

US Rates Watch

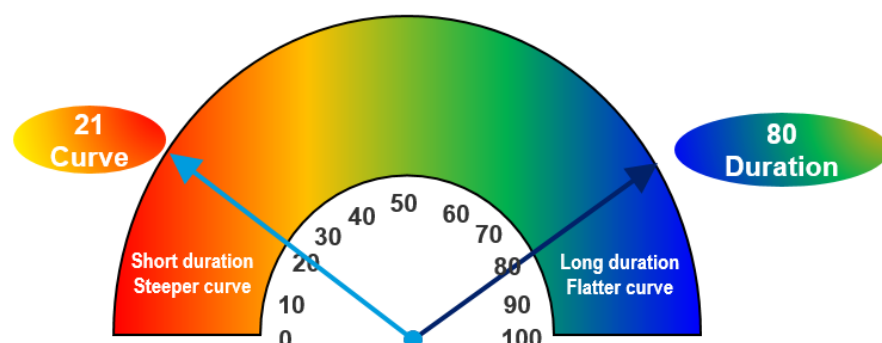
Real money longs intact: AMs extend duration, UST fund inflows recover

No clear evidence

Last week's rate selloff occurred alongside a recovery in UST fund inflows, an add to asset manager longs, and no clear shift in duration views from benchmark fixed income funds. While CTAs appear to be maintaining steepeners and shorts, our models suggest that they haven't been adding materially to these positions alongside the recent price action. The continued move higher in rates leaves a vulnerable long position likely held by the real money community that has not been abandoned based on our overall flows assessment.

Exhibit 1: Curve-o-meter

CTAs and hedge funds are in steepeners, speculators excluding leveraged funds are long



Source: BofA Global Research. Note: dials show 5y percentiles for the average non-commercial ex leverage funds & proxy of futures positioning for duration and the average of CTA betas and our proxy for futures positioning for the curve.

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Bias is higher and steeper

Our futures positioning proxy (for construction details see: [Gauging positioning in Treasury Futures](#)) reflects a bias for rates to sell off, most notably in FV and US (Exhibit 12). Across the curve, the composition of open interest shows a significantly higher share of shorts that are ITM vs longs (Exhibit 11). The stronger bias for longer vs shorter tenors to selloff also points to greater long covering potential at the backend which could exacerbate bear steepening. On the week through Thursday, open interest increased—with shorts added particularly in the belly of the curve.

Trading ideas and investment strategies discussed herein may give rise to significant risk and are not suitable for all investors. Investors should have experience in relevant markets and the financial resources to absorb any losses arising from applying these ideas or strategies.

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UST = Treasury security

CTA = Commodity trading advisor

OTM = out of the money

ITM = in the money

ED = Eurodollars

TIC = Treasury International Capital

QT = quantitative tightening

MoF = ministry of finance

COB = close of business

SFR = SOFR futures contract

TU = Treasury 2Y futures contract

FV = Treasury 5Y contract

TY = Treasury 10Y contract

UXY = Treasury ultra 10Y contract

US = Treasury 20Y contract

WN = Treasury 30Y contract

TGA = Treasury General Account

TR FI funds = Total return fixed income funds

PPTS = percentage points

JGB = Japanese government bonds

FoF = flow of funds

Asset manager net buying re-emerges

Asset manager (AM) longs increased after moderating the prior three weeks. Longs increased to the greatest extent in FV and TY. Taking the other side of AM positions, leverage hedge funds increased shorts—with positions building in TY, US, and UXY. Overall, asset manager longs and leveraged hedge funds shorts remain historically stretched (Exhibit 7). Speculative positioning excluding leveraged funds moderated slightly on the week but still sits above the 75th percentile over the last 5 yrs (Exhibit 8).

Recently released hedge fund form PF data for Q1 confirms our assumptions about the growth in futures shorts occurring alongside cash long positions, indicative of a basis trade. While the add to hedge fund longs was not as significant as the increase reflected in the household balance sheet (Exhibit 18), it more than exceeds the Q1 growth in futures shorts (Exhibit 19). From Q1 21 through Q1 23 cash UST holdings increased \$385bn and leveraged HF futures shorts rose \$275bn, suggesting HF shorts were more than offset by a long cash position on the other side.

CTA steepener position holds as short bottoms

Our cross-over momentum signal and top-down model (see: [CTA impact on the rates market](#)) continue to suggest that CTAs are directionally short (Exhibit 13) and in steepeners (Exhibit 14). Our cross over momentum signal though continues to reflect a bottoming, suggesting that CTAs may not have much more of a short position to add going forward. Consistent with this our top-down model shows no material fluctuation in sensitivity to 10y rates since the start of September despite the continued move higher in rates over that time (Exhibit 15).

