

US Rates Watch

Follow the money: cash & collateral trends
September 12 update**Money map: funding returns to normal post month-end**

Funding markets have largely returned to normal levels seen prior to month-end. SOFR volumes are still slightly elevated relative to levels seen in August, likely reflective of the higher UST holdings on dealer balance sheets. The rate on SOFR however has come back down a basis point to the pre-month-end level, which is also reflected in its 75th and 99th percentiles. ON RRP take-up declined on month-end and is now \$102b lower MTD. We expect the trend in collateral outweighing cash to continue which should lead to gradual upward pressure in funding.

Cash: ON RRP decline offset by reserves

Fed balance sheet data for the week ending Sep 6, show an \$18b decline in securities holdings from QT in addition to a \$1b decline in loans to the FDIC bridge bank (Exhibit 1). On the liability side, the decline in ON RRP and foreign RRP was largely offset by growth in reserves. The TGA also declined and is now \$19b lower on the week. Over the same week, **MMF AUM** grew \$42b according to ICI, primarily into gov't retail funds (Exhibit 5). These inflows alongside the \$91b decline in Fed ON RRP implies those inflows went into other MMF holdings, such as non-Fed repo or Treasury / agency debt. **Bank balance sheet data**, which is lagged an additional week compared to Fed balance sheet data, shows banking system assets grew \$79b over the week ending Aug 30 (Exhibit 6). Domestic banks saw cash holdings increase \$33b driven by deposit inflows and higher borrowing. At the same time bank securities holdings and loan & leases picked up. **Cash bottom line:** higher reserve balances offset by lower ON RRP and TGA. MMF inflows stayed out of ON RRP & bank invested inflows into securities holdings and loans & leases.

Collateral: UST outstanding higher, FHLB & CP lower

UST issuance grew \$394b in August and \$70b MTD in Sept, largely from bill issuance (Exhibit 7). Looking ahead, we have \$29b in net new bill supply today, \$28b in bill supply on Thursday and \$64b in coupons on Friday this week (Exhibit 8).

12 September 2023

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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 declined \$14b on the week ending Sept 6 primarily due to low month-end issuance, which is part of typical FHLB debt dynamics, as well as large maturities (Exhibit 9, Exhibit 10).

CP issuance: Data from the Federal Reserve shows that CP outstanding declined on the week ending Sep 6, with a \$15b decline in financial CP partially offset by a \$3b increase in non-financial CP (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: lower FHLB debt and lower CP outstanding offset by higher UST settlements. Large UST settlements have begun to place upward pressure on repo, we discuss this in more detail in [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 Aug 30 (Exhibit 12, Exhibit 13), despite lower UST bill auction takedown relative to the prior 3m average (Exhibit 8). Treasury holdings appear to be building up on dealer balance sheets. We suspect that dealer UST holdings increased on month end, which helped drive up repo volumes and put upward pressure on SOFR.

Repo volumes: SOFR volumes have come down \$129b since month-end after spiking \$238b on month-end (Exhibit 15). Sponsored repo volumes also showed a large jump on month-end but are now \$72b lower MTD (Exhibit 16).

Funding bottom line: dealer holdings & repo volumes increased leading into month-end. Data post month-end is unavailable for dealer holdings but we have seen SOFR and sponsored repo volumes coming down off their month-end high.

Key takeaway: funding markets have largely returned to levels seen prior to month-end. On month-end repo volumes spiked considerably while SOFR increased 1bp. SOFR volumes have declined but are still higher than the levels seen in August outside of month-end. At the same time, the SOFR rate as well as the SOFR 75th & 99th percentiles have all come down 1bp to levels seen prior to month-end. Fed balance sheet data shows a continuation of declines in ON RRP and increases in reserve balances. The higher UST issuance is starting to show in dealer holdings, but dealer take-down at auction remains below the prior 3m average.

