U.S. Banks and Global Liquidity

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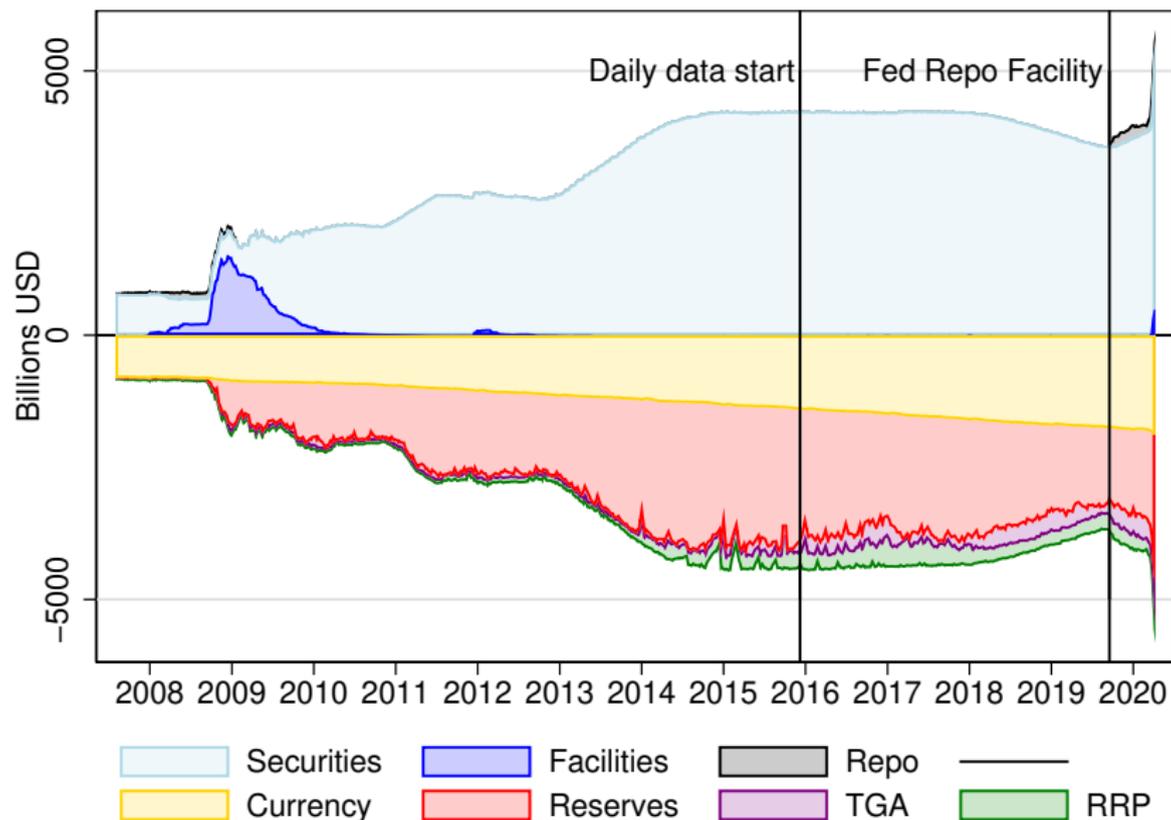
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Overview

- New monetary policy and regulatory environments post-GFC:
  - QE programs create bank reserves.
  - Traditional bank intermediation becomes more costly due to leverage ratio constraints.

- Bank reserves play a key role in supporting short-term liquidity provision during funding crunch (e.g., QE, and large TGA).

- When reserves become scarce, dollar funding markets get impaired (Sep 19).

- Implications for monetary policy: ample reserves are necessary for implementing interest rate policy. Large Fed balance sheets are the "new normal."

Data and Sample

▶ FR 2052a: regulatory filings for the Basel III Liquidity Coverage Ratio

  ▶ A detailed daily snapshot of individual banks' asset inflows and liability outflows by currency on a consolidated basis, as well as by material subsidiary.

  ▶ We manually map inflows and outflows in the FR 2052a to asset and liability line items in the FR Y-9C *Consolidated Financial Statements for Holding Companies*.

▶ Sample Period: December 2015 to May 2020

▶ Six banks (GSIBs): Bank of America, Citi, Goldman Sachs, JP Morgan, Morgan Stanley, Wells Fargo
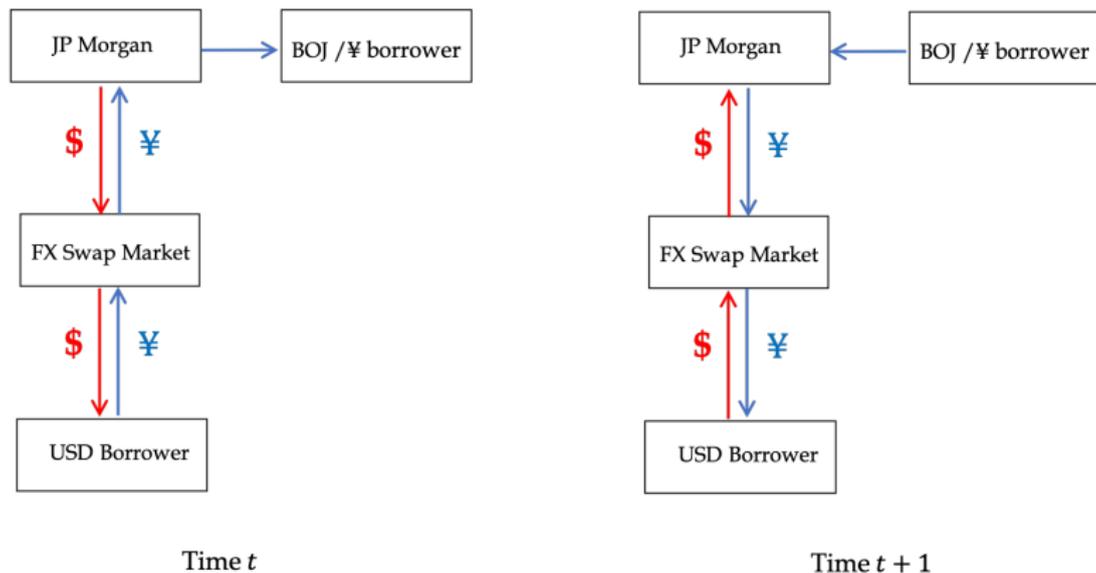
Evolution of the Fed Balance Sheet

