOO-instrumented spread changes plausibly unrelated to local demand shocks:

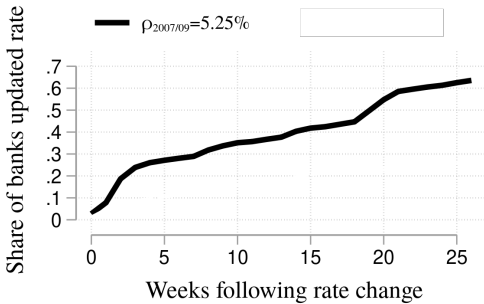
$$\Delta \log m_{jbt} = \zeta_1 \widehat{\Delta x_{jbt}} + \zeta_2 \widehat{\alpha_{bt} \Delta x_{jbt}} + \zeta_3 \alpha_{bt} + \zeta_4 \widehat{\mathrm{HHI}_{jt} \Delta x_{jbt}} + \zeta_5 \mathrm{HHI}_{jt} + \delta_j + \delta_b + \delta_t + \varepsilon_{jbt}.$$

	Deposit spread	**First stage (IV)**	**2SLS**
Policy rate ρ_t	0.761***	–	–
Bank inattention α_{bt}	0.058***	–	–
$\alpha_{bt} \times \rho_t$	0.003*	–	–
LOO of $\alpha \times \Delta x$	–	1.023***	–
First-stage F	–	281.1	–
$\widehat{\alpha \times \Delta x}$	–	–	**0.560*** **
$\widehat{\mathrm{HHI} \times \Delta x}$	–	–	0.515**
Observations	95,296	146,753	146,753
Fixed effects	–	bank,county,year	

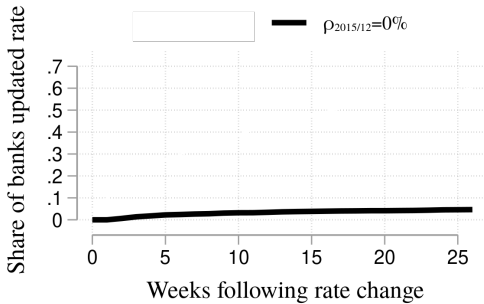
(SE bootstrapped by bank clusters)

$x \uparrow 1\%$: +1 SD in inattention reduces outflow by $\approx 0.56\%$.

“Asymmetry” in short-run adjustments

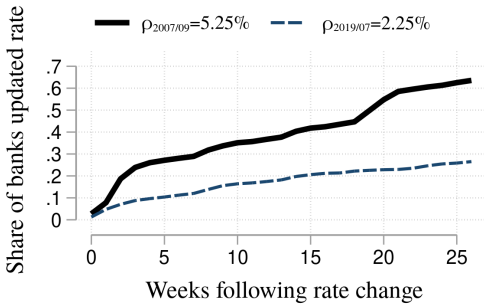


(a) Rate cuts



(b) Rate hikes

"Asymmetry" in short-run adjustments



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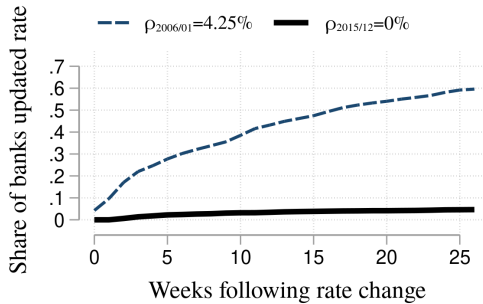

(b) Rate hikes

- When the level of the policy rate is higher, banks adjust more quickly.
- ... It appears like as asymmetry, since rate cuts tend to happen when rate is high!

Empirics: summary

I. Inattentive depositors

Depositors are inattentive.

Inattention dampens rate-sensitive deposit demand.

II. Depositor inattention is priced by banks and shapes bank funding

Banks with more inattentive deposit base (i) set lower rates,

(ii) have less monetary pass-through & (iii) experience less rate-sensitive deposit outflows.

Aggregate implications: monetary pass-through and DFV comparative statics

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III. Aggregate monetary pass-through and funding stability

Calibrating the model with the bank-level estimates (i)-(iii), we analyze how DFV and monetary pass-through change over the monetary cycle.

Calibrating the model

$$\text{Per-dollar DFV} = \frac{x}{\tau^{-1}P(x) + \rho}, \quad \text{with } P(x) = a + \left(\frac{x}{b}\right)^{\gamma}.$$

- Deposit spread x and policy rate ρ are from data.
- Inattention to income informs the inattention to balance τ.
- Three empirical moments pin down a, b, γ:
  - spread level w.r.t. inattention, $d_1 \equiv \partial x / \partial \tau$;
  - spread beta w.r.t. inattention, $d_2 \equiv \partial^2 x / (\partial \rho \, \partial \tau)$;
  - flow sensitivity w.r.t. inattention, $d_3 \equiv (\Delta t)^{-1} \partial^2 (\Delta \log M) / (\partial x \, \partial \tau)$.

▸ Robustness

Untargeted data moments

$\tau = 2.60$, $\rho = 2.2\%$ (2019Q4), calibrated $P(x) = 0.0068 + \left(\frac{x}{0.048}\right)^{1.61}$.

Untargeted moments, savings deposits	Data	Model
Annual deposit decay rate	$5 \sim 10\%$	5.9%
Average deposit spread	1.62%	1.29%
Average pass-through	0.42	0.61
OLS coef., pass-through on policy rate	4.6^{***}	7.5^{***}
	(1.6)	(2.1)

- *Calibration of per-dollar DFV only uses cross-sectional moments.*
  Calibration matches data on the levels of decay rate, deposit spread and pass-through.
- Additionally: new results on state-dependent effects of monetary policy (Eichenbaum-Puglisi-Rebelo-Trabandt '25).

Deposit franchise value

- Savings deposits:
  1. DFV: $\approx$ 18¢/\$ $\rightarrow$ \$1.8tn (end of 2022);
  2. Interest rate risk: $\rho \uparrow$ by 1% in level, DFV $\downarrow$ by 2.8¢/\$;
- Non-interest-bearing deposits: DFV $\approx$ 16¢/\$ $\rightarrow$ \$0.8tn;
- **Total:** $\approx$ **\$2.6 trillion** in aggregate deposit franchise value. More in the paper:

  ▸ **Cross section of banks;**

  ▸ **Impact of digital banking;**

  ▸ **Fixed operating costs and the sign of DFV duration;**

  ▸ **Redistribution across demographic segments;**

  ▸ **Banks' willingness-to-pay for new deposits.**

Depositor behavior: implications for banking and monetary economics

I. Depositors are inattentive.

A novel measure of inattention from the reaction-time gap between scheduled and unscheduled income; inattentive depositors respond less to FOMC announcements.

II. Banks price depositor inattention.

A dynamic model of deposit pricing with inattention, explaining low rates, incomplete pass-through, weak flow sensitivity, and "asymmetric" sluggishness in short-run rate adjustments.

III. Aggregate implications on monetary transmission and financial stability.

A calibration to illustrate how inattention creates state dependent deposits channel and sign-switching interest rate exposure.