Official investors move into USTs from RRP

Custodial holdings increased by \$4bn the week ending September 27th (Exhibit 28). Foreign official buying coincided with similar sized declines in the foreign RRP, retracing some of the \$30bn in inflows observed the prior week (Exhibit 32). MoF data shows that Japanese investors sold about \$4bn in foreign bonds the week ending September 22nd after over \$30bn in purchases the prior two weeks (Exhibit 27).

The steepening of the curve earlier last week continued to help improve the attractiveness of USTs to foreign investors. Hedged pickup of 10y USTs for EUR, GBP, and CAD investors is currently hovering around neutral (Exhibit 23 to Exhibit 25). A continued steepening of the UST curve could further push USTs to more favorable levels on an FX hedged basis from the deeply negative levels observed in prior months.

UST fund flows & positioning unlikely the selloff culprit

Fixed income fund flows overall were negative the week ending Sept 27th for the first time this year. Outflows entirely stemmed from credit, muni, and inflation funds while UST funds saw inflows overall (Exhibit 33). YTD sovereign fund inflows remain on track with the historically large inflows observed in 2022 (Exhibit 34). Consistent with trends over the last year, short-term and long-term funds saw the concentration of UST fund inflows (Exhibit 35). The recovery in the pace of UST fund inflows from the prior week (see: [US Rates Watch](#)) despite the rate selloff suggests that fund flows were unlikely a contributor to last week's price action.

Over 75% of the 28 funds that we track underperformed their benchmark the week ending September 28th (Exhibit 38). The two funds that had previously outperformed in selloffs (PIMCO income & Blackrock income) underperformed/ were generally in line with benchmark on the week. Underperforming funds alongside the selloff in recent weeks continued to underperform this past week. This suggests that benchmark funds which may have been overweight likely maintain these positions and funds previously short may have shifted views. Overall, fund performance doesn't demonstrate an abandonment of duration views.

Exhibit 2: On deck next week

Calendar of upcoming events

	US Data			Fed Speaker / Event	Treasury Auction			Treasury Settlements	
	Series	BofA	BB Consensus		Security	Amount (\$bn)	Prior Δ	Security Coupons	Amount
M, Oct 2	S&P Global US manufacturing PMI	-	48.9	Fed's Powell and Harker (voter) participate in roundtable discussion Fed's Williams (voter) moderates discussion on climate risk Fed's Mester speaks on economic outlook	13-week bills	71	2		35
	Construction Spending (mom)	0.50%	0.60%		26-week bills	64	2		
	ISM Manufacturing	48.5	47.8						
Tu, Oct 3	JOLTS Job Openings	-	8900k	Fed's Bostic speaks on economic outlook, inflation	52-week bills	44	2	Bills	28
	Total Vehicle Sales	15.3M	15.4M		42-day bills	65	5		
W, Oct 4	MBA Mortgage Applications	-	-	Fed's Bowman (voter) speaks at community banking research conference Fed's Goolsbee (voter) speaks at Chicago Payments Symposium	17-week bills				
	ADP Employment	170k	150k						
	S&P Global US services PMI	-	50.2						
	Factory Orders	-	0.20%						
	ISM Services	54	53.5						
Th, Oct 5	Initial Jobless Claims	208k	-	Fed's Mester speaks at Chicago Payments Symposium Fed Daly speaks at Economic Club of New York	4-week bills			Bills	37
	Trade Balance	-\$65.7bn	-\$65.2bn		8-week bills				
F, Oct 6	Change in Nonfarm Payrolls	185k	170k						
	Private Payrolls	170k	150k						
	Unemployment Rate	3.60%	3.70%						
	Average Hourly Earnings mom	0.30%	0.30%						
	Average Weekly Hours	34.4	34.4						
	Consumer Credit	-	\$11.3bn						

