Ample Reserves for Whom?

The Role of Foreign Banks in U.S. Monetary Policy Implementation

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Motivation: Fragility in the Reserves Market

- Fed halts QT in Dec 2025: liabilities side driven
- Repeated stress at month- and quarter-ends (e.g., Sep 2019)

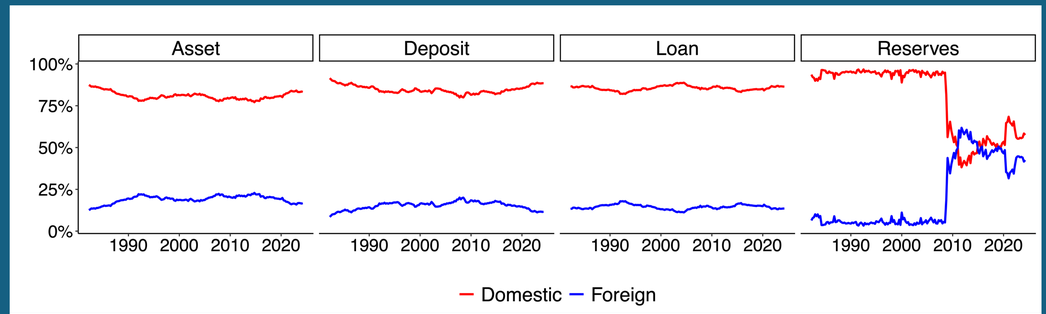
Quote from Chair Powell, March 2024

"*Liquidity is not distributed evenly in the system. There can be times when,* ***in the aggregate, reserves are ample or even abundant, but not in every part. Those parts where they're not ample, there can be stress...****Something like that happened in 2019 perhaps.*"

⇨ Not only the aggregate reserves, but **distribution** matter for the financial stability & Fed's interest rates control!

Focus: Foreign Banks in the US

Foreign banks hold very large share of reserves (>50%) in the US!



Research Question: How do foreign banks' reserve holdings constrain the Federal Reserve's balance sheet policies?

We find…

① Foreign banks' high reserve demand driven by (i) lower regulatory costs and (ii) high sensitivity to interest rates arbitrage.

② Foreign banks act as the "marginal players" in the system; they aggressively absorb liquidity during expansion (QE) but are much slower to shed reserves during contraction (QT) compared to domestic banks.

③ Foreign bank behavior endogenously determines the threshold for rate instability. To avoid rate instability during QT, the Fed must maintain an additional $100~200 billion in reserves to account for uncertainty in foreign bank behavior.

Empirical: Why Foreign Banks Hold Reserves?

	Δ log(Reserves)			
	(1)	(2)	(3)	(4)
ΔIOR-FF	0.7928***	0.7780***	0.7624***	0.7915***
	(0.0578)	(0.0583)	(0.0583)	(0.0590)
Foreign	0.0230***	-0.0397	-0.0598***	-0.0651***
	(0.0068)	(0.0282)	(0.0226)	(0.0242)
ΔIOR-FF × Foreign	2.169***	2.145***	2.016***	2.031***
	(0.7547)	(0.7578)	(0.7618)	(0.7613)
BHC FE		✓	✓	✓
Balance Sheet Control			✓	✓
Reserve Supply Control				✓
Observations	292,832	292,832	291,234	291,234
R^2	0.00	0.01	0.01	0.01

1pp↑ in the IOR–FF spread ↑ foreign banks' reserves 2pp more than domestic

① Foreign banks exploit IOR–FF spread arbitrage

- IOR has exceeded FF (avg 8.5bps, 2009–2024), due to GSEs holding non-interest-bearing reserves
- Domestic banks face more balance sheet cost to (SLR, FDIC fees), arbitrage less
- Foreign banks exploit IOR-FF spread arbitrage more than domestic

② Foreign banks also respond to cross-border rate differentials

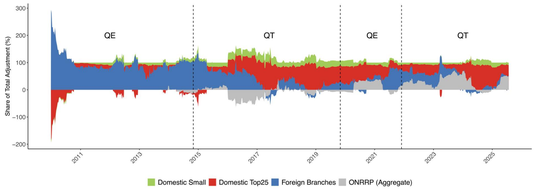
- Reserve demand rises 4.6pp per 25bps spread between IOR and home rates

③ Branches, the least regulated, hold the reserves

- Foreign banks operate via subsidiaries, branches, or both
- Branches face lighter US regulation: NO capital rules, NO FDIC fees, and flexible HQ transfers
- Fully branch-operated adjust reserves more to US–foreign spreads, funded via HQ transfers

④ Foreign Banks Are the Marginal Reserve Holders

- Foreign branches reduce holdings sharply at quarter-end for window dressing
- Foreign banks aggressively absorb liquidity during QE but are much slower to shed reserves during contraction (QT) compared to domestic banks.



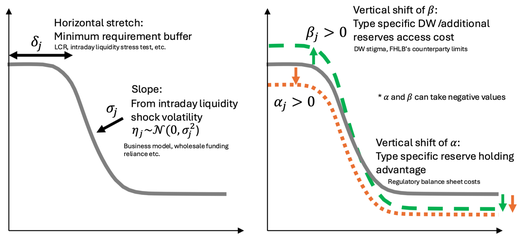
Asymmetric reserve elasticity during QE vs QT

Model: How Do Foreign Banks Reserves Holding Affect US Monetary Policy?

Demand

- Two types of banks: domestic and foreign, indexed by $j \in \{D, F\}$
- Bank j chooses reserve holding M_j prior to liquidity shock η_j realization, under optimization of excess reserves X_j and buffer (exogeneous) δ_j : $M_j(i) = \delta_j + X_j(i)$

$$\min_{X_j} \underbrace{\int_{-X_j}^{\infty} (X_j + \eta_j)(i - i_{\text{IOR}} + \alpha_j)\, dF(\eta_j)}_{\text{Opportunity cost of excess reserves}} + \underbrace{\int_{-\infty}^{-X_j} (-X_j - \eta_j)(i_{\text{DW}} - i + \beta_j)\, dF(\eta_j)}_{\text{Cost of discount window borrowing}}$$



buffer $\delta_D > \delta_F$; slope $\sigma_F > \sigma_D$,
reserve holding advantage $\alpha_F > \alpha_D$; reserve access cost $\beta_D > \beta_F$

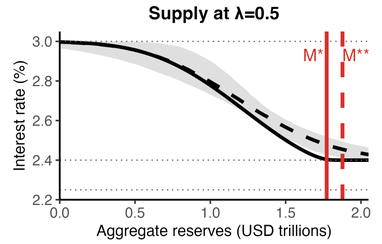
- Bank face liquidity shock and uncertainty shock in minimum buffer δ_j (i.e., foreign banks' quarter-end window dressing)

Supply

- Adapting Afonso et al. (2023) two operational goals model:

$$\min_M \mathcal{L}(M) = \frac{1}{2}\left[(1-\lambda)\left(i^*(M) - i_{\text{target}}\right)^2 + \lambda\left(M - M_{\text{target}}\right)^2\right]$$

- Fed aims to stabilize policy rate and keep reserves ample



Foreign banks' uncertainty shift the optimal reserve supply from M* to M**

Model takeaway

- Foreign banks shape the aggregate marginal demand
- Foreign banks demand uncertainty force the Fed to *increase* reserve supply to hit policy goals by 6~12% (= $100~200 billion)