Dollar Lending in the **Repo Market**

JP Morgan	JP Morgan
$ **Collateral**	**$** **Collateral**
USD Borrower	USD Borrower
Time t	Time $t+1$
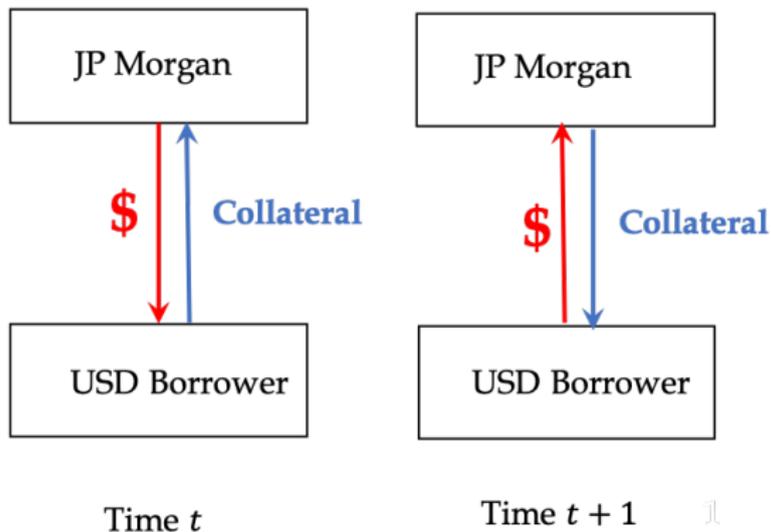
▶ Measurement: $ reverse repo (RRP) position from the U.S. GSIBs' balance sheet.

Dollar Lending in the **FX Swap Market**

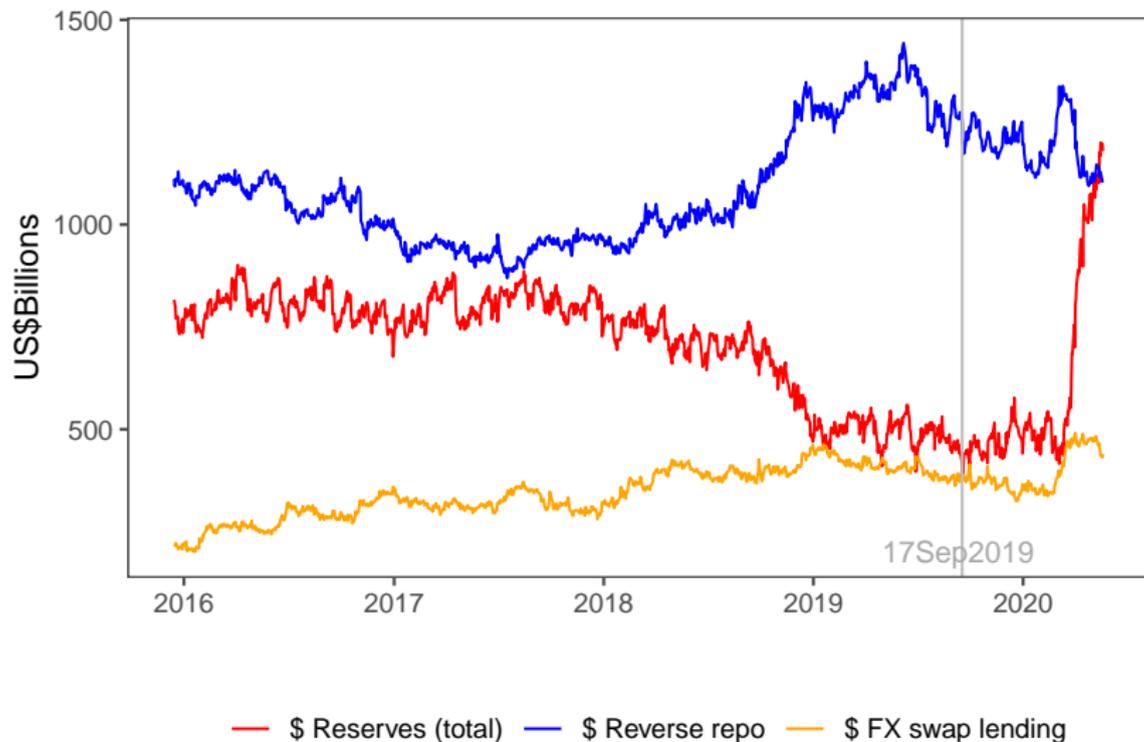
Time t Time $t+1$

▶ Empirical Challenge: FX swap dollar lending is off-balance-sheet. Only the JPY deposit/on-lending is observed.

