USD money market rates with the QT going on

Chiara Manenti
Head of Rates, FX and Commodities Research

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See Appendix for analyst certification and important notices.

Fed balance sheet reduction was accompanied by a decline in RRP facility usage and in autonomous factors

Fed balance sheet: (USD Bn)

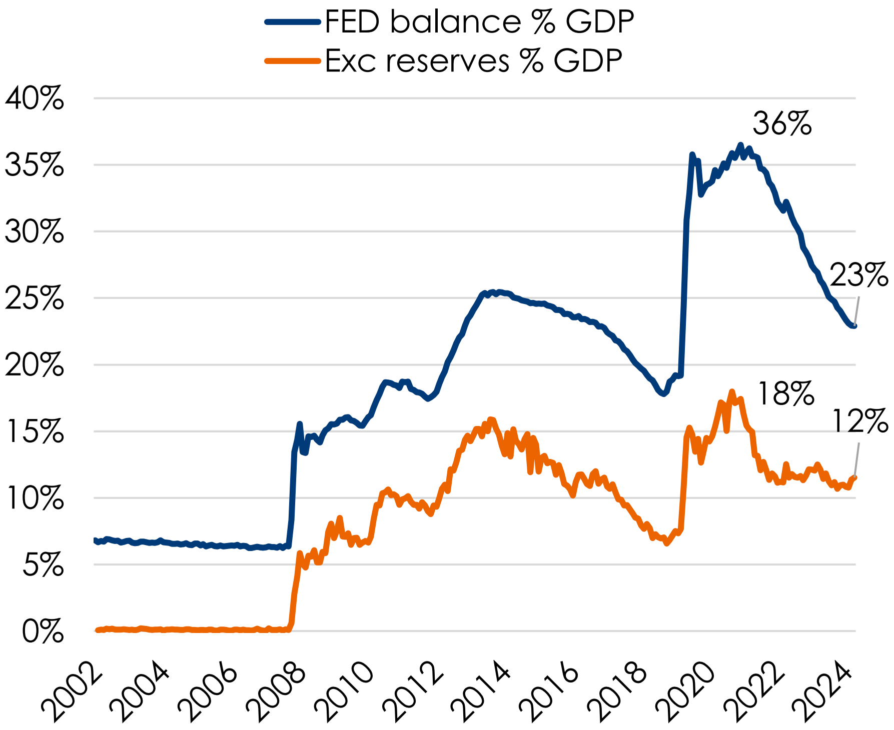
	29/06/2022	03/01/2024	26/03/2025	Change From 3 /01/2024
Assets	**8,962**	**7,731**	**6,791**	**-940**
SOMA	8,476	7,187	6,429	-759
- US Treasury	5,764	4,753	4,237	-516
- Agency MBS	2,709	2,432	2,189	-243
- Agency	2	2	2	0
Repos	0	-	-	0
Other assets	486	544	362	-181
Liabilities	**8,962**	**7,731**	**6,791**	**-940**
Bank Reserves	3,119	3,459	3,451	-9
Currency	2,281	2,348	2,373	25
Reverse Repos RRP	2,227	720	241	-479
Rev.Repos Foreign Officials	261	366	387	21
General Treasury Account GTA	760	743	316	-427
Other liabilities	266	178	197	18
Capital	48	-84	-174	-90

Source: Bloomberg, Intesa Sanpaolo

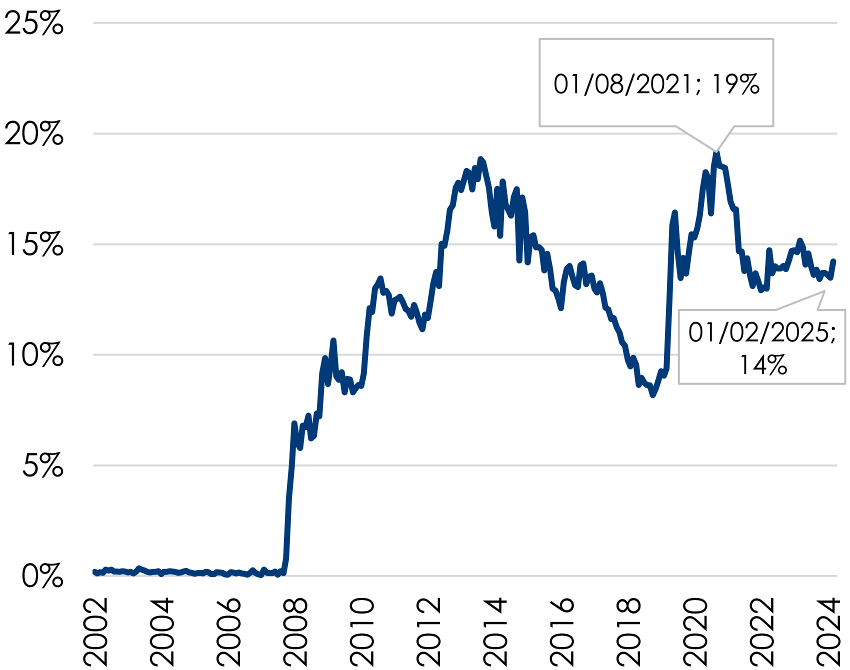
Bank's excess reserves stabilised around 12% of GDP over the last 3 years

- Bank's reserves fluctuated around 12% of GDP from the end of 2022, while the overall Fed balance reduced by 13% of GDP.
- Reserves dropped to 13% of bank's total assets in Feb 2023 from 19% high during Covid crisis.