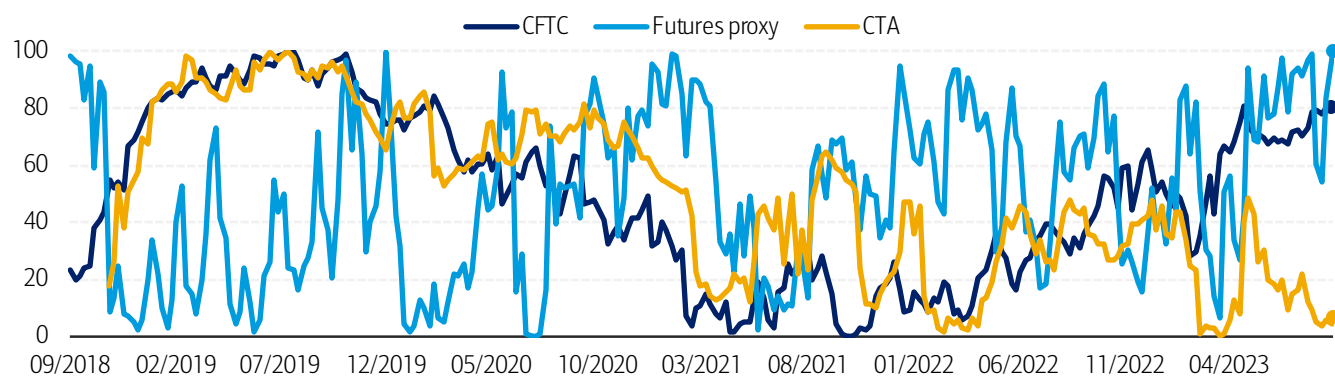
Source: BofA Global Research, Bloomberg, US Treasury

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Positioning indicators

Exhibit 3: 5y percentile of 10 equivalent duration positioning (percentile: higher = longer)

Futures positioning proxy shows less clear bias for rates, CFTC data adjusted for LFs is long, top down CTA model is lagged and shows historic shorts that may have been previously covered

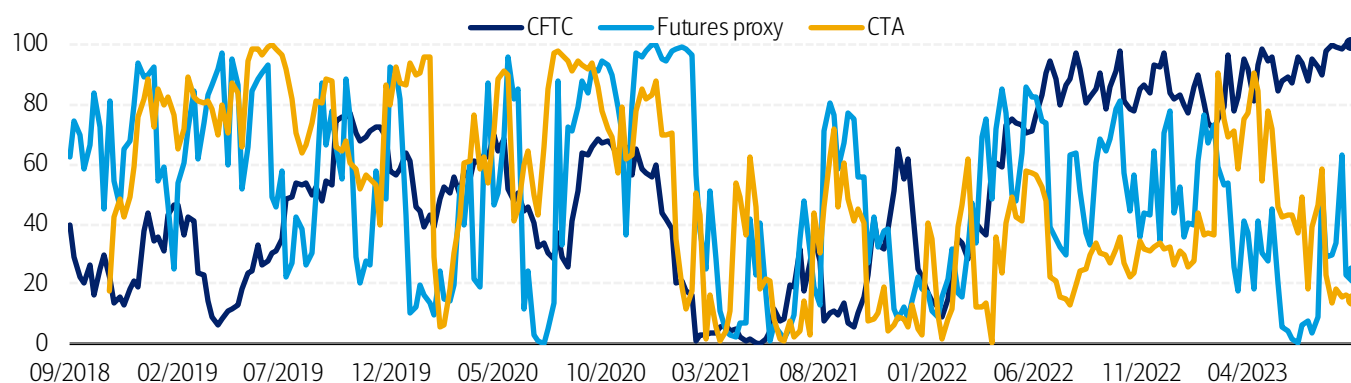


Source: BofA Global Research

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Exhibit 4: 5y percentile of curve positioning (percentile: higher = longer back-end relative to front end)

CTAs are in steeper but futures positioning proxy shows bias for back-end to sell off more, CFTC AMs have longs further out curve

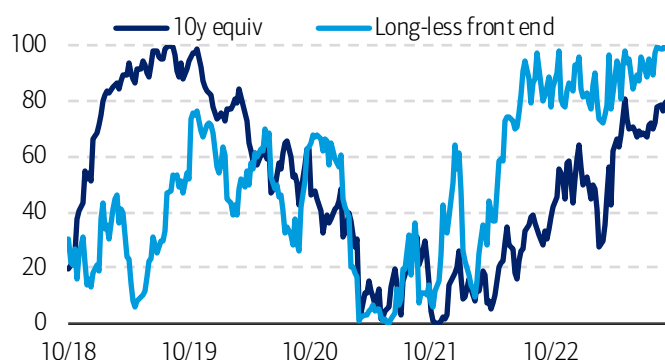


Source: BofA Global Research

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Exhibit 5: 5y percentile of non-commercial ex LF positioning

Positioning is historically long and largely concentrated at the back-end

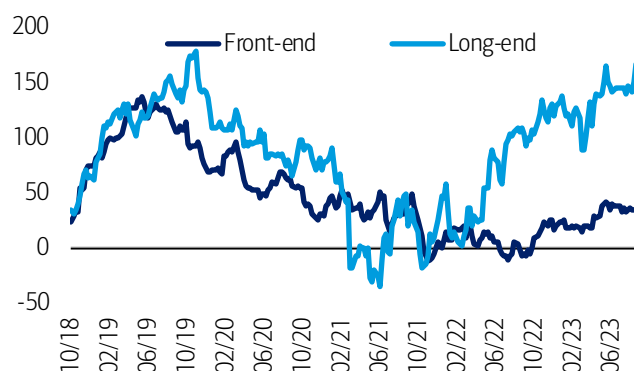


Source: BofA Global Research, Bloomberg

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Exhibit 6: Non-commercial ex leveraged fund positioning (\$bn, 10y equivalent)

