

US Rates Watch

Follow the money: cash & collateral trends
Dec 20 update**Money map: cash drain + collateral increase = repo higher**

Reserve balances continue to move higher, offset by lower ON RRP & TGA. Consistent with higher reserves over the prior week, bank cash holdings increased. Higher repo rates after month-end above IORB (5.4%) appeared to draw banks to lend in repo, especially foreign-related banks. Last Friday's corporate tax date (cash drain) and UST settlements (collateral increase) led to institutional MMF outflows, lower ON RRP take-up, and higher SOFR print. We expect this trend of higher repo and lower ON RRP to take place on dates with large UST settlements or key tax dates.

Cash: reserve balances see another significant jump

Fed balance sheet data (Exhibit 1) for the week ending Dec 13, showed a \$3b decline in Fed T-bill holdings nearly offset by a \$2b increase in the BTFP. Bank borrowing from the facility has continued to slowly trend higher but it is not a clear signal of broader bank liquidity stress with recent growth potentially tied to a reduction of FDIC emergency loans. On the liability side, the Fed's RRP facilities declined \$32b (Exhibit 3) and TGA dropped \$37b. Bank reserve balances grew another \$71b (Exhibit 2) reflecting slightly higher BTFP & RRP + TGA drops amidst bank desire to hold more liquidity.

Cash: corporate tax date drew outflows from inst'l MMFs

Over the week ending Dec 15, MMF AUM declined \$44b according to Crane Data (Exhibit 4). The outflows were primarily out of gov't institutional MMFs, likely a result of the Dec corporate tax date. Corporate tax date outflows are usually temporary and we expect to see MMF inflows continue as long as the curve remains inverted.

Cash: Banks see deposit inflows, higher repo lending

Bank balance sheet data, which is lagged an additional week compared to Fed balance sheet data, shows banking system assets grew \$6b on the week ending Dec 6, with domestic bank assets up \$54b but foreign bank assets down \$48b (Exhibit 7). On the asset side, bank cash holdings were up \$69b for domestic banks but down \$30b for foreign banks. Large banks and foreign banks both increased their lending in repo & FF, likely taking advantage of higher rates on the week. This lines up with a week where SOFR's 75th percentile was at or above IORB. On the liability side, domestic banks saw \$67b in deposit inflows and reduced borrowing by \$9b. At the same time, foreign banks saw \$2b in deposit outflows and reduced borrowing from their foreign parent by \$20b.

20 December 2023

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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
FF: Fed funds

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Timestamp: 20 December 2023 08:02AM EST

Cash bottom line: Reserve balances continue to move higher in-line with lower ON RRP and TGA. Decline in ON RRP is a continuation of recent trends but was likely exacerbated by Treasury settlements and the corporate tax date. The week prior, large domestic banks saw deposit inflows and an increase in cash holdings from foreign offices lead to an increase in cash holdings, which was reflected in a large increase in reserve balances from the prior week.

Collateral: UST & CP issuance moved higher

UST issuance increased \$69b MTD as of Dec 15 from net coupon issuance (Exhibit 8). We forecast \$68b in net new UST supply to the public in December with \$173b in net issuance from coupons and \$105b in net paydowns of bills.

FHLB debt was roughly flat on the week ending Dec 15 (Exhibit 9) according to our estimates. As we recently noted in our [FHLB supply outlook](#), FHLB supply is likely to be limited going forward as banks diversify their borrowing away from FHLB advances.

CP issuance: Data from the Federal Reserve shows that on the week ending Dec 13 CP outstanding increased \$6.2b, a \$7.6b increase for financial CP but \$1.4b decline for non-fin CP (Exhibit 11).

Collateral bottom line: UST issuance of bills is slowing but coupon settlements last Friday put upward pressure on repo and led to a drop in ON RRP take-up. FHLB debt was roughly flat on the week. CP issuance increased but remains well below levels pre-bank stress events as banks have diversified their sources of funding.