Fed balance sheet and banking excess reserves % of GDP



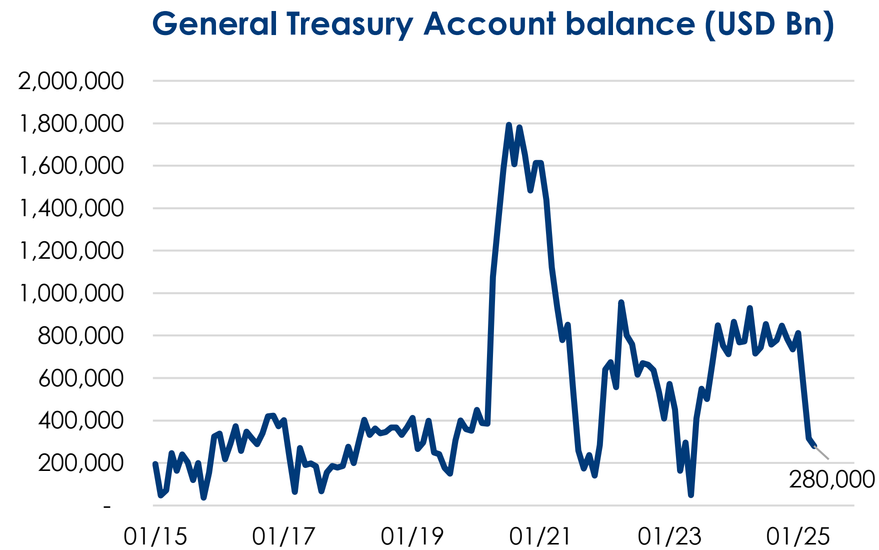
Excess reserves in % of total assets



Source: Bloomberg, Intesa Sanpaolo

Under the debt limit constraints, assessing reserve conditions is more challenging

- Federal debt limit reinstated January 1st 2025.
- The Treasury Department started using "extraordinary measures" on Jan. 21 to allow the United States to keep meeting its financial obligations.
- Treasury Secretary, Bessent said that he was continuing to deploy the measures set in motion by Ms. Yellen.
- The Bipartisan Policy Center (BPC) monitor and analyze federal cash flows to project the X Date—the period during which the government is at heightened risk of exhausting available resources and failing to meet at least some of its obligations.
- **BPC currently projects that the X Date will most likely fall between mid-July and early October.**



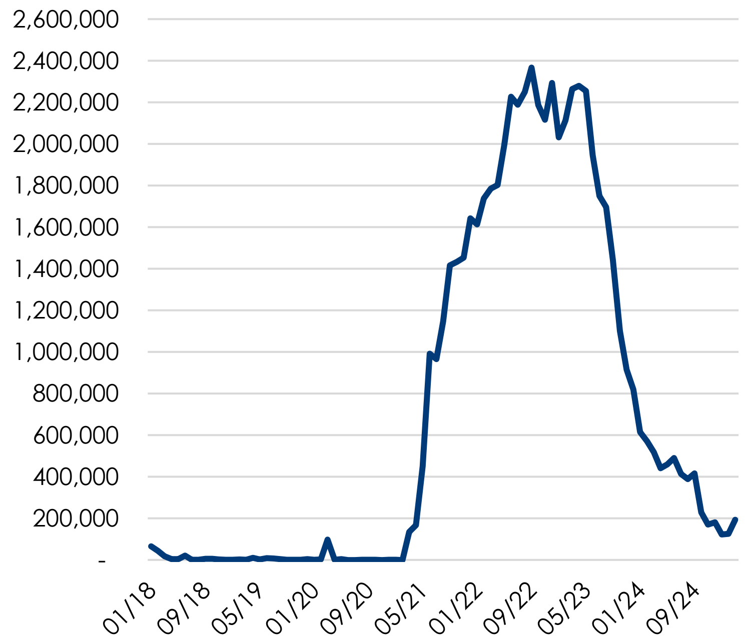
Source: Fed, Bloomberg, Intesa Sanpaolo

- As of 26 March, the US Treasury had USD 207 billion of extraordinary measures left, in addition to cash in GTA (280bn as of March 27th).
- April 15th is the tax date and last year inflows were around 392 bn.

The RRP rate was aligned with the bottom of Fed Fund corridor

- In December 2024, the FOMC lowered the rate on the RRP relative to the lower bound of the policy target range by 5 basis points. Taken together with the Fed's reduction in the overall target range for the fed funds rate to 4.25% to 4.50%, the new RRP rate is 4.25%, in line with the lower bound for the first time since 2021.
- This was presented as a technical adjustment to keep US funding markets running smoothly.
- Before March 2021, the spread between RRP and FF Lower rate was at zero.
- This measure accelerated the outflows of cash from the RRP facility by money market funds.

Use of Fed's Reverse Repo Facility (USD Mln)



Source: Fed, Bloomberg, Intesa Sanpaolo

The extension of QT is constrained by the dynamics of the GTA, reserves are expected at critical level in 3Q25

- The table illustrates a scenario in which:
  - the Fed continue QT in 2025 at the current pace of 5Bn/M on USTs plus max 35Bn/M on MBS (15Bn effective);
  - The announced target of GTA at 850Bn at the end of 3Q25
  - Funds deposited in the RRP stable around current level.
- **Based on these assumptions, bank reserves are expected to fall below 3 trillion in 3Q-4Q '25 and it will be more difficult for the Fed to continue balance sheet reduction beyond year end.**
- Based on Annette Vissing-Jørgensen's analysis* seeking to identify an optimal level of the Fed's balance sheet, the stock of bank reserves+RRP should stay above USD3 trillion to guarantee the stability of the system.