Proxy for Short-term FX Swap Lending
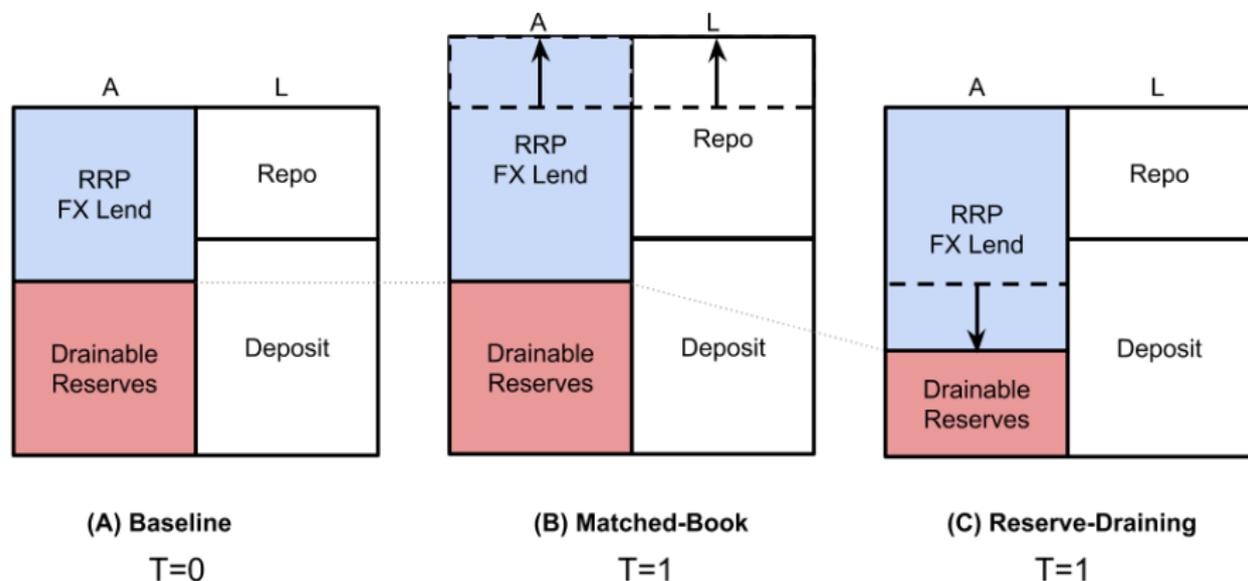*= Foreign Currency Excess Reverses*
+Foreign Currency Reverse Repos − Foreign Currency Repos.

Short-term Dollar Liquidity Provision

How is the Short-term Dollar Lending Financed?

▶ Two types of intermediation: **Matched-book** vs. **Reserve-draining**

(A) Baseline
T=0

(B) Matched-Book
T=1

(C) Reserve-Draining
T=1

Constraints for Reserve-draining Intermediation

▶ Distribution of liquidity across material entities and jurisdictions
▶ Intraday liquidity (Copeland, Duffie and Yang, 2021)
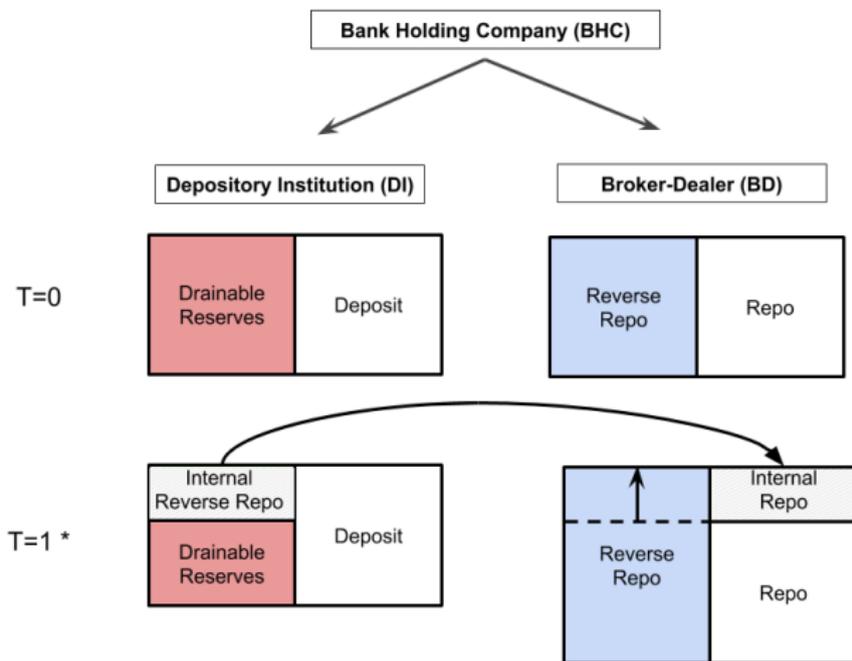
* BHC and DI balance sheet size unchanged
BD balance sheet expands at T=1