Funding: SOFR higher with mid-month settlement

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

Dealer holdings, which are 1-week lagged, show a \$3.6b increase in Treasury holdings on the week ending Dec 6 (Exhibit 12), from a \$4.5b increase in coupon holdings offset by lower TIPS and FRNs. Dealers need to finance their Treasury holdings in repo, the large mid-month placed upward pressure on SOFR and reduced ON RRP take-up.

Repo volumes: SOFR volumes increased \$88b on the week ending Dec 18th (Exhibit 15), peaking on the Friday mid-month settlement date. Sponsored volumes, also peaking on mid-month, are \$79b higher on the week with \$62b coming from bilateral repo transactions (Exhibit 16). The rate on SOFR increased 1bp on the mid-month settlement as dealers likely had to pay up to finance USTs. The reduction of cash in the system due to the corporate tax-date also likely contributed to upward pressure in repo.

Funding bottom line: repo volumes and rate increased on Friday, likely due to large Treasury settlements. SOFR volumes have since declined but the rate remains slightly elevated at 5.32%.

Key takeaway: Last week, cash continued to shift from ON RRP and TGA, into reserve balances, which is also reflected in higher bank cash holdings. Bank lending in repo increased on the week following month-end, implying banks may be more willing to deploy cash when repo rates are above IORB (5.4%). MMFs saw outflows around the corporate tax date but we expect this to be temporary. SOFR was driven higher last week, consistent with large UST settlements coinciding with cash drain from corporate tax date.

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

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	452	2,307	334	2,293	410	2,980	277	8,601
12/6/2023	7,262	0	2	122		0	402	2,332	338	846	668	3,497	107	7,788
12/13/2023	7,259	0	2	124		0	405	2,331	329	823	631	3,568	108	7,790
WoW Change	-3	0	0	2		0	3	-1	-9	-23	-37	71	1	3
YTD Change	-886	0	-2	124		0	-47	24	-5	-1,470	221	588	-169	-811

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 \$71.02bn as of Dec 13



Source: Federal Reserve

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

ON RRP take-up decreased -\$113.8bn from prior week as of Dec 18



Source: FRBNY

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

MMF AUM dedined \$44b WoW as of Dec 15, with outflows primarily out of gov't institutional funds

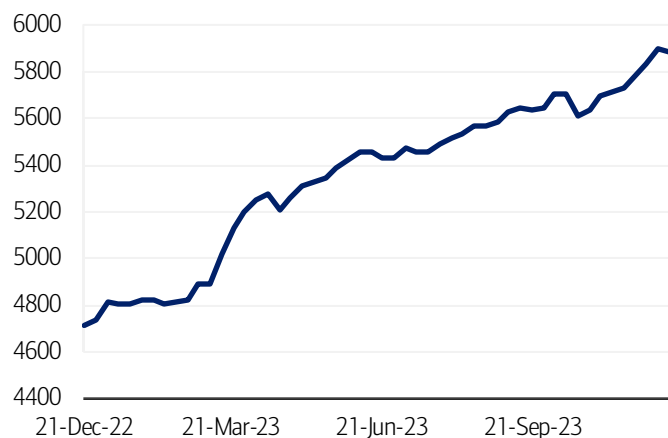
Dates	Total	Prime	Gov't	Tax exempt	Retail	Institutional	Prime Institutional	Gov't Institutional	Prime Retail	Gov't Retail
12/30/2022	5,073	1,077	3,996	0	1,584	3,489	655	2,834	421	1,163
12/8/2023	6,299	1,309	4,860	130	2,200	3,969	626	3,344	684	1,516
12/15/2023	6,255	1,325	4,802	128	2,204	3,923	640	3,283	685	1,519
WoW change	-44	16	-58	-2	4	-46	15	-61	1	3
YTD Change	1,182	248	806	128	620	434	-15	449	264	356

Source: Crane Data

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Exhibit 5: MMF AUM (\$bn)