Fed balance sheet reduction scenario (USD Billion)

	31/03/2025	30/09/2025	31/12/2025
Assets	**6,745**	**6,687**	**6,627**
SOMA	6,380	6,320	6,260
- US Treasury	4,222	4,207	4,192
- Agency MBS	2,158	2,113	2,068
- Agency	2	2	2
Repos	0	0	0
Other assets	365	365	365
Liabilities	**6,745**	**6,687**	**6,627**
Bank Reserves	**3,168**	**2,902**	**2,818**
Currency	2,391	2,399	2,423
Reverse Repo RRP	150	150	150
Rev. repos Foreign Off.	360	360	360
Gen.Treas. Account	**650**	**850**	**850**
Other liabilities	195	195	195
Capital	-170	-170	-170
Bank Reserves+RRP	**3,318**	**3,052**	**2,968**

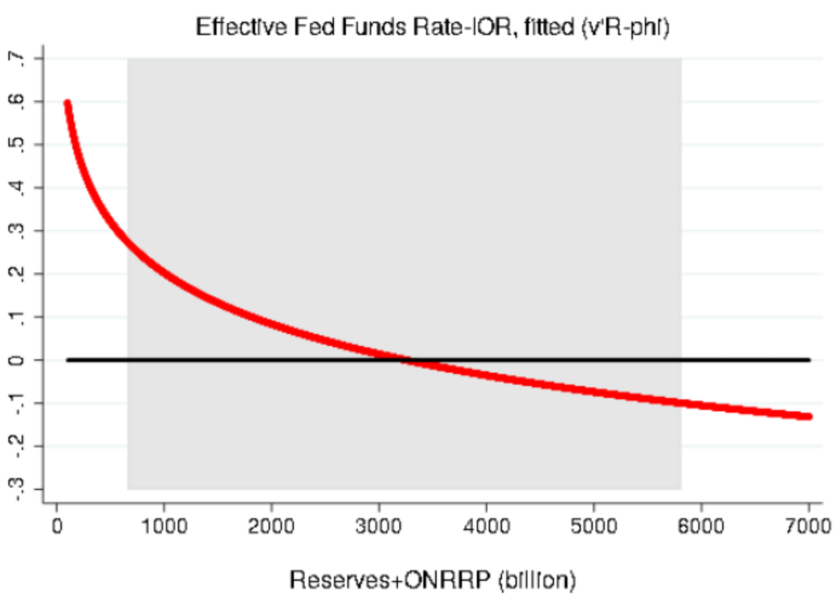
(*) Annette Vissing-Jorgensen, "Balance Sheet Policy Above the ELB", June 12, 2023

Source: Fed, Bloomberg, Intesa Sanpaolo

Understanding banks' needs is important to ensure the Fed does not drain too many reserves

- Banks demand reserves to meet internal and regulatory liquidity constraints.
- These demands change over time as the financial system expands and regulations change.

Fed - Convenience-maximizing reserve supply if reserves are supplied via holdings of inconvenient assets



- According with a recent econometric analysis*, **the estimated convenience-maximizing excess liquidity** has evolved during the last decade: **the current estimate is around 3.2 trillion dollars.**

(*) Cfr. Annette Vissing-Jørgensen, «Macroeconomic stabilisation in a volatile inflation environment» «Balance sheet policy above the ELB", 2023

Source: A.Vissing 2023, Intesa Sanpaolo.

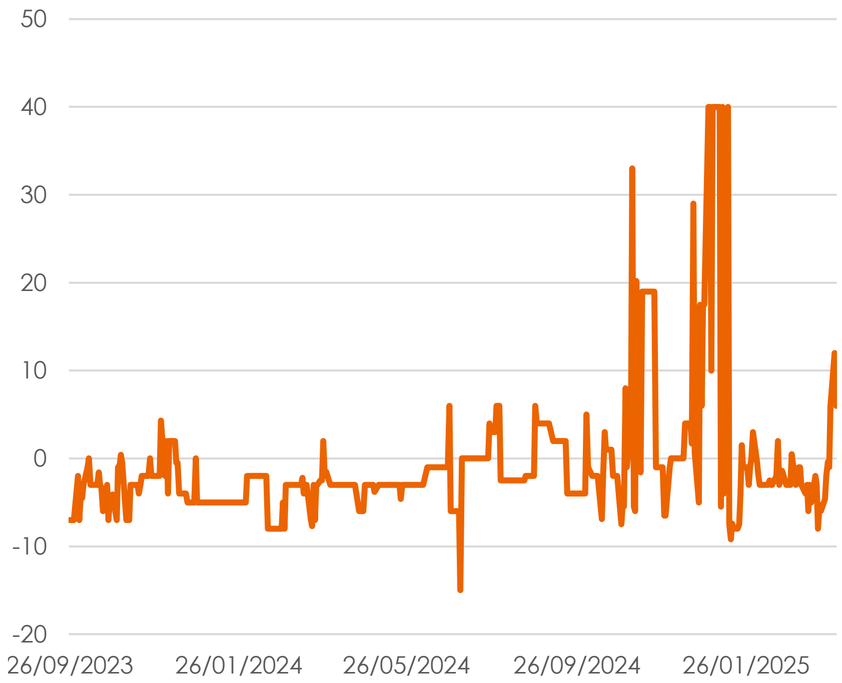
Central bank balance sheets should be efficient and effective

- Dallas Fed President Lorie K. **Logan argued that central bank balance sheets should be efficient and effective.** Those twin principles imply keeping money market rates close to the interest rate on reserves, supplying ample reserves and maintaining strong ceiling or lending tools.
- **Supplying ample reserves and positioning money market rates close to interest on reserves is both efficient and effective.**
- Logan said: "In my view, for the U.S. financial system, **bringing market rates all the way up to interest on reserves could reduce effectiveness** while delivering only a minimal improvement in efficiency."
- Logan added: "**In the long run, I believe it will be appropriate for the Federal Reserve to operate with money market rates close to, but perhaps slightly below, IORB."**
- "I believe every bank in the United States should be operationally ready to access the discount window." and "**Banks should also consider the potential benefits of establishing access to the Standing Repo Facility (SRF)**."