Longs are more concentrated in the back-end

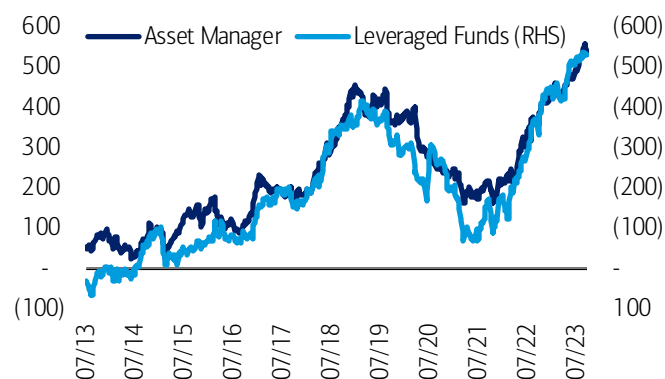


Source: BofA Global Research, Bloomberg

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Exhibit 7: Asset manager and leveraged fund positioning (10y equivalent, \$bn)

Asset manager longs correspond with leveraged fund shorts

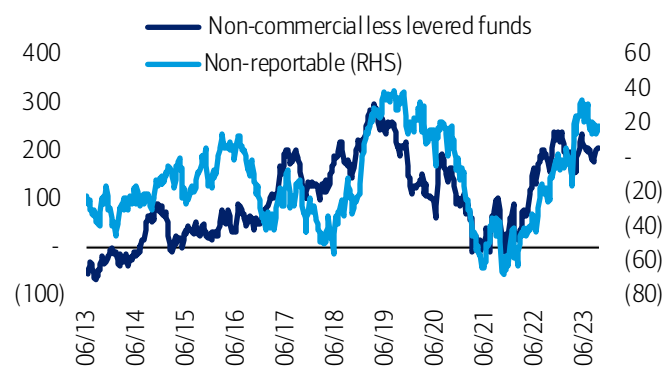


Source: BofA Global Research, Bloomberg

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Exhibit 8: Non-commercial ex LFs and non-reportable positioning (10y equivalent, \$bn)

Directional positions trend together



Source: BofA Global Research, Bloomberg

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Exhibit 9: 10y rate change for given percentile of non-commercial ex-Leveraged fund positioning (higher percentile = longer)

Positioning is a momentum signal: longer positioning is usually followed by stronger 10y performance

	0	1w	4w	8w	12w	16w
0 to 10	10	2	1	1	2	3
10 to 20	20	1	3	3	2	3
20 to 30	30	3	1	1	1	3
30 to 40	40	3	5	4	3	3
40 to 50	50	1	1	0	1	1
50 to 60	60	-1	-1	0	0	0
60 to 70	70	0	0	0	0	0
70 to 80	80	-4	-2	-3	-3	-5
80 to 90	90	1	-1	-1	-2	-4
90 to 100	100	-2	-2	-2	-2	-2

Source: BofA Global Research, Bloomberg, average performance calculated over last 5y
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Exhibit 10: 10y rate change for given percentile of leveraged fund positioning (higher percentile = longer)

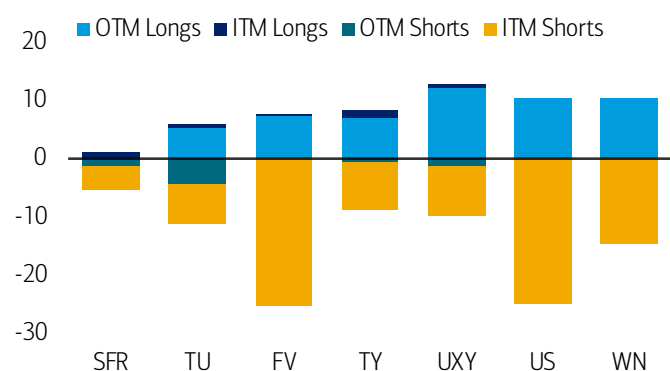
Positioning is contrarian signal: shorter positioning is usually followed by stronger 10y performance

