# Open to All Comers: How Unsought Deposit Inflows Affect Banks

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# This Paper: Unsought deposit inflows induces risk-taking

This paper: "unwanted" or "supply-driven" deposit inflows induce banks to take more risks

- deposit inflows increase leverage
- banks are subject to capital requirements
- raising equity is costly
- the bank reaches for yield by taking more risk.

Paper relies on

- quarterly Call reports data over 2001-2022
- a measure of supply-driven deposit inflows (inspired by Cohen, Diether, and Malloy (2007) to isolate supply and demand shifts in the equity lending market).

Main results:

- supply-driven deposit inflows increase bank risk: increase in ROA, maturity gap, risk-weighted assets, etc.
- this is driven by equity issuance concerns:
  - result driven by low-equity banks and high-uninsured deposits banks
  - effect dampens when the regulatory capital constraint is relaxed.

# Methodology: Measuring supply-driven deposit flows

"Supply-driven deposit flows" is a censored variable: *"we construct our measure of supply-driven deposit inflows by only including bank-quarters in which the bank does not increase deposit rates in the current or previous quarter."*

Dependent: risk-taking of bank $i$ in quarter $t$

$$y_{it} = \beta \underbrace{\triangle Deposits_{it-1} \times I_{it-1}}_{\text{Supply-driven deposit flows}} + \delta \text{Bank Controls}_{it-1} + \alpha_i + \gamma_t + \varepsilon_{it}$$

where $I_{it} = 1$ if

- $\triangle Deposits_{it} > 0$ and $\triangle DepRate_{it} \leq 0$ and $\triangle DepRate_{it-1} \leq 0$ (supply inflow),
- or $\triangle Deposits_{it} < 0$ and $\triangle DepRate_{it} \geq 0$ and $\triangle DepRate_{it-1} \geq 0$ (supply outflow),

and $I_{it} = 0$ otherwise (demand inflows and outflows).

Prediction: $\beta > 0$.

Robustness tests: different definitions of $I_{it}$, different samples, adding controls, IV.

# Main Results

$$y_{it} = \beta \underbrace{\triangle Deposits_{it-1} \times I_{it-1}}_{\text{Supply-driven deposit flows}} + \delta \text{Bank Controls}_{it-1} + \alpha_i + \gamma_t + \varepsilon_{it}$$

| | Δ Gross Income to Assets (1) | Δ ROA (2) | Δ Maturity Gap (3) | Δ Interest Rate Sensitivity Gap (4) | Δ Risk-Weighted Assets (5) | Risky Securities Growth (6) |
|---|---|---|---|---|---|---|
| Supply-Driven Deposit Flow | 0.0123*** | 0.00825*** | 0.0506*** | 0.302*** | 0.223*** | 0.371*** |
| | (0.000409) | (0.000412) | (0.00853) | (0.103) | (0.00936) | (0.100) |
| Log Assets | 0.0155*** | 0.0190*** | 0.0643 | -1.072*** | 0.690*** | -0.551 |
| | (0.00169) | (0.00406) | (0.0412) | (0.341) | (0.0380) | (0.653) |
| NIM | -0.0166*** | 0.0401*** | 0.0166 | -0.627*** | -0.538*** | -0.937*** |
| | (0.000633) | (0.00114) | (0.0141) | (0.133) | (0.0139) | (0.198) |
| 3-Year Loan Growth | 0.00352*** | 0.0152*** | -0.101*** | -0.302*** | -0.0585*** | -0.175 |
| | (0.000357) | (0.000783) | (0.0103) | (0.0845) | (0.00800) | (0.135) |
| ROA | -0.0405*** | -0.162*** | -0.0431*** | 0.274** | 0.105*** | 0.851*** |
| | (0.000803) | (0.00131) | (0.0108) | (0.139) | (0.00985) | (0.141) |
| Equity to Assets | -0.00193** | -0.000556 | 0.0910*** | -0.0404 | 0.0672** | 1.006*** |
| | (0.000911) | (0.00207) | (0.0226) | (0.279) | (0.0277) | (0.256) |
| Deposits to Assets | -0.00294*** | -0.000508 | 0.163*** | -0.385* | 0.0772*** | 0.923*** |
| | (0.000630) | (0.00115) | (0.0162) | (0.213) | (0.0186) | (0.198) |
| Bank Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Year-Quarter Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 431,984 | 431,984 | 431,984 | 238,170 | 431,984 | 138,005 |
| $R^2$ | 0.120 | 0.351 | 0.069 | 0.735 | 0.078 | 0.060 |

# My Comments

This paper is about the bank response to "unwanted" deposit inflows in a context where banks face leverage constraints (e.g., capital requirements) and equity issuance is costly.

- additional results show that risk-taking likely stems from equity issuance concerns
  - result driven by low-equity banks and high-uninsured deposits banks
  - effect dampens when the regulatory capital constraint is relaxed.
- banks with unwanted deposits face bigger losses and deposit outflows when the Fed rate rises
- partly explains regional bank failures in 2023, following Covid deposit inflows

Comment 1: What happens to demand-driven deposit flows?