Source: Dallas Fed President Lorie K. Logan delivered these remarks at the Securities Industry and Financial Markets Association annual meeting. "Normalizing the FOMC's monetary policy tools", October 21, 2024.
Dallas Fed President Lorie K. Logan delivered these remarks at the Bank of England Agenda for Research Conference in London. Efficient and effective central bank balance sheets, February 25, 2025

Powell said in last FOMC press conference there were "*some signs of increased tightness in money markets.*"

USD repo GC – IOER (bp)

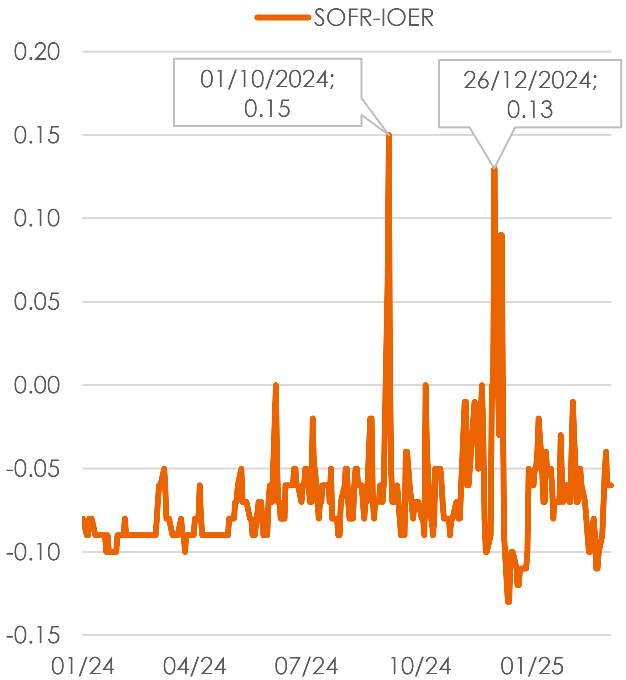


3M Bloomberg Short Term Bank Yield BSBY/OIS spread (bp)

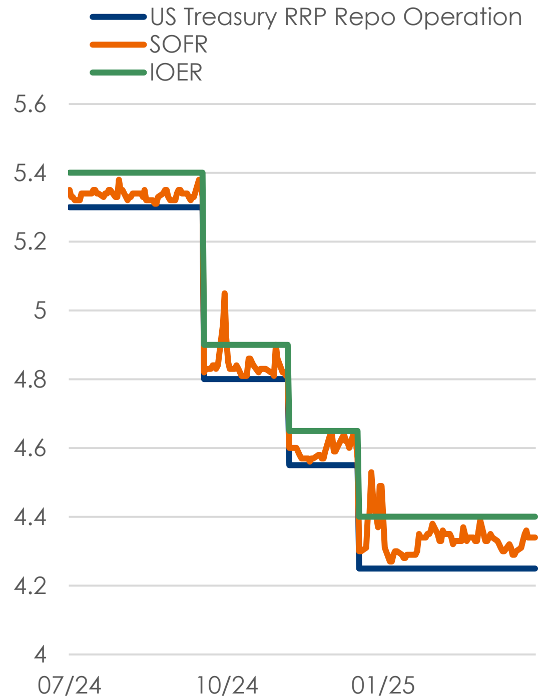
Source: Bloomberg, Intesa Sanpaolo

Volatility across USD funding markets moderately rising

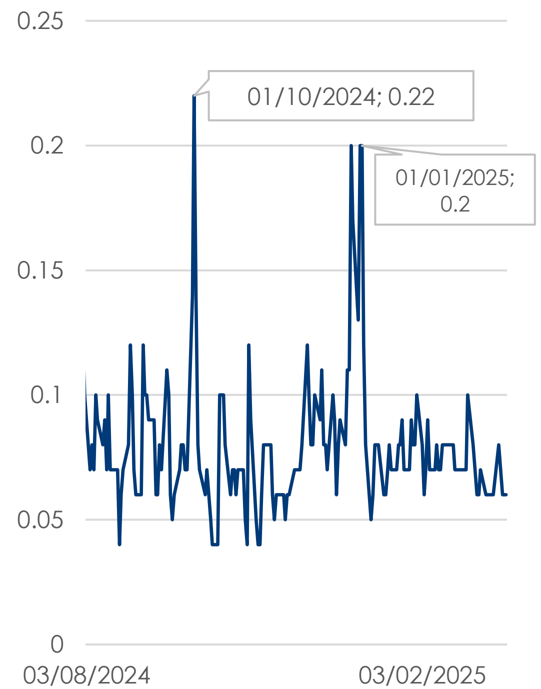
SOFR vs IOER spreads (%)



SOFR is fluctuating into the corridor (%)



SOFR Volume weight 75th-25th percentile (%)

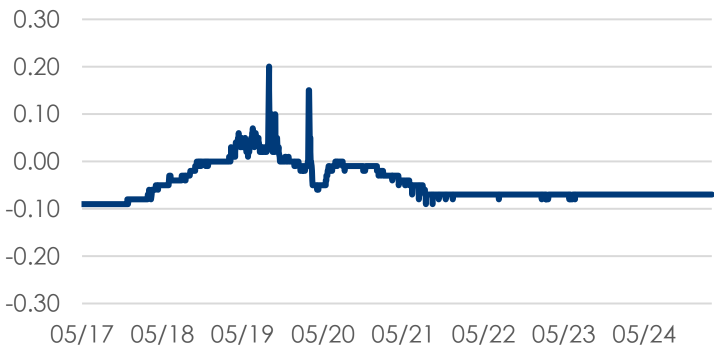


Source: Bloomberg, Intesa Sanpaolo

Market-based indicators helpful in assessing market conditions with respect to 2017 balance sheet runoff (*)

- These indicators are readily observable and thus may be useful to the public in tracking progress toward "ample" reserve conditions.