MMFs saw -\$11.55bn in flows from prior week as of Dec 13

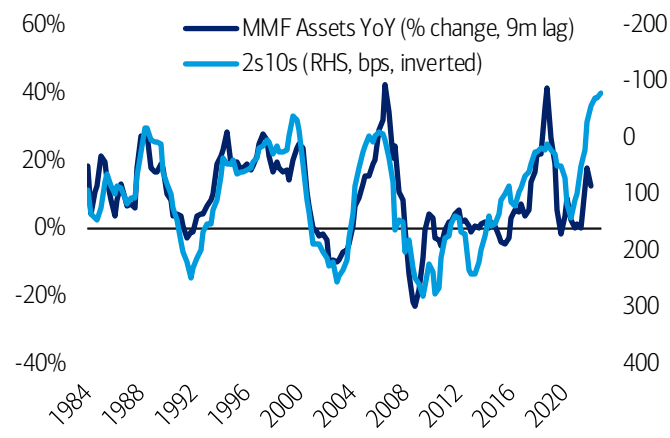


Source: ICI, Bloomberg

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Exhibit 6: MMF assets and 2s10s curve

MMF assets are typically negatively correlated to the yield curve with a lag



Source: BofA Global Research, Federal Reserve, Haver

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Exhibit 7: US Commercial Bank balance sheets, selected assets & liabilities (\$bn)

Domestic bank cash holdings increased, primarily through deposit inflows. MBS and repo & FF assets increased WoW

		Total	Assets						Liabilities					
			Cash	UST & Agy	MBS	Repo & FF	Loans & Leases	Other	Deposits	Large	Small	Borrowings	Net due to related foreign offices	Other
All Banks	12/6/2023	23201	3536	1521	2533	633	12301	2676	17454	2265	15189	2321	397	3029
	1w Chg	6	39	-2	23	9	-13	-51	65	10	56	-7	-18	-34
	1m Chg	245	126	-23	51	45	63	-16	149	26	123	2	43	17356
	YTD Chg	225	440	-132	-241	33	197	-71	-491	613	-1104	468	127	18065
Domestic Banks	12/6/2023	20082	2228	1409	2501	260	11231	2453	16173	1457	14716	1342	-296	2862
	1w Chg	54	69	-3	19	4	-10	-26	67	5	62	-9	2	-6
	1m Chg	208	149	-28	46	10	42	-11	131	26	105	1	26	16091
	YTD Chg	79	358	-138	-237	-54	184	-34	-458	642	-1099	358	43	16766
Large Banks	12/6/2023	13513	1774	1115	1927	223	6782	1692	10855	802	10054	925	-322	2055
	1w Chg	45	63	-6	11	5	-4	-24	52	2	50	-7	5	-4
	1m Chg	175	137	-30	38	10	32	-12	114	16	97	-1	28	10776
	YTD Chg	88	303	-106	-51	-45	14	-26	-375	415	-790	331	54	11308
Small Banks	12/6/2023	6569	453	294	574	37	4449	761	5318	655	4662	417	27	807
	1w Chg	9	6	3	8	-1	-6	-2	15	3	12	-2	-3	-1
	1m Chg	33	13	2	8	-1	11	0	18	10	8	2	-2	5316
	YTD Chg	-9	55	-32	-186	-8	170	-8	-83	227	-310	27	-11	5458
Foreign Banks	12/6/2023	3119	1308	112	32	374	1070	223	1281	808	473	979	692	167
	1w Chg	-48	-30	2	4	4	-4	-25	-2	5	-7	2	-20	-28
	1m Chg	38	-24	5	5	35	21	-5	17	0	17	1	17	1265
	YTD Chg	147	82	6	-4	86	13	-37	-33	-28	-5	109	84	1299

Source: Federal Reserve H8

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Exhibit 8: Treasury bill and coupon issuance (\$000s)

Treasury issuance has increased \$69b MTD in December, due to \$64b in net coupon issuance

