THE DEPOSITS CHANNEL OF AGGREGATE FLUCTUATIONS

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Motivation and Objective

- Deposit is a salient source of bank liability: it accounts for about 80% of bank liabilities. Thus, shocks to deposits can destabilize bank funding and loan supply.
- Fat tails: Banks' source of deposits are geographically concentrated (i.e., fat-tailed). Idiosyncratic shocks to the fat tails may account for aggregate fluctuations (Gabaix 2011)
- Network Cascades: Multi-market banks connect distant areas economically. Thus, bank networks can transmit local bank deposit shocks to distant areas.
- The objective of this paper is to study the mechanism through which local deposit shocks affect aggregate economic fluctuations.

Data

- Spatial Hazard Events and Losses Database for the United States (SHELDUS): County-level hazard and loss dataset.
- Summary of Deposits (SOD): Branch-level annual survey of deposits for the universe of US bank branches.
- Community Reinvestment Act (CRA): Tract and bank-level data for the near universe of commercial and industrial loans of $1 million or less (i.e., small business lending).
- Others: HMDA, Compustat, Dealscan, Call Report, etc.

Methodology

- The relationship of interest:

$$\Delta ln(GDP)_t = \alpha + \beta \cdot \Delta ln(Deposit)_{t-1} + \epsilon_t$$

- We address the endogeneity issue by constructing deposit shocks based on the Granular Instrumental Variable (GIV) methodology.

1. **Bank Level Shocks**: Weighted by bank-county deposit share

$$\Gamma_{b,t} = \sum_c \left\{ \frac{D_{b,c,t-1}}{\sum_c D_{b,c,t-1}} \times \varepsilon_{c,t} \right\}$$

2. **Aggregate Shocks**: Wighted by lending share

$$\Gamma_t = \sum_b \left\{ \frac{L_{b,t-1}}{\sum_b L_{b,t-1}} \times \Gamma_{b,t} \right\}$$

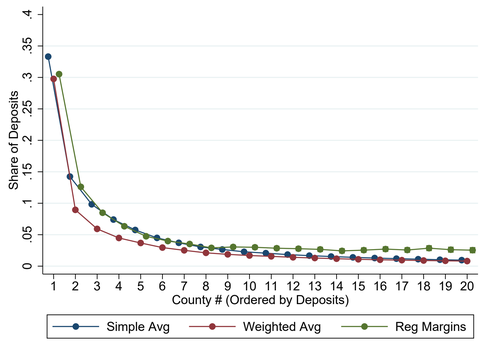
3. **Granular Shocks**: Subtracting Equal Weighted Shocks from Aggregate Shocks

$$\Gamma_t^* = \Gamma_t - \sum_b \frac{1}{N_b} \left\{ \sum_c \left\{ \frac{1}{N_c} \times 1_{b,c,t} \times \varepsilon_{c,t} \right\} \right\}$$

where b indicates bank, c indicates county, and t indicates time. $\varepsilon_{c,t}$ is the property damage per capita in county c and t.

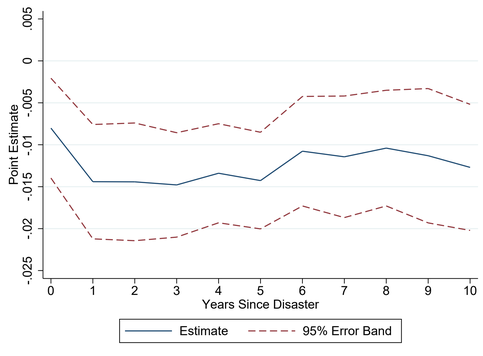
Key Findings

1. Bank deposits are geographically concentrated: 30% of deposits are concentrated in a single county for an average bank.



2. Natural disasters result in a persistent decline in deposits.

$$log(Y_{c,t+h}) - log(Y_{c,t-1}) = \beta_h \cdot \text{Disaster Shock}_{c,t-1} + \theta_c + \theta_{s(c \in s),t} + \varepsilon_{c,t}$$

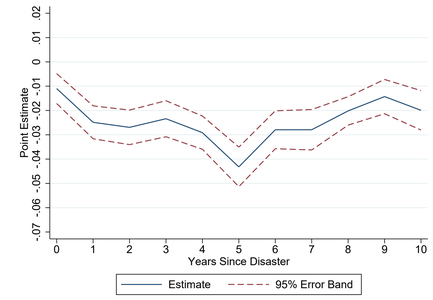


3. Granular deposit shocks can explain aggregate fluctuations.

Dep Var: GDP Growth$_t$	(1)	(2)	(3)
Γ^*_{t-1}	-0.0631**	-0.0679**	-0.0491**
	(0.0279)	(0.0277)	(0.0218)
Constant	1.0836***		
	(0.0416)		
Quarter FE		✓	✓
Year FE			✓
# Obs	97	97	96
R^2	0.0237	0.0259	0.5178

4. A persistent decline in small business lending after deposit shocks implies the mechanism through which the deposit shocks affect economic growth.

$$log(Lending_{b,c,t+h}) - log(Lending_{b,c,t-1}) = \beta_h \cdot \Gamma_{b,t-1} + \theta_{c,t} + \theta_{b,c} + \varepsilon_{b,c,t}$$



5. Financial frictions such as bank capital constraints and informational advantages are crucial for the transmission of deposit shocks: the decline in lending growth is more severe (1) for capital-constrained banks, (2) in non-core markets where banks do not have a physical branch, and (3) for constrained borrowers relative to unconstrained borrowers.

Conclusion

- This paper proposes a new source of financial fragility: the geography of bank deposits.

  The geography of bank deposits is directly related to exposure to extreme disasters caused by climate change that threatens financial stability. Disaster shocks to counties where the deposit is highly concentrated can significantly affect bank deposits. These shocks, in turn, can be transmitted to other counties through multi-market banks' internal capital market, reducing lending in those counties.
- This paper has immediate implications for bank mergers and acquisitions policies, which affects the deposit concentration of merged banks.

References

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