Going forward, we expect Fed QT will continue to drain cash from the system alongside a higher TGA from debt issuance. As a result of this, ON RRP will decline & reserves should modestly fall. This should continue to put upward pressure on dealer holdings & repo 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)

ON RRP drain was offset by an increase in reserves

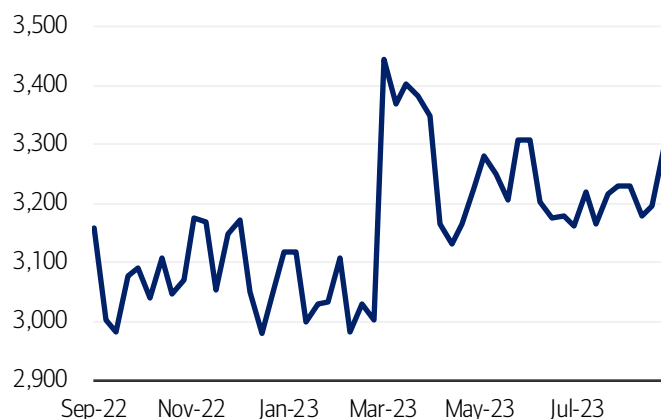
Assets								Liabilities						
Dates	Securities	Repo	Discount Window	BTFF	FDIC bank credit extension	FX Swaps	Other	Currency	Foreign RRP	ON RRP	TGA	Reserves	Other	Total
12/28/2022	8,145	0	5	0	0	0	451	2,307	334	2,293	410	2,980	277	8,601
8/30/2023	7,508	0	3	108	134	0	418	2,332	302	1,697	501	3,197	144	8,171
9/6/2023	7,490	0	2	108	134	0	418	2,335	294	1,606	482	3,290	144	8,151
WoW Change	-18	0	-1	0	-1	0	-1	4	-8	-91	-19	94	0	-20
YTD Change	-655	0	-3	108	134	0	-33	28	-41	-687	72	311	-132	-449

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 \$93.93bn



Source: Federal Reserve

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

ON RRP take-up declined \$91b on the week ending Sep 6



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
9/1/2023	6,010	1,247	4,639	123	2,036	3,850	635	3,215	612	1,424
9/8/2023	6,022	1,246	4,650	125	2,049	3,847	629	3,218	618	1,432
WoW change	12	-1	10	2	13	-3	-6	3	5	8
YTD Change	949	170	653	125	466	358	-27	384	196	269

Source: Crane Data

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Exhibit 5: MMF AUM (\$bn)

According to ICI, MMFs saw \$41.82bn in flows on the week ending Sep 6



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	8/30/2023	22851	3326	1511	2580	587	12170	2676	17282	2275	297	2996



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			
Banks	1w Chg	79	63	8	3	-3	40	-32	39	13	21	7
	1m Chg	37	35	12	11	-20	24	-25	-44	55	-4	30
	YTD Chg	-127	229	-142	-193	-14	66	-72	-664	421	27	89
Domestic Banks	8/30/2023	19779	1994	1397	2555	244	11147	2443	16003	1300	-348	2824
	1w Chg	47	33	3	2	0	36	-27	41	20	-16	2
	1m Chg	43	25	8	12	5	22	-30	-43	65	1	19
	YTD Chg	-223	123	-150	-182	-70	100	-45	-628	316	-9	97
Large Banks	8/30/2023	13243	1541	1108	1956	208	6748	1682	10747	851	-377	2023
	1w Chg	33	26	4	4	1	24	-27	28	22	-18	1
	1m Chg	42	36	8	18	2	7	-28	-43	70	4	11
	YTD Chg	-182	69	-113	-22	-60	-20	-36	-484	257	-1	46
Small Banks	8/30/2023	6536	453	290	599	36	4399	761	5256	450	30	801
	1w Chg	14	6	0	-2	-1	12	0	13	-2	2	1
	1m Chg	1	-10	0	-6	4	15	-2	0	-4	-3	8
	YTD Chg	-41	54	-37	-160	-9	120	-10	-145	60	-8	51
Foreign Banks	8/30/2023	3071	1332	114	25	343	1024	233	1279	975	645	172
	1w Chg	32	30	5	1	-3	4	-5	-2	-7	37	5
	1m Chg	-6	9	4	0	-26	2	5	-1	-10	-5	11
	YTD Chg	97	106	8	-11	56	-34	-27	-35	105	36	-9

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	70,079	70,079	-	433,000	433,000	-	362,921	362,921	-
YTD	2,085,798	1,478,286	607,512	13,712,025	11,457,025	2,255,000	11,626,227	9,978,739	1,647,488
FYTD	2,459,048	1,551,435	907,613	17,644,025	14,723,025	2,921,000	15,184,977	13,171,590	2,013,387

Source: BofA Global Research, Haver Analytics

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Exhibit 8: Treasury bill auctions

Treasury bill auction data are showing lower than avg take-down from primary dealers vs 3mo avg at last week's auctions