	Net total	Net bills	Net coupons	Gross new issue	Gross bill issue	Gross coupon issue	Gross maturing	Gross bill maturing	Gross coupon maturing
MTD	68,802	5,017	63,785	966,000	858,000	108,000	897,198	852,983	44,215
YTD	3,041,740	2,038,813	1,002,927	20,891,025	17,623,025	3,268,000	17,849,285	15,584,212	2,265,073
FYTD	715,959	423,408	292,551	5,868,000	4,993,000	875,000	5,152,041	4,569,592	582,449

Source: BofA Global Research, Haver Analytics

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

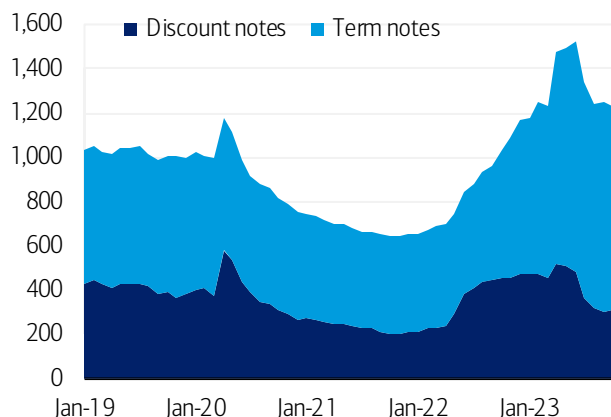
Daily FHLB cumulative debt is roughly \$67b lower since March 1



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 term debt declined \$29b but DN rose \$18b in November

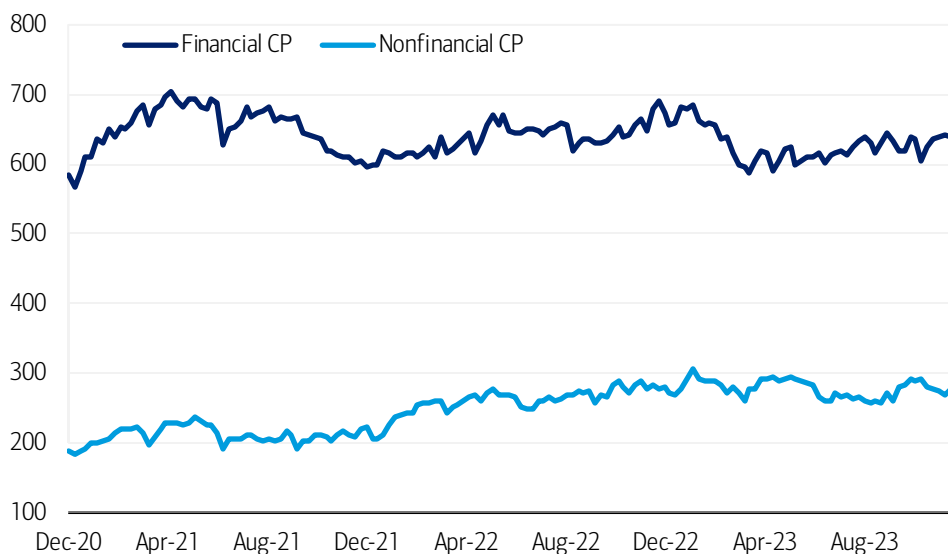


Source: BofA Global Research, FHLB Office of Finance

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Exhibit 11: Commercial paper (\$bn)

Financial CP is \$8b higher WoW, nonfin is \$1b lower WoW as of Dec 13



Source: Bloomberg

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Exhibit 12: Primary dealer holdings (\$mn)

PD holdings of UST is \$3.6tn higher WoW, but largely offset by decline in MBS holdings. As of Dec 6

