

## US Rates Watch

Follow the money: cash & collateral trends  
September 19 update**Money map: repo ripple returns**

Sept 15 was a corporate tax date and coincided with \$64b in coupon issuance. As a result, government institutional MMFs saw a \$26b outflow, ON RRP declined \$91b, SOFR volumes increased \$150b, and the rate on SOFR increased 1bp. The combination of a reduction in cash and an increase in collateral likely drove the upward pressure in funding. We expect the trend in collateral outweighing cash to continue which we discuss in further detail here: [US funding: subtle repo ripple](#).

**Cash: reserve balance increase offsets ON RRP drain**

**Fed balance sheet data** for the week ending Sep 13, show a \$6b decline in securities holdings from QT in addition to a \$1b increase in loans from the discount window (Exhibit 1). On the liability side, Fed RRP appeared to absorb most of the refill in the TGA and growth in reserve balances. Bank reserve balances have grown over the past several weeks despite QT and increases in the TGA. This could be a sign that banks are unwilling to let go of liquidity, which could put upward pressure on front-end rates. Over the same week, **MMF AUM** grew \$18b according to ICI, but declined later in the week around the Sept 15 corporate tax date and around a large coupon settlement according to Crane Data (Exhibit 5, Exhibit 4). The \$26b in outflows on the 15<sup>th</sup> from MMFs was entirely out of gov't institutional funds, likely reflecting the corporations who began parking their cash in relatively safe MMFs after the bank stress events in March. **Bank balance sheet data**, which is lagged an additional week compared to Fed balance sheet data, shows banking system assets grew \$53b over the week ending Sep 6 (Exhibit 6). Domestic banks saw cash holdings increase \$89b driven by deposit inflows and despite a reduction in borrowing. At the same time bank securities holdings and loan & leases partially reversed some of the growth seen in recent weeks. **Cash bottom line:** higher reserve balances offset by lower ON RRP and higher TGA. MMFs saw outflows on the corporate tax date. Domestic banks grew their cash holdings via higher deposits.

**Collateral: UST outstanding higher, FHLB & CP lower**

**UST issuance** has increased \$191b MTD, including \$64b from coupons on Sep 15 (Exhibit 7). While bill auction sizes so far, including for cash management bills, remain unchanged even after the corporate tax date, we're seeing smaller settlements coming up (Exhibit 8). Compared to last week, due to larger maturities, this week's net new bill settlements will be \$13b smaller.

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[See Team Page for List of Analysts](#)**Abbreviations:**

BTFP: bank term funding program  
ME: month-end  
CB: Central bank  
DW: discount window  
FHLB: Federal Home Loan Banks  
FIMA: Foreign and international monetary authorities  
Gov't: government  
GSE: Government sponsored enterprises  
Inst'l: institutional  
MMF: Money market funds  
ON RRP: Overnight reverse repo facility  
P&I: principal & interest  
TGA: Treasury General Account  
w/w: week on week  
DL: debt limit  
WTD: week to date  
DN: Discount Note  
PD: Primary Dealer  
UST: US Treasury  
FRN: Floating rate note

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**FHLB debt** increased \$9b on the week ending Sept 13 but then declined roughly \$24b in the second half of last week (Exhibit 9). We also saw a decline in Fed funds volumes over last week, implying that FHLBs may have less excess cash on hand due to net paydowns.

**CP issuance:** Data from the Federal Reserve shows that CP outstanding increased on the week ending Sep 13, with a \$14b increase in financial CP and non-financial CP relatively unchanged (Exhibit 11). We are tracking commercial paper issuance in detail in a monthly report, see the latest here: [CP monitor: stability now but watch supply](#).

**Collateral bottom line:** Coupon settlements on Sept 15 at the same time as corporate tax returns, put upward pressure on SOFR. We expect to continue to see upward pressure in SOFR around large settlements that coincide with cash drains but these moves will likely be temporary and small until ON RRP has been sufficiently drained. For more detail, see [US funding: subtle repo ripple](#).