	0	1w	4w	8w	12w	16w
0 to 10	10	4	4	3	3	4
10 to 20	20	-3	-3	-2	-1	0
20 to 30	30	-1	-3	-3	-3	-5
30 to 40	40	-6	-3	-3	-3	-4
40 to 50	50	1	0	-1	-1	-2
50 to 60	60	4	2	2	1	1
60 to 70	70	2	2	1	2	3
70 to 80	80	3	4	4	4	5
80 to 90	90	2	4	4	4	5
90 to 100	100	-1	-2	-1	0	0

Source: BofA Global Research, Bloomberg, average performance calculated over last 5y
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Exhibit 11: Proxies for futures positioning

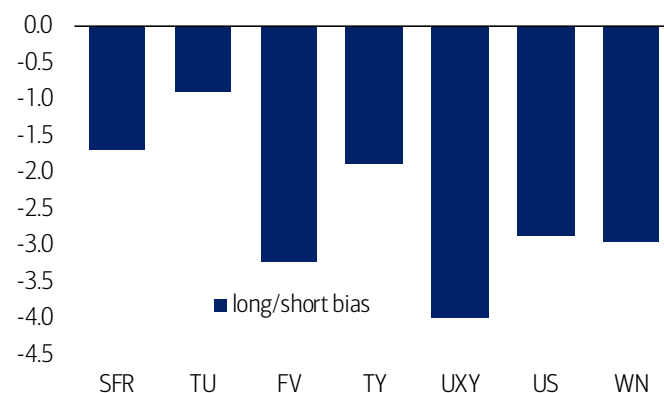
On the week, shorts are largely ITM but more mixed in TU, longs are OTM except in SFR



Source: BofA Global Research, Bloomberg
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Exhibit 12: Analysis of proxies for futures positioning

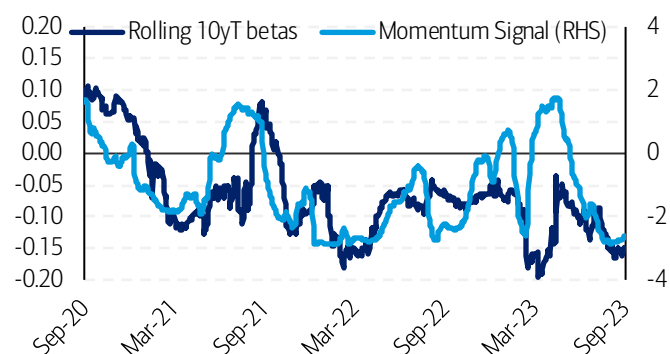
Bias for rates to sell off across the curve, mainly in belly and back-end



Source: BofA Global Research, Bloomberg, Note: reflects average positioning of futures stack over last 5 days
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Exhibit 13: CTA positioning in 10yT

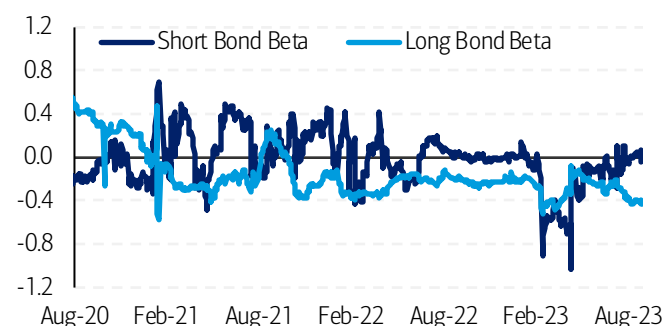
On the week, drop in momentum signal moderated, CTAs positioning little changed



Source: BofA Global Research
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Exhibit 14: CTA positioning in longer duration and shorter duration bonds

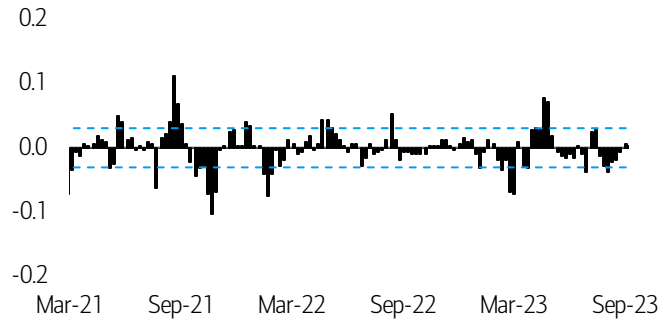
Top-down model suggests CTAs are positioned for a steeper curve and are short the back-end



Source: BofA Global Research
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Exhibit 15: Changes in CTA 10yT beta