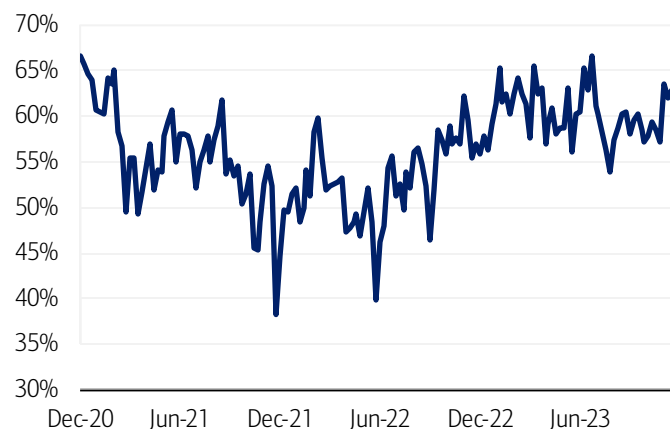
	Total	US Treasuries					Agency ex MBS	MBS	Corporates	Commercial Paper	State & Munis	ABS	Variable Rate Notes
		Bills	Coupons	FRNs	TIPS								
12/6/2023	392,936	247,181	76,480	146,744	6,472	17,485	13,067	86,591	21,499	9,131	13,102	8,586	2,910
Chg WoW	730	3,623	504	4,481	-854	-508	-1,509	-3,452	2,996	1,319	-992	285	-221
Chg MoM	38,137	39,258	28,924	7,080	2,262	992	-1,100	-229	-928	-2,345	1,019	-936	1,053
Chg since DL	8,225	3,993	-10,773	17,985	1,077	-4,296	-3,460	5,746	3,357	-439	-1,775	1,467	-1,103

Source: BofA Global Research, Bloomberg

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Exhibit 13: PD UST holdings as a % of total holdings

Latest level 63% as of Dec 6

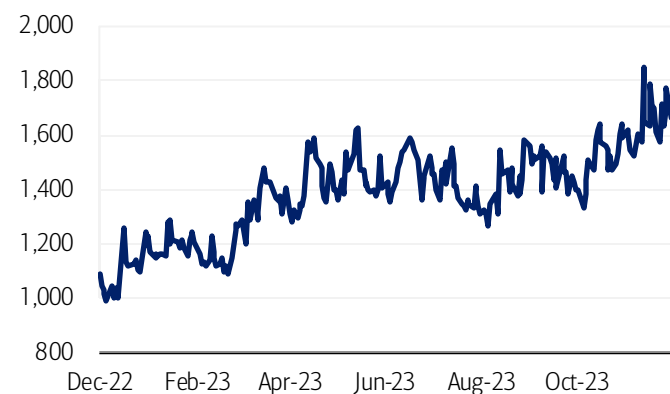


Source: BofA Global Research, Bloomberg

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Exhibit 15: SOFR volumes (\$bn)

SOFR volumes increased \$88bn from prior week as of Dec 18



Source: FRBNY

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

PD holdings of bills are higher than avg

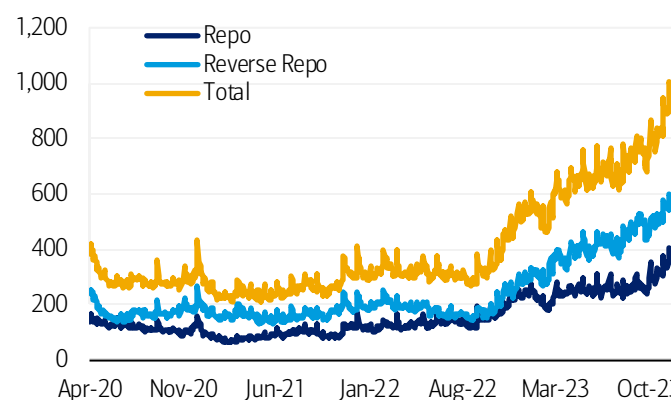
	Bills	Coupons	FRNs	TIPS	Total
11/8/2023	47,556	139,664	4,210	16,493	207,923
12/6/2023	76,480	146,744	6,472	17,485	247,181
MoM Change	28,924	7,080	2,262	992	39,258
Level Z-score	1.38	0.50	(0.30)	1.32	1.13