Intermediation Spread

- **GCF-Triparty repo spread**: overnight repo lending financed by repo borrowing
- **GCF-IOR spread**: overnight repo lending financed by draining reserves
- **FX IOR basis**: overnight FX-swap dollar lending financed by reserves; o/n CIP deviation between interests on excess reserves between the Fed and ECB
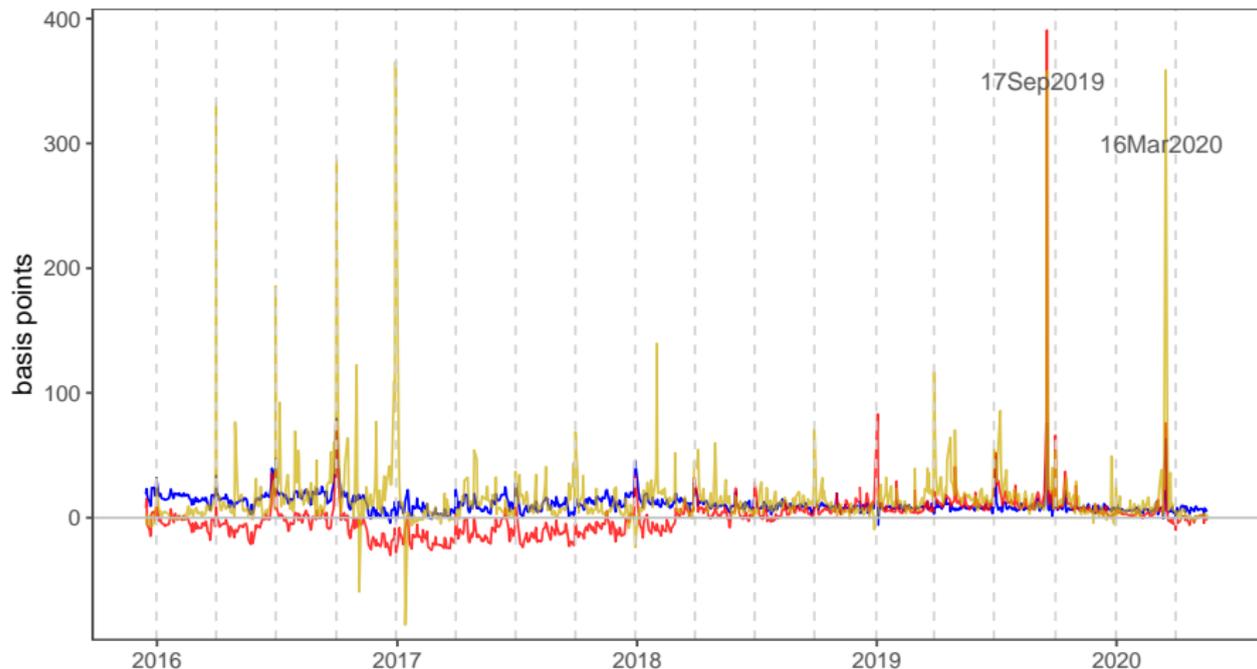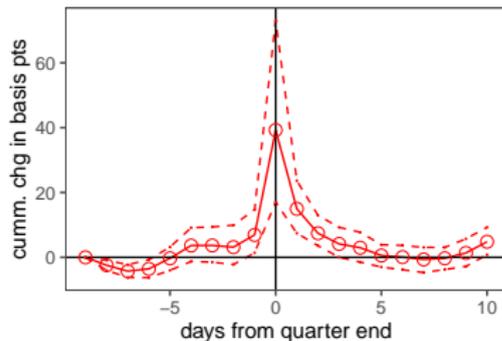
Quarter-end increases in intermediation spreads

▶ On quarter-ends regulatory reporting dates, foreign banks significantly contract their matched-book intermediation activities. ▶ FBO

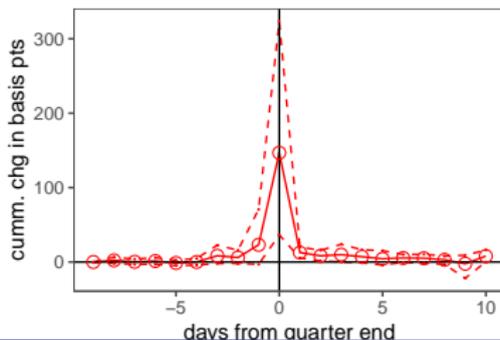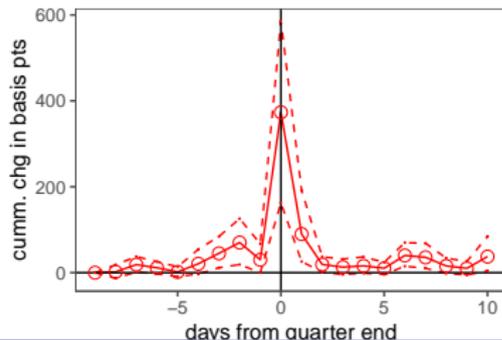▶ Repo and FX swap spreads both increase significantly on quarter-
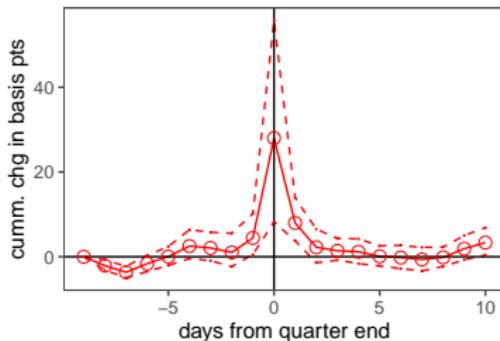
U.S. GSIBs Dollar Intermediation on Quarter-ends