10y beta little changed on the week

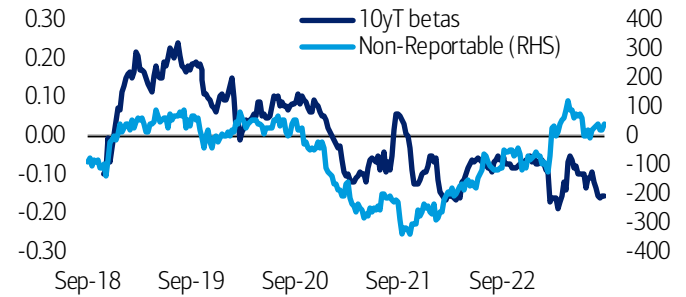


Source: BofA Global Research

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Exhibit 16: CTA 10y TSY beta and non-reportable positions

Strong divergence between non-reportable position and top-down model, which tends to be lagged



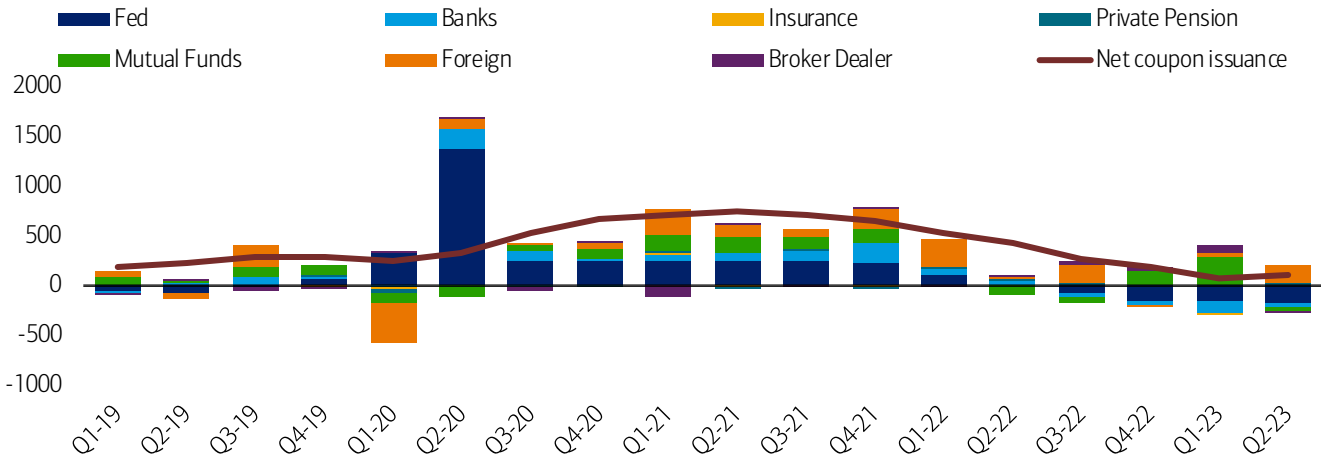
Source: BofA Global Research, Bloomberg

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Flow of funds

Exhibit 17: Changes in large holders of UST securities (\$bn)

In Q2 foreign investors were largest buyers while Fed and banks reduced UST holdings the most

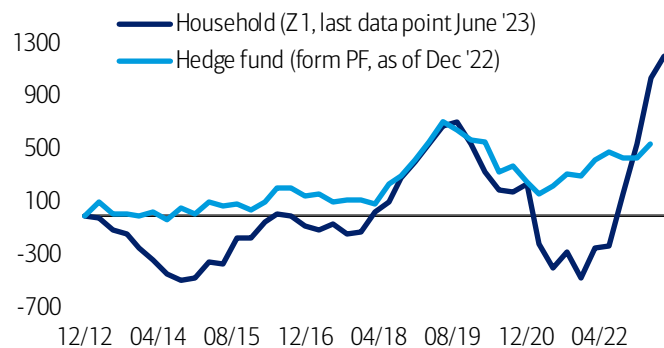


Source: BofA Global Research, Bloomberg. Note: change in levels adjusted for change in rates over the quarter

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Exhibit 18: Change in UST holdings (\$bn)

Hedge funds UST holdings increased last year based on Flow of Funds data and form PF

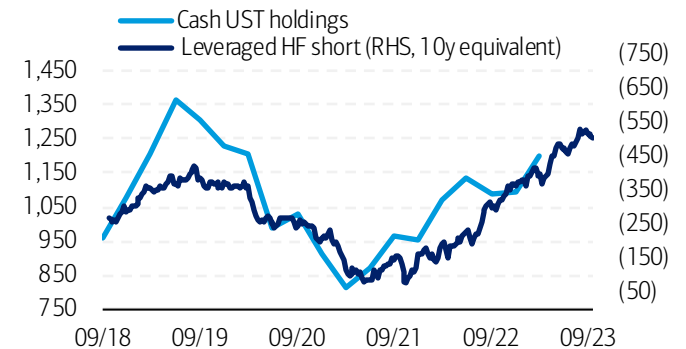


Source: BofA Global Research, Federal Reserve

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Exhibit 19: Hedge fund cash UST holdings vs leveraged fund shorts (\$bn)