	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	9/12/2023	10/26/2023	60,000					
This week's bill auctions	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%
Last week's bill auctions	4-Week	9/7/2023	10/10/2023	80,000	5.28%	2.7	2.35%	57.52%	40.13%
	8-Week	9/7/2023	11/7/2023	70,000	5.29%	2.79	2.91%	51.48%	45.61%
	17-Week	9/6/2023	1/9/2024	50,000	5.34%	2.98	3.58%	57.64%	38.79%
	42-Day	9/5/2023	10/19/2023	60,000	5.29%	3.04	1.80%	57.08%	41.13%
	13-Week	9/5/2023	12/7/2023	69,000	5.32%	2.94	4.56%	50.32%	45.13%
	26-Week	9/5/2023	3/7/2024	62,000	5.30%	3.02	2.57%	63.13%	34.31%
	52-Week	9/5/2023	9/5/2024	42,000	5.12%	3.14	1.96%	67.32%	30.72%

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)

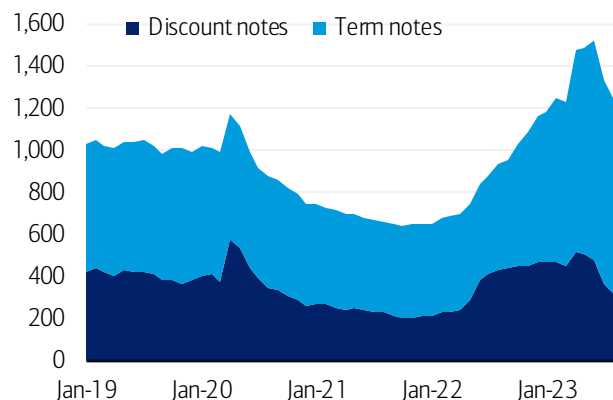
Daily FHLB cumulative debt is roughly \$62.402bn lower since March 1



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

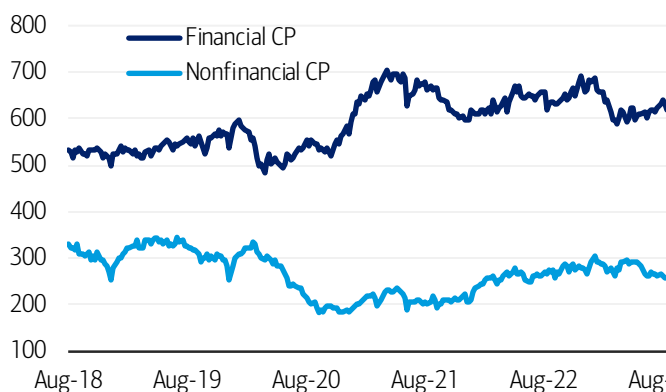


Source: BofA Global Research, FHLB Office of Finance

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Exhibit 11: Commercial paper (\$bn)

Financial CP is \$15b lower WoW, nonfin is \$3b higher WoW as of Sep 6



Source: Bloomberg

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Exhibit 12: Primary dealer holdings (\$mn)

PD holdings of UST has increased roughly \$13b over the month ending Aug 30

	Total	US Treasuries					Agency ex MBS	MBS	Corporates	Commercial Paper	State & Munis	ABS	Variable Rate Notes
			Bills	Coupons	FRNs	TIPS							
8/30/2023	344,259	201,972	55,607	126,704	5,971	13,690	16,349	88,785	13,376	8,388	12,488	8,377	2,912
1w Chg	6,378	7,962	-3,491	14,288	-2,318	-517	-270	1,409	199	1,136	-1,827	-330	-765
1m Chg	19,146	12,588	846	9,606	2,303	-167	3,210	5,902	-5,232	275	-91	1,623	1,146
YTD Chg	85,702	52,163	26,977	28,851	-931	-2,734	3,098	16,498	7,941	4,848	1,278	2,557	2,167

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 have declined from a recent peak of 67% to 50%

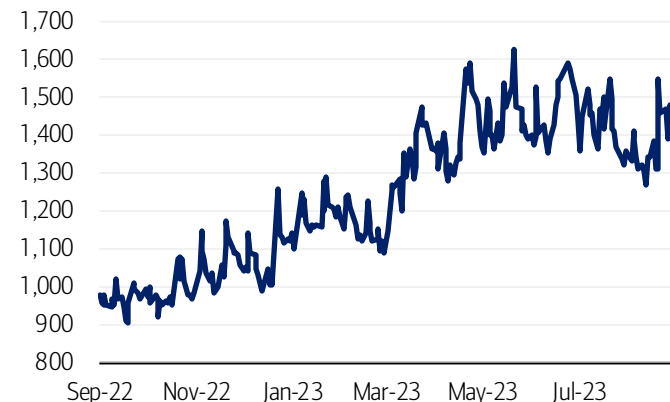


Source: BofA Global Research, Bloomberg

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Exhibit 15: SOFR volumes (\$mn)