▶ U.S. G-SIBs maintain $ reverse repos, increase FX swap lending and reduces $ repo borrowing. Reserves are used to finance dollar liquidity provision.
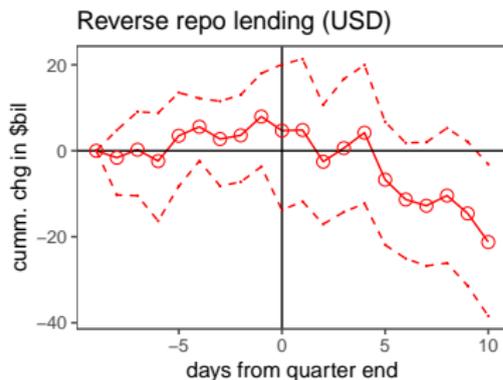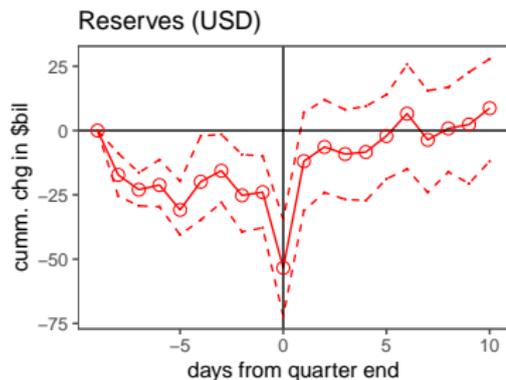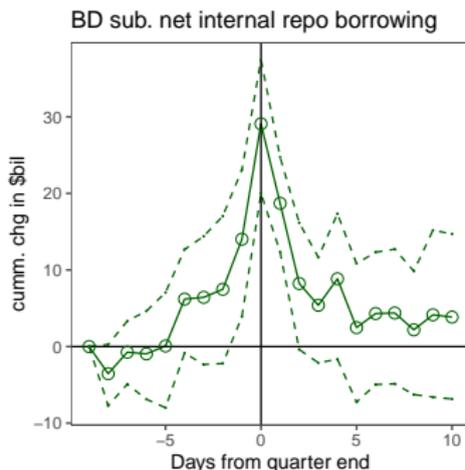

Reserves (USD)

Reverse repo lending (USD)

Repo borrowing (USD)

FX swap lending
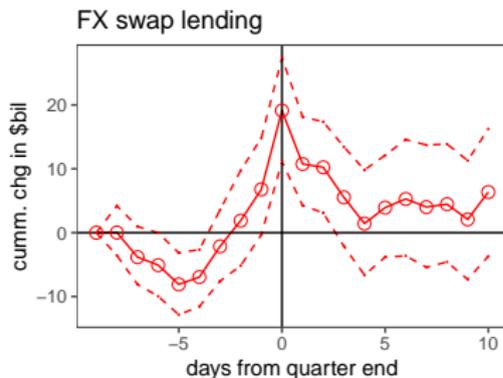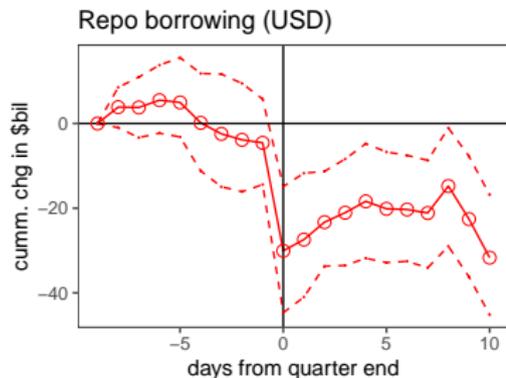
Quarter-end: BD and non-BD subsidiaries

▶ Broker-dealer (BD) subsidiaries reduce their external repo borrowing and increase their internal borrowing from commercial bank subsidiaries that drain reserves.

　　▶ Liquidity sharing between traditional banking and shadow banking
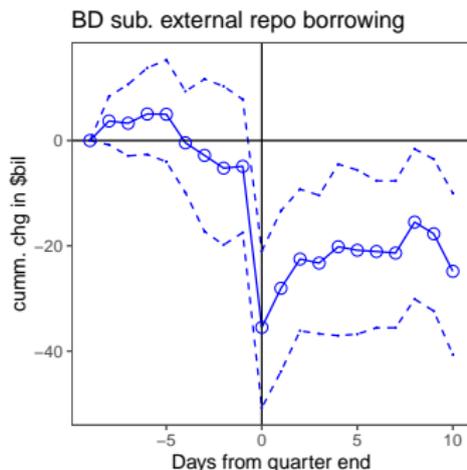
Fluctuations in the TGA Balance