EFFR-IORB Spread

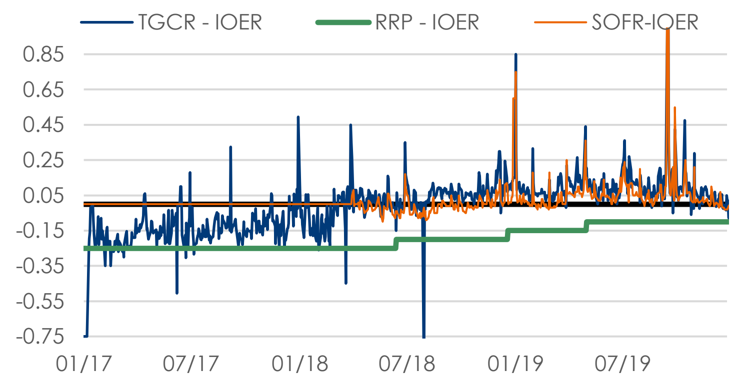


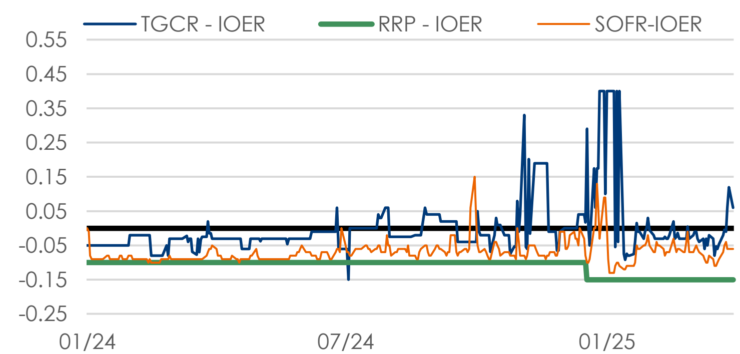
Source: Bloomberg, Intesa Sanpaolo

- EFFR-IORB spread was one of the first indicators signaling increased competition for reserves: the spread started to tighten in March 2018 and the EFFR moved up to and then above IORB in early 2019.
- Both **SOFR and TGCR vs IOER** started to rise in the spring of 2018 just several months after balance sheet runoff had started.

(*) Clouse, James A., Sebastian Infante, and Zeynep Senyuz (2025). "Market-Based Indicators on the Road to Ample Reserves," FEDS Notes. Washington: Board of Governors of the Federal Reserve System, January 31, 2025, https://doi.org/10.17016/2380-7172.3704.

Repo spreads to IOER (%)

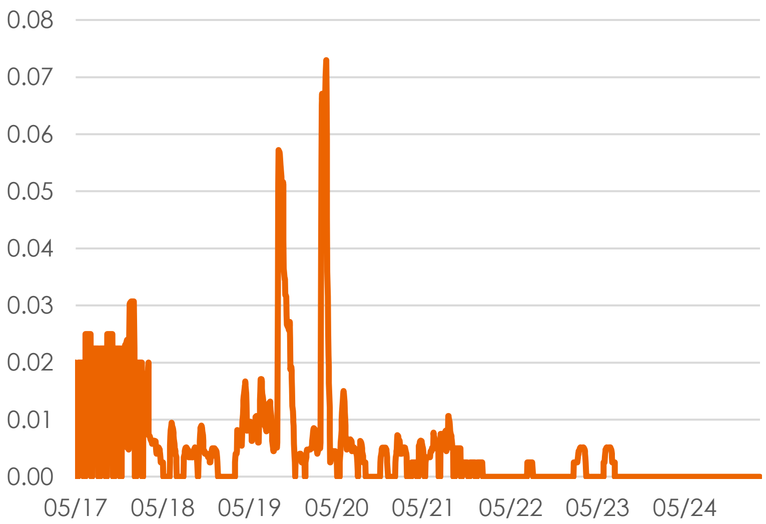




Source: Bloomberg, Intesa Sanpaolo

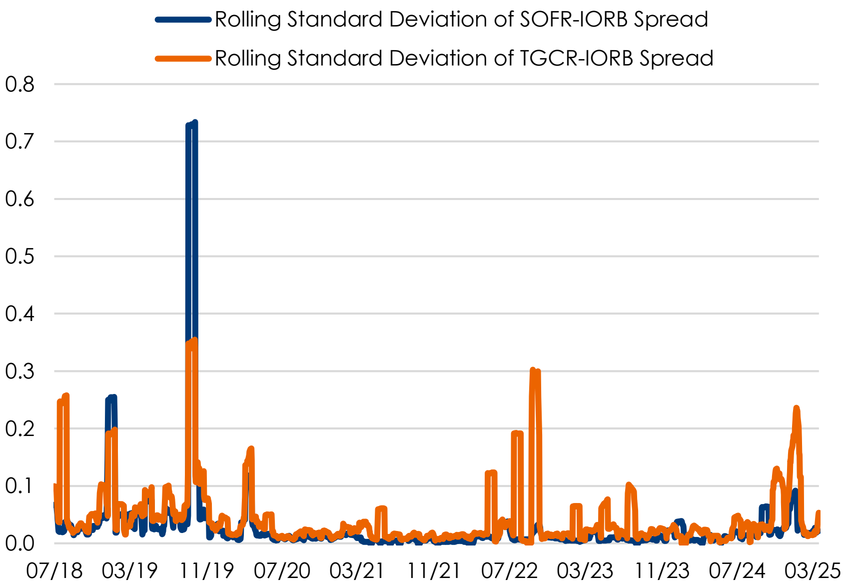
Rate volatility should increase when the slope of the reserve demand curve is more pronounced