## Funding: Repo volume spikes on month-end

To translate cash / collateral dynamics into funding markets we examine dealer holdings, repo volumes, & realized funding levels.

**Dealer holdings,** which are lagged, show an increase in Treasury holdings on the week ending Sep 6 (Exhibit 12, Exhibit 13), which includes the month-end settlements on Aug 31. The increase in PD UST holdings was primarily in T-bills, which is also reflected in the Treasury auction data. In the last week, dealer auction takedown as a percent of the competitive bids also remained above average levels seen in prior auctions over the last 3 months (Exhibit 8).

**Repo volumes:** SOFR volumes jumped \$150b on Sept 15, likely reflecting dealers having to finance the UST settling on the same date (Exhibit 15). This coincided with a 1bp increase in SOFR, which appears to be driven by the bilateral component. This aligns with the jump in sponsored repo volumes (Exhibit 16), which shows the jump in sponsored repo was entirely driven by bilateral volumes. Bilateral repo is primarily between dealers and asset managers lending cash to leveraged / hedge funds.

**Funding bottom line:** dealer holdings increased on the week that includes month-end, which likely helped drive the increase in repo volumes and rates on month-end. Data post month-end shows bilateral repo volumes and rates picked up on Sept 15, coinciding with coupon settlements (collateral increase) and the corporate tax date (cash drain).

**Key takeaway:** We are likely going to see upward pressure in repo around large collateral settlements and cash draining dates. Banks are protecting their reserve balances which is reflected in the drain from QT and TGA refill coming entirely out of Fed RRP over the past several weeks. If banks have a higher threshold for a comfortable level of liquidity, this could put upward pressure on funding rates sooner than we previously expected. Short-term, we still expect SOFR to remain around the rate on ON RRP, especially as GSE cash comes back into the system this week, which could also lead to ON RRP take-up increasing temporarily.

Looking further out, we expect Fed QT will continue to drain cash from the system alongside a higher TGA from debt issuance. ON RRP take-up will continue to decline from this & reserves should modestly fall. The drain in cash and increase in collateral will continue to put upward pressure on repo rates & volumes. We expect greater funding pressure in coming months & quarters as collateral slowly overwhelms cash.

**Exhibit 1: Fed balance sheet, selected assets & liabilities (\$bn, Wednesday comparison data)**

Cash in banking system exceeded Fed balance sheet growth due to lower ON RRP

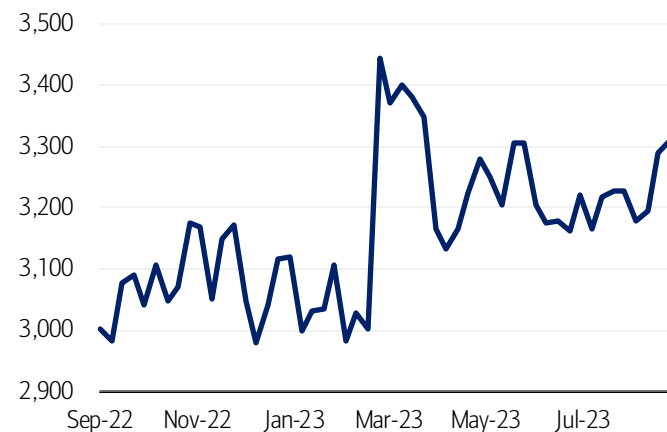
Dates	Assets								Liabilities							Total
	Securities	Repo	Discount Window	BTFF	FDIC bank credit extension	FX Swaps	Other		Currency	Foreign RRP	ON RRP	TGA	Reserves	Other		
12/28/2022	8,145	0		5	0	0	0	451	2,307	334	2,293	410	2,980	277		8,601
9/6/2023	7,490	0		2	108	134	0	418	2,335	294	1,606	482	3,290	144		8,151
9/13/2023	7,484	0		3	108	133	0	421	2,330	289	1,546	537	3,311	136		8,149
WoW Change	-6	0		1	0	0	0	4	-5	-4	-60	56	20	-8		-2
YTD Change	-661	0		-2	108	133	0	-29	22	-45	-747	128	331	-140		-451