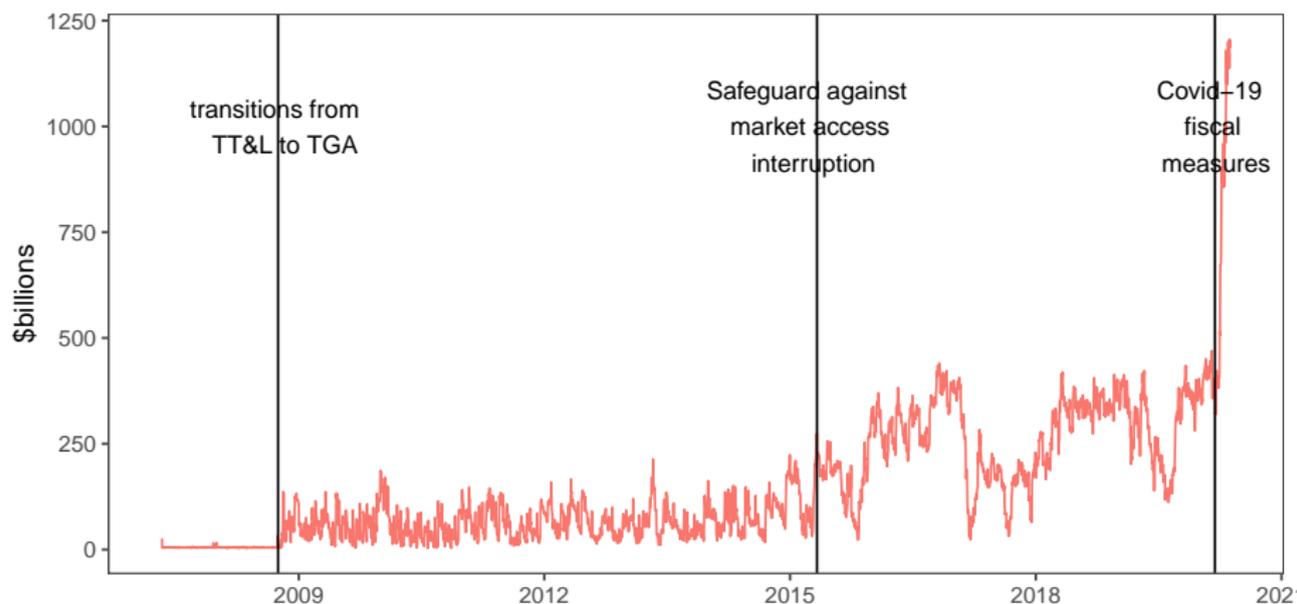▶ The U.S. Treasury holds cash at the Fed through the Treasury General Account (TGA) starting in 2009.

▶ Large swings in the Treasury TGA account starting in 2015.

▶ A higher TGA balance implies a lower cash balance for the entire banking system, i.e. scarcer dollar liquidity.

TGA fluctuations and the Repo Spread

- ▶ TGA is the checking account of the U.S. Treasury held at the Fed.
- ▶ An increase in TGA reduces overall cash for banks, raising the repo spread.
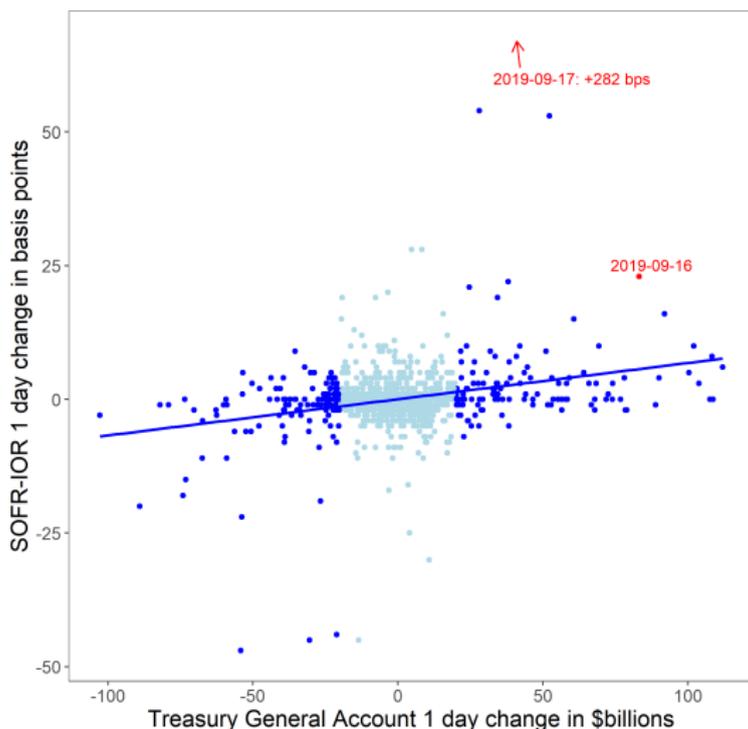
TGA fluctuations and Other Intermediation Spreads

▶ All other intermediation spreads also increase with TGA balances.

	(1) $\Delta SOFR - IOR$	(2) $\Delta GCF - IOR$	(3) $\Delta GCF - Triparty$	(4) $\Delta EUR\ IOR$	(5) $\Delta JPY\ IOR$
ΔTGA_t	0.0685***	0.103 ***	0.0481***	0.454***	0.926***
t-stat	[6.13]	[3.84]	[2.25]	[3.18]	[3.12]
R^2	0.146	0.041	0.014	0.030	0.039

TGA fluctuations and Dollar Liquidity Provision

	$\Delta Reserves_t$	ΔRRP_t	ΔRP_t	$\Delta NRRP_t$	$\Delta FX\ Lend_t$	$\Delta Deposit_t$
ΔTGA_t	-0.289***	-0.0234	-0.0951***	0.0717***	0.0367**	-0.124***
t-stat	[-7.23]	[-0.86]	[-3.92]	[3.09]	[2.55]	[-3.01]
R^2	0.219	0.004	0.064	0.043	0.033	0.055