15-day rolling standard deviation of the EFFR-IORB spread



Source: Bloomberg, Intesa Sanpaolo

15-day rolling standard deviation of the Repo Spreads to IORB



Source: Bloomberg, Intesa Sanpaolo

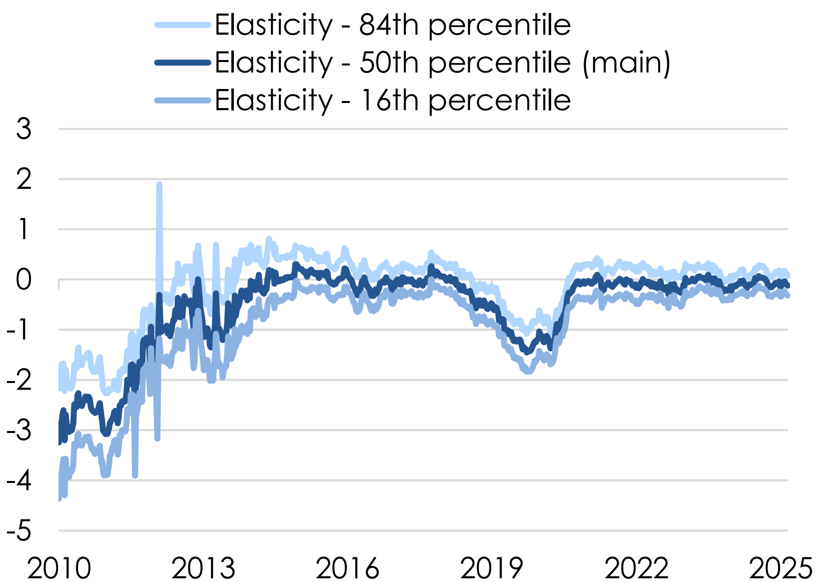
- Starting in mid-2018, trading in money markets became more volatile compared to the prior period as rates moved above IORB.
- The volatility increased further leading up to the end of balance sheet runoff in July 2019 and the subsequent stress emerged in money markets in September 2019.

The NY Fed's estimate of the elasticity of the federal funds rate to reserve changes suggests that reserves remain abundant

- Reserves are ample when the supply of reserves is sufficiently large that the federal funds rate is not materially sensitive to everyday changes in aggregate reserves.
- The slope of the reserve demand curve becomes steeper as reserves decline.
- Reserve demand elasticity is now close to zero.

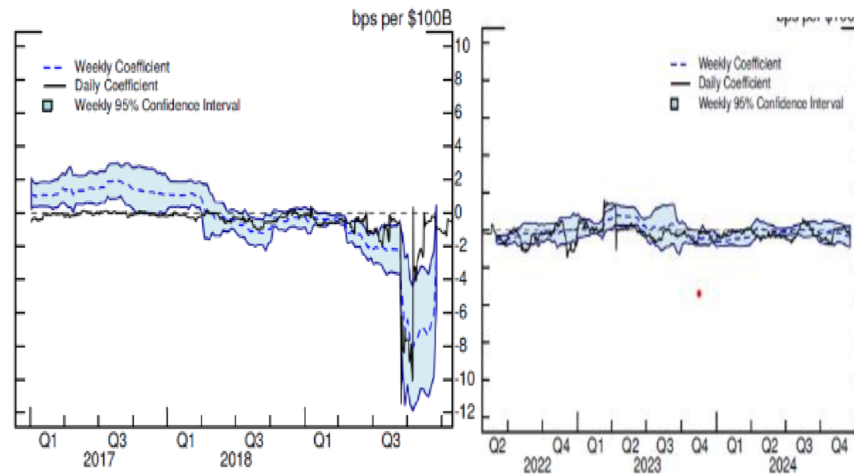
NY Fed - Reserve demand elasticity

February 2025 Update



Notes: Daily estimates of the slope of the reserve demand curve which represents the elasticity of the federal funds rate to shocks in the supply of reserves: it shows by how many basis points the spread between the federal funds and IORB rates would move for an increase in aggregate reserves equal to 1% of banks' total assets.
Source: Alfonso, Giannone, La Spada, Williams, "Tracking Reserve Ampleness in Real Time Using Reserve Demand Elasticity", Fed New York, *Liberty Street Economics*, October 17, 2024. https://www.newyorkfed.org/research/reserve-demand-elasticity/#interactive, Intesa Sanpaolo

Estimate of the Slope of the Reserve Demand Curve at Daily and Weekly Frequencies: 2017-2019 period