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Exhibit 16: Sponsored Repo Volumes (\$bn)

Sponsored repo volumes have risen \$453 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
11/1/2023	17,154	2,628	-	(20,411)	2,305	50	80	(5,916)	-	(4,110)
11/2/2023	18,550	1,273	5,995	(21,039)	4,060	15	-	(1,256)	-	7,599
11/3/2023	17,400	2,923	-	(25,877)	2,058	60	492	(6,661)	-	(9,604)
11/6/2023	18,077	2,108	-	(22,131)	545	156	80	(1,880)	-	(3,045)
11/7/2023	18,516	2,082	3,035	(20,126)	135	90	252	(1,200)	-	2,784
11/8/2023	14,930	2,162	-	(24,276)	800	1,063	150	(1,255)	-	(6,426)
11/9/2023	17,023	3,842	3,150	(15,886)	-	-	5	(3,452)	-	4,682
11/10/2023	17,288	2,290	-	(21,158)	2,000	1,002	-	(5,273)	-	(3,851)
11/13/2023	16,141	4,361	-	(21,843)	1,555	150	95	(2,500)	(25)	(2,066)
11/14/2023	17,763	3,150	2,890	(17,941)	1,000	610	139	(6,025)	-	1,586
11/15/2023	16,297	3,233	-	(27,163)	1,000	197	1,560	(3,078)	(15)	(7,969)
11/16/2023	17,275	4,277	4,330	(17,983)	-	2,104	264	(1,235)	(55)	8,978
11/17/2023	14,741	3,588	-	(24,977)	7,000	1,035	1,400	(10,862)	(570)	(8,645)
11/20/2023	16,814	8,011	-	(20,282)	1,055	190	1,270	-	(45)	7,013
11/21/2023	16,231	4,621	5,805	(18,366)	100	75	1,500	(4,090)	(25)	5,851
11/22/2023	14,848	2,280	2,555	(24,864)	1,000	3,680	43	(1,999)	(15)	(2,472)
11/24/2023	17,099	1,868	-	(20,479)	500	70	850	(6,465)	(77)	(6,633)
11/27/2023	18,043	5,384	-	(21,471)	-	382	40	(4,291)	(53)	(1,966)
11/28/2023	18,227	5,331	7,575	(18,535)	1,200	520	210	(4,116)	(551)	9,861
11/29/2023	16,353	3,814	-	(22,783)	300	1,817	400	(1,871)	-	(1,970)
11/30/2023	9,370	5,057	7,510	(18,276)	350	550	131	(2,750)	(35)	1,907
12/1/2023	18,944	1,433	-	(18,581)	1,000	25	9	(4,330)	-	(1,500)
12/4/2023	18,659	1,203	-	(21,129)	-	55	100	(5,500)	-	(6,612)
12/5/2023	19,986	1,753	4,345	(21,121)	305	85	50	(2,284)	(223)	2,896
12/6/2023	15,677	989	-	(23,941)	-	2,830	70	(1,223)	-	(5,598)
12/7/2023	16,366	1,490	2,455	(17,114)	700	35	102	(548)	(55)	3,431
12/8/2023	13,541	3,173	-	(22,424)	3,000	5,170	340	(9,723)	(3,010)	(9,933)
12/11/2023	13,448	1,710	-	(16,958)	1,500	5,830	430	(4,640)	(15)	1,304
12/12/2023	14,605	2,955	2,680	(16,479)	-	4,518	171	(152)	(355)	7,943
12/13/2023	14,977	2,253	-	(19,730)	1,000	1,018	69	(2,175)	(1,755)	(4,343)
12/14/2023	18,215	3,485	3,055	(17,743)	1,625	1,348	20	(5,217)	(630)	4,159
12/15/2023	14,387	2,395	-	(27,064)	520	3,220	90	(2,772)	(220)	(9,444)

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

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