▶ US GSIBs provide dollar liquidity when dollar funding becomes scarcer by
  ▶ draining reserves to substitute repo financing
  ▶ maintaining revere repo
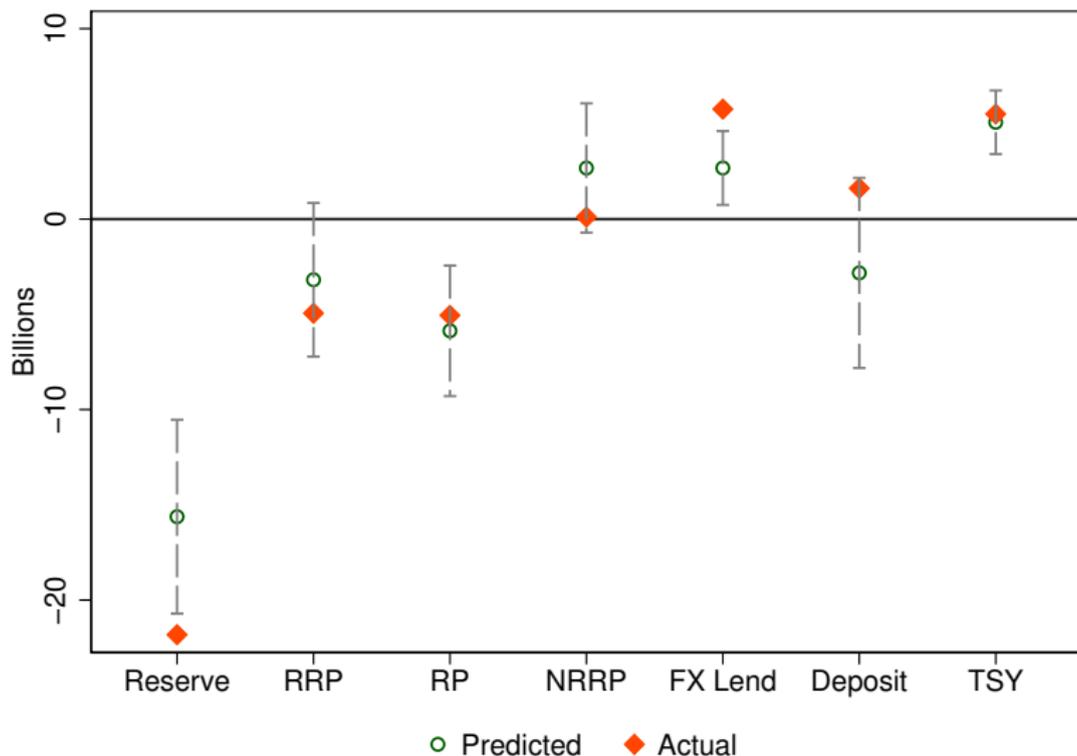 ▶ lending more via FX swap

September 2019 Funding Market

▶ September 16, 2019
  ▶ TGA balance increased by $83 billion on the day
  ▶ Repo and FX swap implied dollar funding rates increased in lockstep
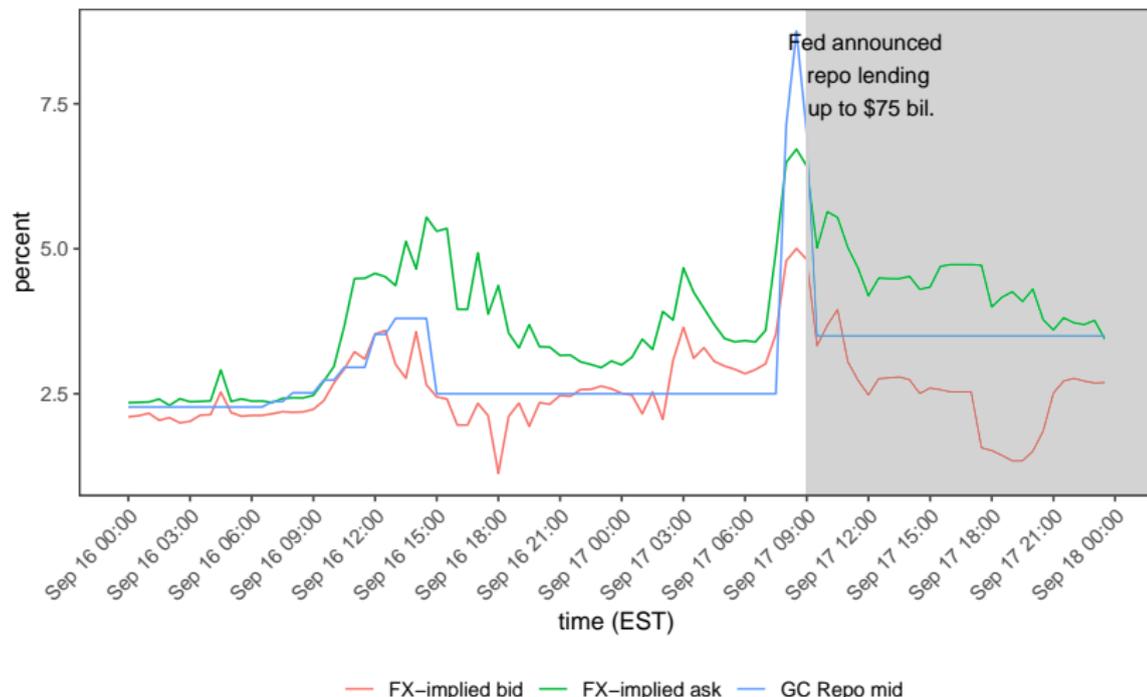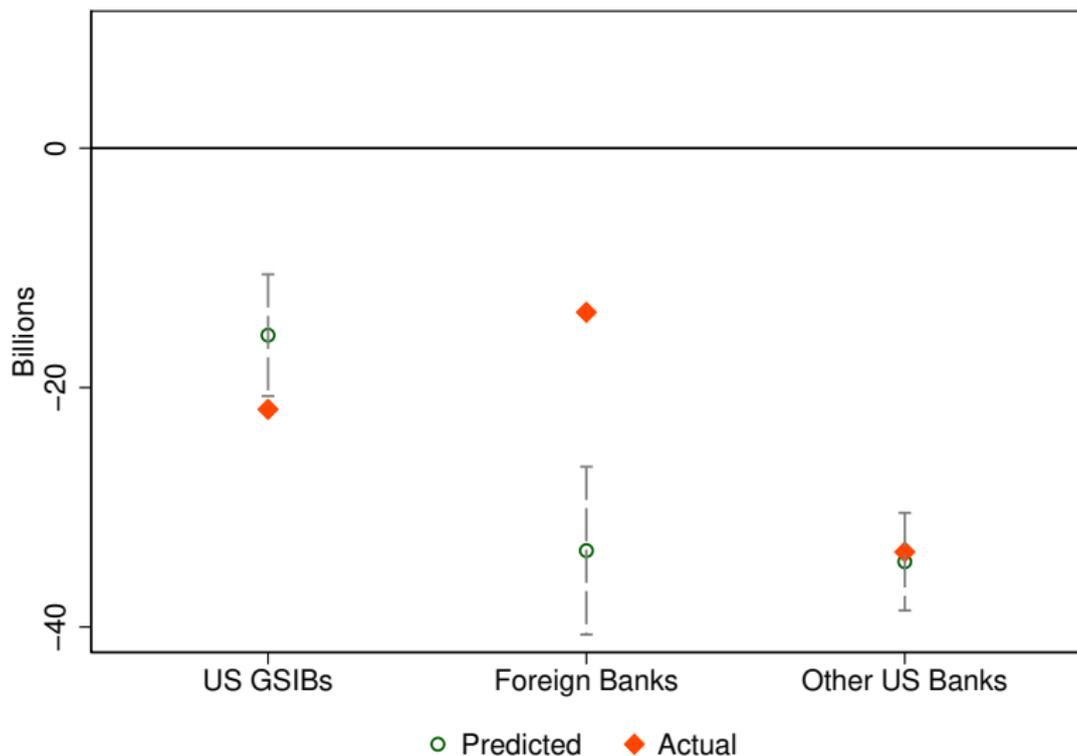
Predicted and actual one-day change on Sept 16, 2019