Comment 2: External vs. internal equity

Comment 3: Additional comments

# Comment 1: What happens to demand-driven flows?

Decomposition of deposit flows:

$$\triangle Deposits_{it} = \underbrace{\triangle Deposits_{it} \times I_{it}}_{\text{Supply-driven deposit flows}} + \underbrace{\triangle Deposits_{it} \times (1 - I_{it})}_{\text{Demand-driven deposit flows}}$$

Questions: what is the relative occurrence of $I_{it} = 1$? What is the correlation between $\sum_i \triangle Deposits_{it} \times I_{it}$ and $\sum_i \triangle Deposits_{it} \times (1 - I_{it})$ ?

From Correia, Luck and Verner (2024): we understand that deposit inflows are not always good news

**(b)** *Post 1959: Time, Demand, and Brokered Deposits, and Wholesale Funding*

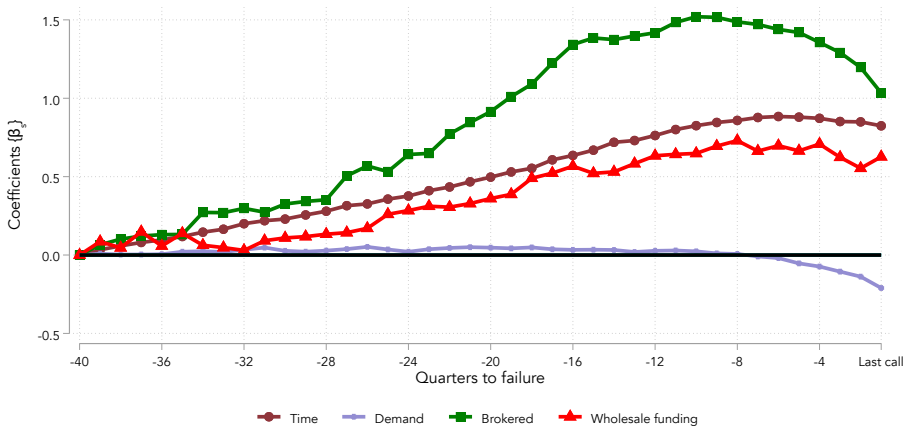
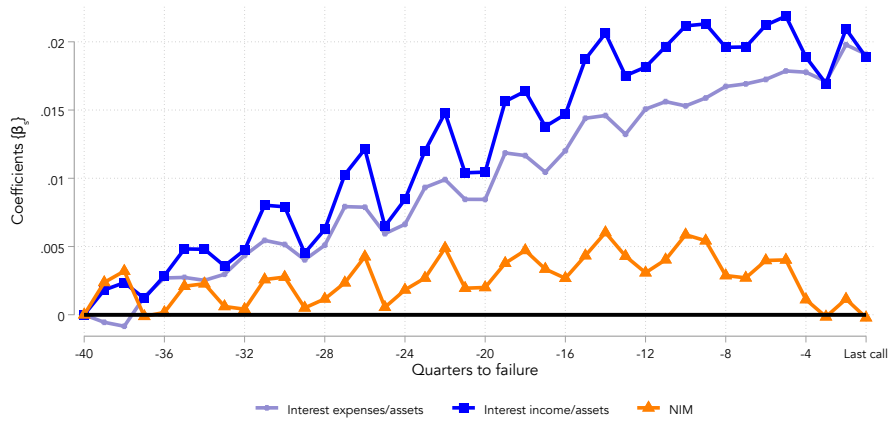



**Figure A.4:** *Interest Income, Expenses and NIM: 1959-2023*




Suggestion: how do supply-driven vs. demand-driven deposit flows predict bank failures?

# Comment 1: Differential effect of demand-driven flows

Dependent: risk-taking of bank $i$ in quarter $t$

$$y_{it} = \beta_1 \underbrace{\triangle Deposits_{it-1} \times I_{it-1}}_{\text{Supply-driven deposit flows}} + \beta_2 \underbrace{\triangle Deposits_{it-1} \times (1 - I_{it-1})}_{\text{Demand-driven deposit flows}} + \beta_3 I_{it-1} + \delta \text{Bank Controls}_{it-1} + \alpha_i + \gamma_t + \varepsilon_{it}$$

where $I_{it} = 1$ if

- $\triangle Deposits_{it} > 0$ and $\triangle DepRate_{it} \leq 0$ (supply inflow),
- or $\triangle Deposits_{it} < 0$ and $\triangle DepRate_{it} \geq 0$ (supply outflow),

and $1 - I_{it} = 1$ if

- $\triangle Deposits_{it} > 0$ and $\triangle DepRate_{it} > 0$ (demand inflow),
- or $\triangle Deposits_{it} < 0$ and $\triangle DepRate_{it} < 0$ (demand outflow),

Suggestion: test $\beta_1 - \beta_2 > 0$ (or $\beta_1^* > 0$ below) .

$$y_{it} = \beta_1^* \underbrace{\triangle Deposits_{it-1} \times I_{it-1}}_{\text{Supply-driven deposit flows}} + \beta_2^* \triangle Deposits_{it-1} + \beta_3 I_{it-1} + \delta \text{Bank Controls}_{it-1} + \alpha_i + \gamma_t + \varepsilon_{it}$$

# Comment 2: External vs. internal equity

Supply-driven deposit inflows are not wanted because banks need to comply with regulation and are disciplined by (uninsured) depositors.