Source: BofA Global Research, Federal Reserve

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**Exhibit 2: Fed reserve balances outstanding (\$bn)**

Change in reserve balance from prior week was \$20.05bn



Source: Federal Reserve

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**Exhibit 3: ON RRP take-up (\$bn)**

ON RRP take-up decreased -\$124.bn around mid-month



Source: FRBNY

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**Exhibit 4: Daily Crane MMF AUM (\$bn)**

MMF AUM increased \$55b WoW as of Sep 1, with inflows primarily into gov't institutional funds

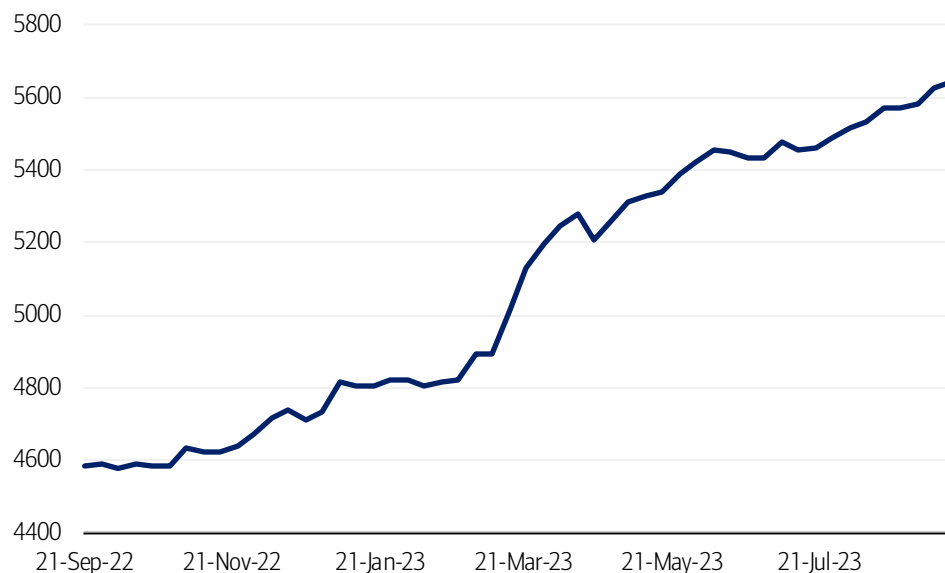
Dates	Total	Prime	Gov't	Tax exempt	Retail	Institutional	Prime Institutional	Gov't Institutional	Prime Retail	Gov't Retail
12/30/2022	5,073	1,077	3,996	0	1,584	3,489	655	2,834	421	1,163
9/8/2023	6,022	1,246	4,650	125	2,049	3,847	629	3,218	618	1,432
9/15/2023	5,998	1,249	4,626	123	2,058	3,817	626	3,191	623	1,435
WoW change	-24	2	-24	-2	8	-30	-3	-27	5	3
YTD Change	925	172	630	123	474	328	-29	357	201	272

Source: Crane Data

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**Exhibit 5: MMF AUM (\$bn)**

MMFs saw \$17.7bn in flows from prior week



Source: ICI, Bloomberg

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**Exhibit 6: US Commercial Bank balance sheets, selected assets & liabilities (\$bn)**

Domestic banks saw cash increase largely due to deposit inflows and higher borrowing