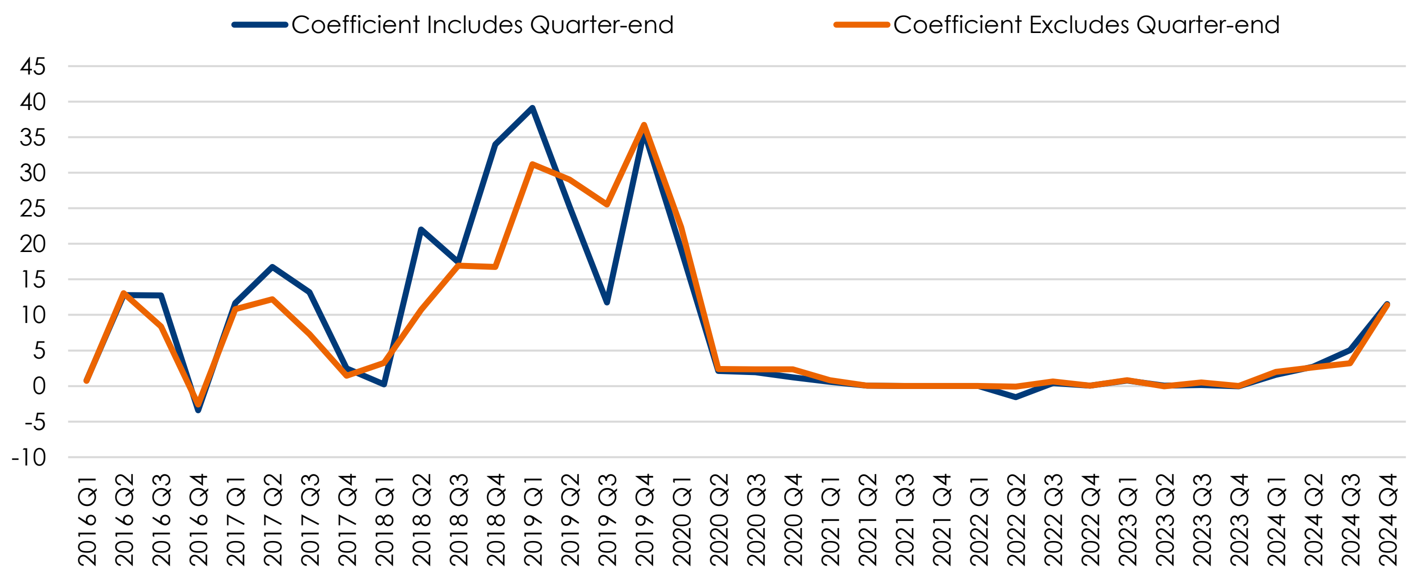


Source: Clouse, James A., Sebastian Infante, and Zeynep Senyuz (2025). "Market-Based Indicators on the Road to Ample Reserves," FEDS Notes January 31, 2025, Intesa Sanpaolo

QT contributes to the relative tightness of supply and demand conditions in the repo market

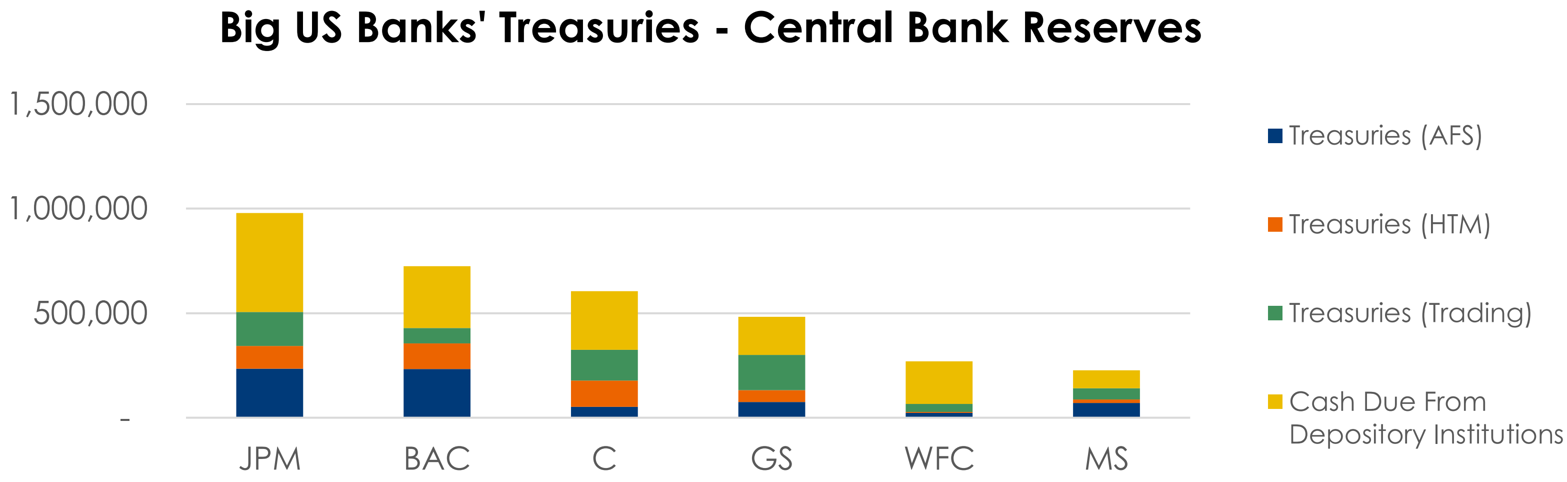
- During the previous phase of QT in 2017-19, the sensitivity of repo rates to issuance increased as the size of the Fed's balance sheet shrank.
- **In the current phase, this sensitivity has been mostly limited and statistically insignificant although it has increased in the last six months.** Nonetheless, the recent increase in sensitivity remains well below the 2017-2019 sensitivity estimates and suggests that liquidity remains abundant.
- The statistical results provide a signal that QT contributes to the relative tightness of supply and demand conditions in the repo market, making rates more sensitive to changes in the supply of Treasuries.

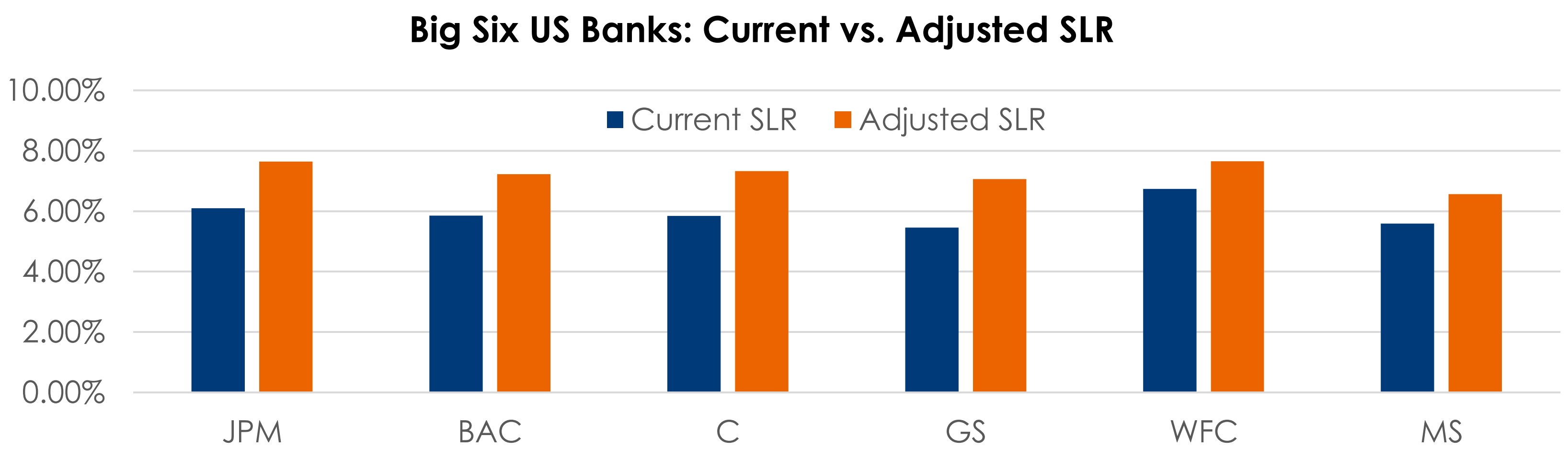
Estimated Sensitivity of Changes in (TGCR-ON RRP) to Changes in Treasury Securities Outstanding Over Time, with and without Quarter-Ends