- banks have some target leverage levels
- leverage goes up with additional deposits
- to bring leverage back to target level: bank raises equity externally (equity issuance) or internally (via profits)
- paper focuses on external equity: banks seeks to generate higher returns to compensate shareholders

| | Equity Issuance Indicator (1) | Net Equity Issuance (2) | Δ Gross Income to Assets (1) | Δ ROA (2) |
|---|---|---|---|---|
| Supply-Driven Deposit Flow | 0.00408*** | 0.132*** | 0.0123*** | 0.00825*** |
| | (0.00128) | (0.0255) | (0.000409) | (0.000412) |

- but if equity issuance costly: retained earnings
- in addition, with more uninsured deposits, the bank's target leverage might go down (market discipline).

Experiment in the paper: regulatory shift from risk-based to leverage constraint

- "treated" banks with supply-driven inflows could invest in riskier assets to generate more profits (but the opposite result appears).

# Comment 3: Additional Comments

Dependent: Risk-taking suggests investing in new risky assets after the inflows

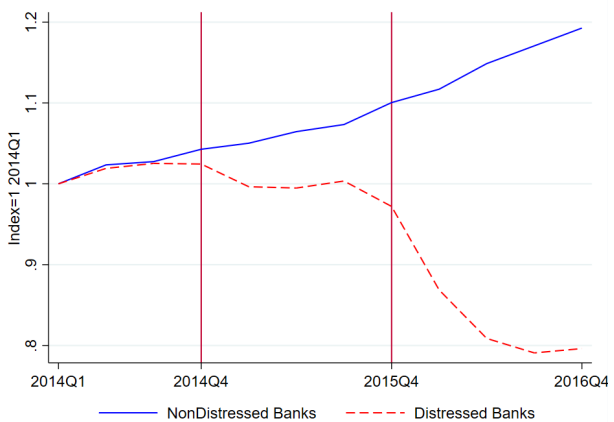
- risk of new exposures vs. increased riskiness of legacy assets?

Bartik instrument at the bank level: $B_{it} = \sum_c w_{ic} g_{ct}$, with $g_{ct}$ deposit growth (or savings growth) at the county level excluding $i$'s deposit growth.

Other experiments that generate deposit supply shocks (alternative to Covid)

- idiosyncratic bank failures and following deposit reallocation (left panel from Carletti et al. (2024)),
- enforcement of an asset cap on Wells Fargo and deposit reallocation (right panel from Ruan and Vij (2024))

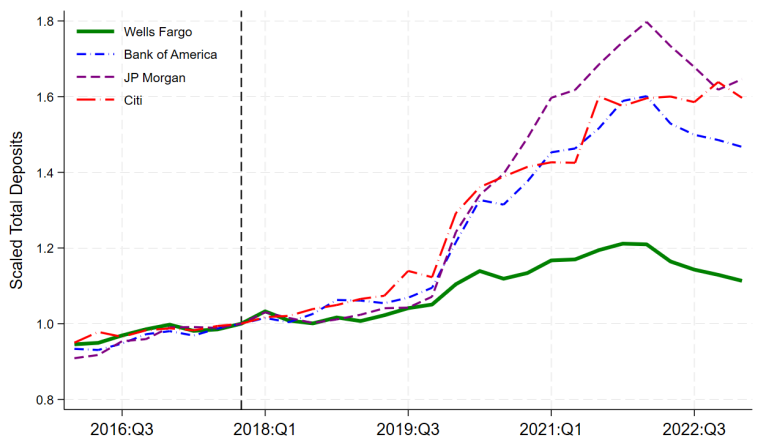
Figure 2: Total Deposits: Distressed vs. Non-Distressed Banks




This figure shows the total deposits of distressed and non-distressed banks from 2014Q1 to 2016Q4. All series are normalized to 1 as of 2014Q1. The vertical lines indicate the beginning of Post 1 (February 2015) and Post 2 (2015Q4) periods.

Figure 5: **Deposit Growth of Top 4 Bank Holding Companies**

This figure compares the deposit growth of the top 4 U.S. bank holding companies– JP Morgan, Bank of America, Citigroup, and Wells Fargo. We normalized the total deposits of the 4 bank holding companies to their respective levels in 2017:Q4. The vertical line indicates 2017:Q4.



# Summary

This paper is about the bank response to "unwanted" deposit inflows in a context where banks face leverage constraints (e.g., capital requirements) and equity issuance is costly. Concerns over leverage uncertainty and equity issuance costs induce the bank to take more risk following these inflows.

Comment 1: What happens to demand-driven deposit flows?

Comment 2: External vs. internal equity

Comment 3: Additional comments

- dependent: new risk exposures vs. increasing riskiness of legacy assets
- Bartik instrument definition
- alternative supply shocks for deposits