		Total	Assets						Liabilities			
			Cash	UST & Agy	MBS	Repo & FF	Loans & Leases	Other	Deposits	Borrowings	Net due to related foreign offices	Other
All Banks	9/6/2023	22904	3387	1494	2573	595	12168	2687	17334	2272	310	2988
	1w Chg	53	61	-17	-8	8	-3	12	52	-4	12	-7
	1m Chg	90	72	-5	8	-1	42	-26	20	33	18	19
	YTD Chg	-73	290	-159	-200	-6	63	-62	-612	418	39	81
Domestic Banks	9/6/2023	19858	2083	1383	2548	250	11142	2451	16075	1290	-325	2818
	1w Chg	78	89	-15	-8	6	-4	9	72	-11	22	-6
	1m Chg	137	119	-8	8	10	33	-25	61	44	11	20
	YTD Chg	-145	213	-164	-189	-63	96	-37	-556	306	13	91
Large Banks	9/6/2023	13312	1612	1096	1949	214	6747	1694	10796	845	-353	2024
	1w Chg	69	71	-12	-7	6	-2	12	49	-5	24	1
	1m Chg	121	105	-5	15	11	16	-21	40	54	13	15
	YTD Chg	-113	141	-125	-30	-54	-21	-24	-434	252	23	47
Small Banks	9/6/2023	6546	471	287	599	36	4396	757	5279	444	28	795
	1w Chg	9	18	-3	0	0	-3	-3	23	-6	-2	-7
	1m Chg	16	14	-3	-7	-1	17	-4	21	-9	-2	6
	YTD Chg	-32	72	-39	-160	-9	117	-13	-121	54	-9	45
Foreign Banks	9/6/2023	3046	1304	111	25	345	1025	236	1259	982	635	170
	1w Chg	-25	-29	-2	0	2	2	3	-21	7	-10	-1
	1m Chg	-47	-48	4	0	-11	9	-1	-42	-11	8	-1
	YTD Chg	72	77	5	-11	57	-33	-24	-56	112	26	-10

Source: Federal Reserve H8

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**Exhibit 7: Treasury bill and coupon issuance (\$000s)**

Treasury issuance has grown \$394b in Aug as of Aug 31, primarily from bills

	Net total	Net bills	Net coupons	Gross new issue	Gross bill issue	Gross Coupon issue	Gross maturing	Gross bill maturing	Gross coupon maturing
MTD	190,994	127,130	63,864	923,000	824,000	99,000	732,006	696,870	35,136
YTD	2,206,713	1,535,337	671,376	14,202,025	11,848,025	2,354,000	11,995,312	10,312,688	1,682,624
FYTD	2,579,963	1,608,486	971,477	18,134,025	15,114,025	3,020,000	15,554,062	13,505,539	2,048,523

Source: BofA Global Research, Haver Analytics

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**Exhibit 8: Treasury bill auctions**

Treasury bill auction data are showing dealers having to take down more of the recent auctions than the auctions of the same tenor over the last 3 months

	Tenor	Auction Date	Maturity Date	Offering amount (\$mn)	High rate	Bid to Cover ratio	% Direct bidders	% Indirect bidders	% Primary Dealers
Upcoming bill auctions	42-Day	9/19/2023	11/2/2023	60,000					
This week's bill auctions	13-Week	9/18/2023	12/21/2023	69,000	5.32%	2.86	5.59%	52.44%	41.97%
	26-Week	9/18/2023	3/21/2024	62,000	5.30%	3.05	5.06%	60.50%	34.44%
Last week's bill auctions	4-Week	9/14/2023	10/17/2023	80,000	5.29%	2.66	3.54%	45.88%	50.57%
	8-Week	9/14/2023	11/14/2023	70,000	5.30%	2.77	3.48%	54.89%	41.63%
	17-Week	9/13/2023	1/16/2024	50,000	5.33%	2.95	3.92%	48.52%	47.56%
	42-Day	9/12/2023	10/26/2023	60,000	5.29%	3.04	2.44%	60.32%	37.23%
	13-Week	9/11/2023	12/14/2023	69,000	5.32%	2.98	3.70%	59.51%	36.80%
	26-Week	9/11/2023	3/14/2024	62,000	5.30%	3.15	2.44%	70.53%	27.03%
	4-Week	9/7/2023	10/10/2023	80,000	5.28%	2.7	2.35%	57.52%	40.13%