Form PF confirms that cash long has grown alongside futures short



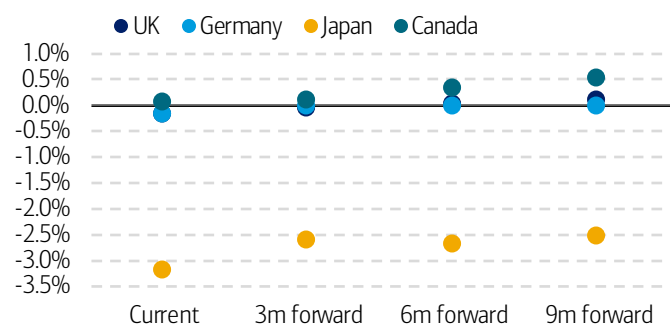
Source: BofA Global Research, Federal Reserve, Bloomberg

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FX hedged pickup and foreign flows

Exhibit 20: FX hedged pickup of TSYs vs local alternatives implied by forwards

Market pricing does not reflect attractive environment for FX hedged carry trades in TSYs currently but forwards suggest improvement



Source: BofA Global Research, Bloomberg. Note: pickup vs 10y local alternative except Japan which is relative to 20y JGB using 3m forward FX hedge

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Exhibit 21: 10Y UST pickup to 20Y JGB, with 3m fx hedge (bps)

10y TSY now offer very negative hedged pickup vs 20yJGBs



Source: BofA Global Research, Bloomberg

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Exhibit 22: 10Y UST pickup to 10Y JGB, with 3m fx hedge (bps)

10y TSY now offer very negative hedged pickup vs 10yJGBs



Source: BofA Global Research, Bloomberg

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Exhibit 23: 10Y UST pickup to 10Y Bund, with 3m fx hedge (bps)

10y TSY offers near zero pickup vs 10y Bund

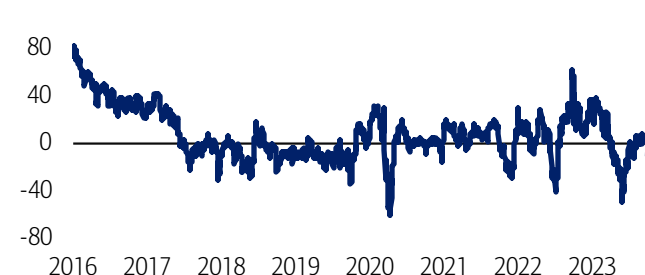


Source: BofA Global Research, Bloomberg

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Exhibit 24: 10Y UST pickup to 10Y CAD govie, with 3m fx hedge (bps)

10y TSY erased previous modest hedged pickup to 10y CAD gov bond

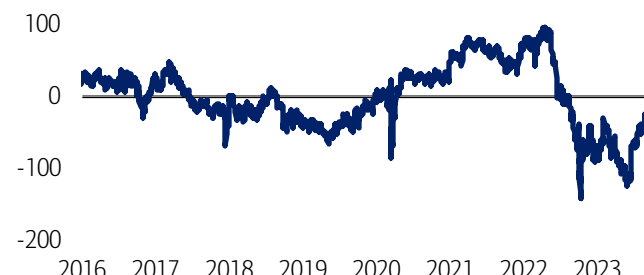


Source: BofA Global Research, Bloomberg

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Exhibit 25: 10Y UST pickup to 10Y Gilt, with 3m fx hedge (bps)

10y TSY offers flat pickup vs gilts



Source: BofA Global Research, Bloomberg

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Exhibit 26: 3m rolling JPY currency hedge