▶ U.S. banks' response was in line with predicted change based on TGA increase
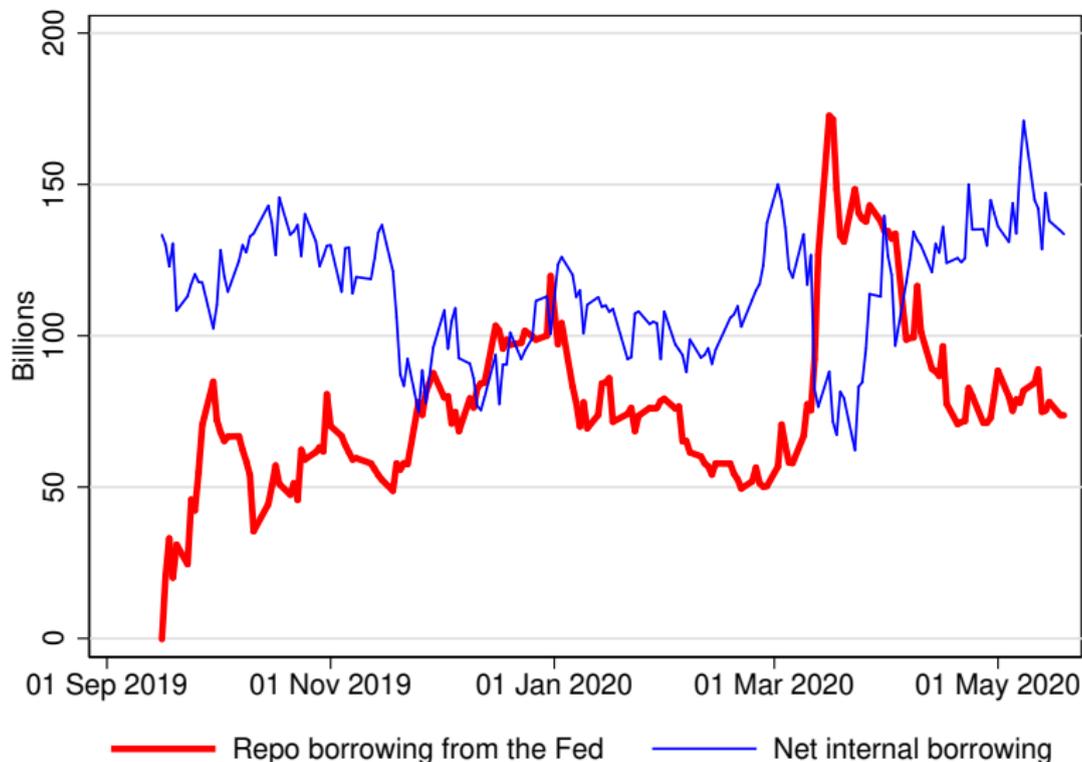
Predicted and actual one-day change in reserves

▶ Foreign banks reduced reserves less than expected ⟨▶ Reserve Distribution⟩

○ Predicted   ◆ Actual

BD take-up at the Fed repo facility

▶ For BDs, liquidity from the Fed and internal repo borrowing from commercial banks (financed via reserve draining) are substitutes.

Repo borrowing from the Fed ——— Net internal borrowing

Conclusion

- Ample reserves are key to well-functioning short-term funding markets.

- Internal transfers between BD and non-BD subsidiaries within the BHC are crucial.

  - Synergy between traditional banking and shadow banking

- Large Fed balance sheets are to stay beyond the ZLB.