Source: BofA Global Research, US Treasury. Note: green highlight represents higher than the avg over the last 3 months, red highlight is lower than the avg over the last 3 months

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**Exhibit 9: Cumulative growth in FHLB debt since March 1 (\$bn)**

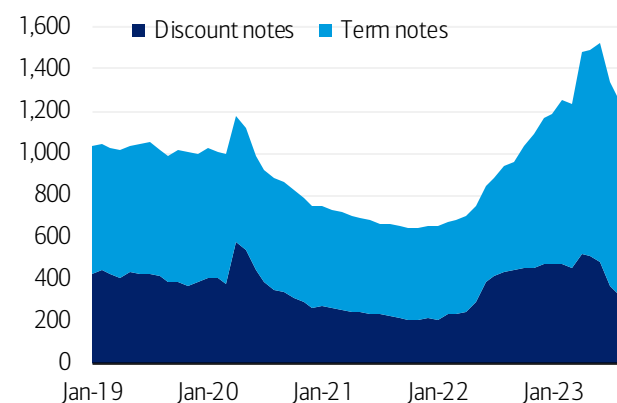
Daily FHLB cumulative debt is roughly \$61.8bn lower vs March 1



Source: Bloomberg, FHLB Office of Finance. Note: we use estimates of daily net issuance  
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**Exhibit 10: FHLB debt issuance (\$bn)**

FHLB debt net new issuance was relatively flat in August

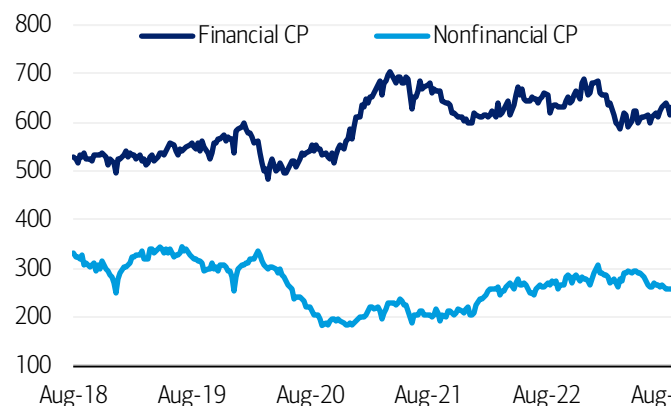


Source: BofA Global Research, FHLB Office of Finance

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**Exhibit 11: Commercial paper (\$bn)**

Financial CP is \$14b higher WoW, nonfin is unchanged as of Sept 13



Source: Bloomberg

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**Exhibit 12: Primary dealer holdings (\$mn)**

PD holdings of UST has increased roughly \$15b over the week ending Sept 6, which includes month-end settlements from Aug 31

	Total	US Treasuries					Agency ex MBS	MBS	Corporates		State & Munis	ABS	Variable Rate Notes
			Bills	Coupons	FRNs	TIPS				Commercial Paper			
9/6/2023	359,940	216,992	69,613	129,304	5,394	12,681	15,613	89,706	17,959	8,312	10,137	8,470	1,063
1w Chg	15,681	15,020	14,006	2,600	-577	-1,009	-736	921	4,583	-76	-2,351	93	-1,849
1m Chg	47,302	40,561	24,937	14,181	3,145	-1,702	2,329	5,386	66	355	-998	466	-508
YTD Chg	101,383	67,183	40,983	31,451	-1,508	-3,743	2,362	17,419	12,524	4,772	-1,073	2,650	318

Source: BofA Global Research, Bloomberg

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**Exhibit 13: US Treasuries as a % of overall PD holdings**

USTs as a % of PD holdings is consistently moving up week to week



Source: BofA Global Research, Bloomberg

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**Exhibit 14: PD UST holdings by security type (\$mn)**