SOFR volumes declined \$129bn from prior week



Source: FRBNY

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

PD holdings of bills are still higher than avg but declining

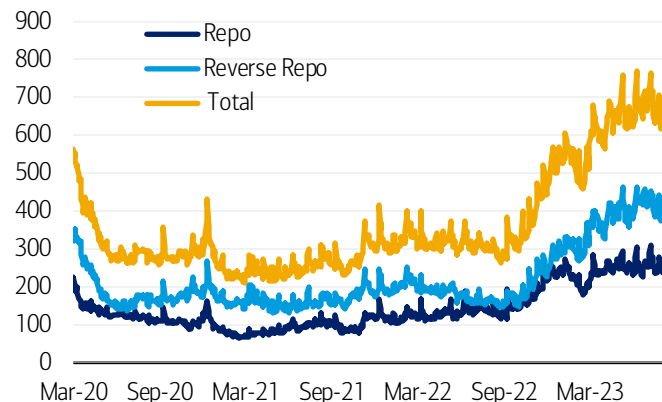
	Bills	Coupons	FRNs	TIPS	Total
8/23/2023	59,098	112,416	8,289	14,207	194,010
8/30/2023	55,607	126,704	5,971	13,690	201,972
1w Change	(3,491)	14,288	(2,318)	(517)	7,962
Change Z-score	(0.30)	1.23	(0.75)	(0.36)	0.41
Level Z-score	0.99	0.51	(0.18)	0.83	0.78

BofA Global Research, Bloomberg. Note: Level Z-score is as of Aug 30; change Z-score is based on the 1w change

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Exhibit 16: Sponsored Repo Volumes (\$bn)

Sponsored repo volumes have risen \$183b 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
8/1/2023	26,022	5,900	2,685	(23,791)	-	355	415	(3,887)	-	7,698
8/2/2023	23,038	2,049	-	(34,357)	3,895	77	133	(1,215)	-	(6,381)
8/3/2023	23,669	6,613	4,245	(25,599)	2,660	20	87	(2,288)	(15)	9,392
8/4/2023	22,997	5,471	-	(32,987)	-	15	807	(489)	-	(4,185)
8/7/2023	20,879	5,190	-	(29,036)	305	407	155	(2,080)	-	(4,179)
8/8/2023	23,317	3,152	3,030	(24,463)	4,540	120	125	(1,680)	-	8,140
8/9/2023	22,280	4,550	-	(30,592)	2,650	139	43	-	-	(930)
8/10/2023	21,250	1,937	2,950	(25,076)	250	335	61	(1,743)	-	(36)
8/11/2023	19,031	717	-	(32,099)	1,850	50	90	(275)	-	(10,636)
8/14/2023	20,450	2,141	-	(25,090)	932	525	570	(55)	-	(528)
8/15/2023	20,694	2,124	5,785	(24,776)	-	1,520	130	(2,901)	(15)	2,560
8/16/2023	18,906	1,521	-	(28,720)	-	360	151	(403)	-	(8,184)
8/17/2023	19,496	3,940	5,080	(19,807)	5,350	1,646	110	(3,290)	-	12,524
8/18/2023	17,039	2,771	-	(26,570)	5,450	70	68	(4,804)	-	(5,976)
8/21/2023	17,619	1,620	-	(19,461)	5,240	105	217	(2,565)	(20)	2,755
8/22/2023	18,072	4,555	6,290	(18,438)	2,750	130	115	(3,500)	-	9,974
8/23/2023	17,950	1,439	-	(28,044)	3,600	601	20	(3,115)	-	(7,549)
8/24/2023	19,101	2,868	7,805	(22,919)	4,370	125	245	(4,714)	(20)	6,862
8/25/2023	18,318	2,311	-	(30,338)	1,420	50	550	(3,088)	(15)	(10,793)
8/28/2023	15,838	2,798	-	(20,438)	5,020	2,888	539	(5,315)	(95)	1,235
8/29/2023	17,660	4,927	2,825	(21,753)	1,220	1,000	125	(2,627)	-	3,377
8/30/2023	16,318	3,492	-	(25,601)	6,440	320	140	(360)	-	748
8/31/2023	16,123	3,117	2,700	(19,418)	-	-	-	-	-	2,521
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)

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

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