Source: https://www.federalreserve.gov/econres/notes/feds-notes/repo-rate-sensitivity-to-treasury-issuance-and-quantitative-tightening-20250212.html, Intesa Sanpaolo

SLR relief may ease constraints on US Treasury repos during times of stress





Source: Bloomberg Intelligence, Intesa Sanpaolo

Balance sheet normalization has implication for the Fed’s choices about the design of lending facilities

- Fed need to consider whether the lending transactions should adjust to be effective in mitigating liquidity shocks.
- US banks should be operationally ready to access the discount window.
- Fed should consider the benefit of centrally clearing SRF.

On the asset side of the Fed balance sheet there is a set of lending facilities:

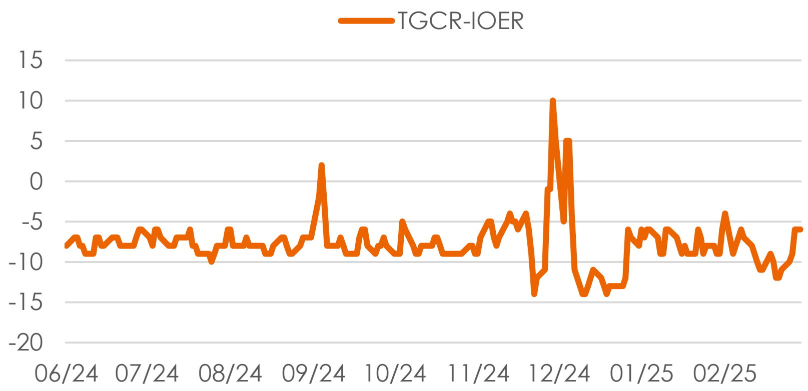
- **Open Market Operations.** In September 2019, the Federal Reserve used term and overnight repurchase agreements (repo) to ensure that the supply of reserves remain ample even during periods of sharp increases in non-reserve liabilities, and to mitigate the risk of money market pressures that could adversely affect policy implementation. The Federal Reserve continued to offer overnight repos and, amid the COVID-related stress around March 2020

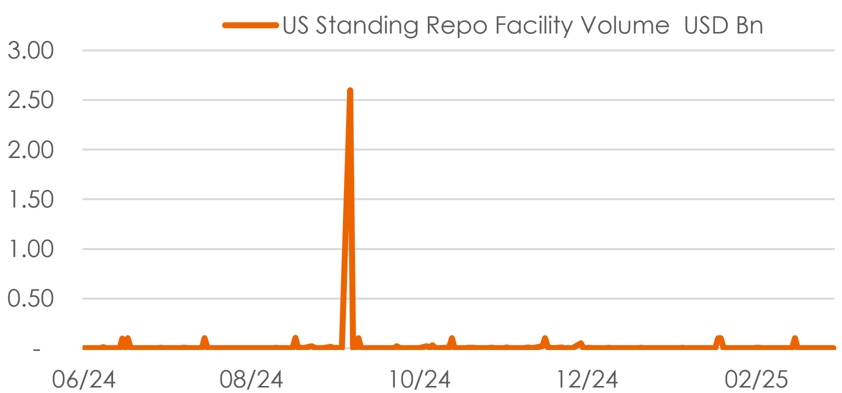
- **Discount window.** The discount window allows depository institutions and U.S. branches and agencies of foreign banks to borrow from Federal Reserve Banks after executing legal agreements and pledging collateral.

- **The Foreign & International Monetary Authorities Repo Facility.** The FIMA Repo Facility allows FIMA account holders, which consist of central banks and other international monetary authorities with accounts at the Federal Reserve Bank of New York, to enter into repurchase agreements with the Federal Reserve. In these transactions, approved FIMA account holders temporarily exchange their U.S. Treasury securities held with the Federal Reserve for U.S. dollars, which can then be made available to institutions in their jurisdictions.

- **Central Bank Liquidity Swaps.** The Bank of Canada, the Bank of England, the Bank of Japan, the European Central Bank, the Federal Reserve, and the Swiss National Bank maintain standing U.S. dollar liquidity swap line arrangements to enhance the provision of U.S. dollar liquidity.

The Standing Repo Facility, intended to dampen upward pressure in the uncleared tri-party segment of repo market, is not used





- Fed established the Standing Repo Facility (SRF) in July 2021 as a backstop in money markets as eligible banks can borrow reserves in exchange for Treasury and agency debt.
- The SRF is designed to dampen upward pressures in repo markets that may spillover to the fed funds market and serve as a ceiling for the Fed funds rate.
- The SRF rose to a 2.6Bn high on Sept 30th, 2024, but demand was nil at year-end.
- NY Fed expanded repo operations during March quarter end, conducting 2 SRF operations every trading day between March 27 and April 2, adding an extra morning session.

Source: Fed, Bloomberg, Intesa Sanpaolo

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Report prepared by:
Chiara manenti
Head of *Rates, FX and Commodities Research Department*

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