PD holdings of bills are still higher than avg but declining

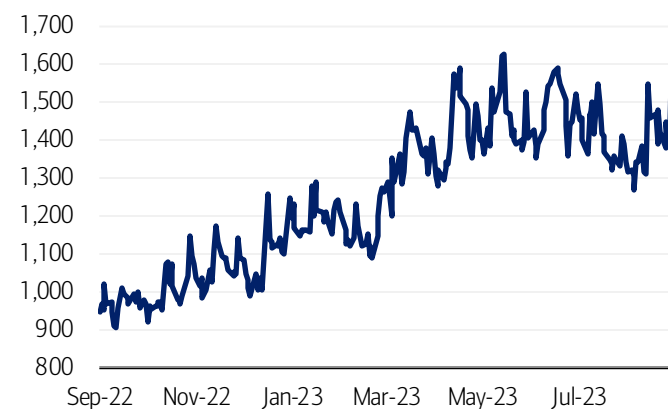
	Bills	Coupons	FRNs	TIPS	Total
8/30/2023	55,607	126,704	5,971	13,690	201,972
9/6/2023	69,613	129,304	5,394	12,681	216,992
1w Change	14,006	2,600	(577)	(1,009)	15,020
Change Z-score	1.15	0.20	(0.19)	(0.69)	0.79
Level Z-score	1.57	0.56	(0.33)	0.60	0.99

BofA Global Research, Bloomberg. Note: Level Z-score is as of Aug 2; change Z-score is based on the 1w change

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**Exhibit 15: SOFR volumes (\$mn)**

SOFR volumes increased \$56bn from prior week

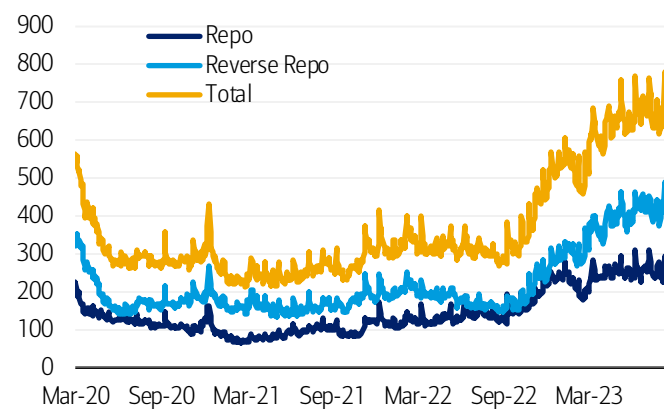


Source: FRBNY

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**Exhibit 16: Sponsored Repo Volumes (\$bn)**

Sponsored repo volumes have risen \$241 YTD



Source: OFR

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# Appendix

## Exhibit 17: Daily FHLB debt issuance estimates (\$mn)

We estimate daily issuance from Bloomberg and FHLB Office of Finance website. Data is subject to revisions

	O/N	Term DN	Auction	Maturing DN	FRNs	Callable	Bullets	Maturing	Called	Total
9/1/2023	16,950	5,880	-	(30,902)	600	53	31	(2,736)	(27)	(10,152)
9/5/2023	18,776	3,306	1,220	(18,680)	850	118	52	(4,366)	-	1,276
9/6/2023	20,155	1,847	-	(26,429)	6,325	25	10	(9,335)	-	(7,402)
9/7/2023	19,779	2,854	4,230	(22,391)	2,500	15	114	(155)	-	6,946
9/8/2023	19,932	1,882	-	(25,153)	2,653	40	50	(9,103)	(15)	(9,714)
9/11/2023	18,093	3,014	-	(22,777)	2,675	122	155	(1,072)	-	210
9/12/2023	16,750	8,294	1,995	(20,439)	1,350	1,065	100	(15)	-	9,100
9/13/2023	27,475	2,459	-	(26,167)	-	222	380	(2,245)	(100)	2,024
9/14/2023	15,830	3,469	4,600	(18,780)	-	65	74	(19,135)	(63)	(13,940)
9/15/2023	17,630	14,275	-	(40,434)	-	30	170	(761)	(1,240)	(10,330)

Source: Bloomberg, FHLB Office of Finance. Note: We use estimates of daily FHLB debt issuance

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