From the perspective of Japanese investor, pickup is negative across all regions

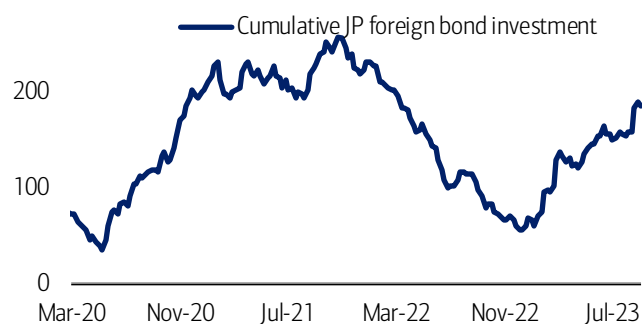
	9/28/2023		As of 1 wk ago		As of 1 mo ago		As of 1 yr ago	
	Pickup to 10y JGB	Pickup to 20Y JGB	Pickup to 10y JGB	Pickup to 20Y JGB	Pickup to 10y JGB	Pickup to 20Y JGB	Pickup to 10y JGB	Pickup to 20Y JGB
10y UST	-2.52%	-3.23%	-2.13%	-2.85%	-2.27%	-2.99%	-0.42%	-1.24%
10y GER	-2.28%	-2.99%	-2.31%	-3.02%	-2.12%	-2.84%	0.58%	-0.23%
10y FRA	-1.72%	-2.44%	-1.77%	-2.48%	-1.60%	-2.32%	1.18%	0.37%
10y BEL	-1.63%	-2.34%	-1.67%	-2.39%	-1.50%	-2.22%	1.23%	0.42%
10y ITA	-0.36%	-1.08%	-0.47%	-1.19%	-0.45%	-1.17%	2.98%	2.17%
10y SPA	-1.20%	-1.91%	-1.24%	-1.96%	-1.11%	-1.82%	1.76%	0.95%
10y UK	-2.32%	-3.04%	-2.21%	-2.92%	-1.97%	-2.69%	-0.05%	-0.86%
10y CAN	-2.44%	-3.16%	-2.25%	-2.96%	-2.35%	-3.07%	-1.16%	-1.97%

Source: BofA Global Research, Bloomberg

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Exhibit 27: Japan investment in foreign bonds, cumulative weekly (\$bn)

Long & medium term bonds (\$bn) holdings dropped on the week

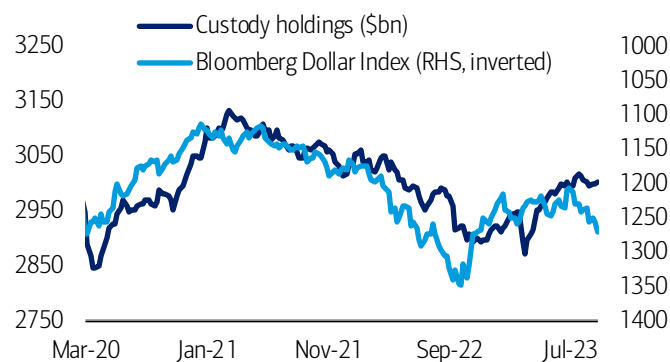


Source: BofA Global Research, Bloomberg

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Exhibit 28: Weekly UST custody holdings, foreign official (\$bn)

Custody holdings picked up on the week

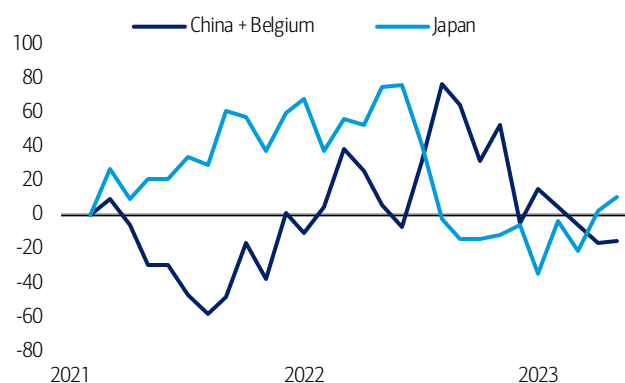


Source: BofA Global Research, NY Fed

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Exhibit 29: Cumulative UST flows from foreign investors (\$bn)

China + Belgium and Japan have turned to net sellers since end of '22

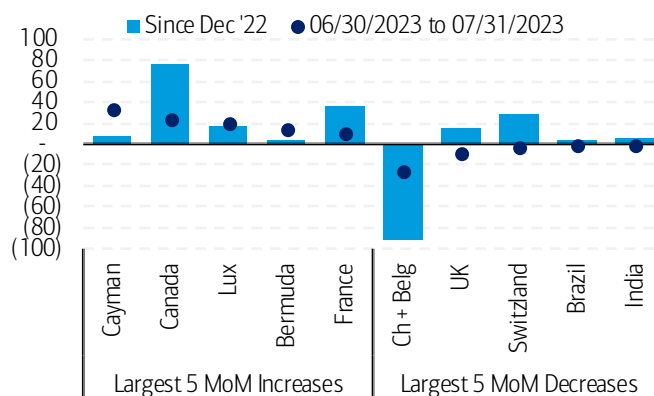


Source: BofA Global Research, Bloomberg, TIC, note: references the valuation-adjusted flow

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Exhibit 30: Largest MoM changes in foreign TSY holdings (\$bn)

Cayman was largest buyer, China + Belgium largest seller in July

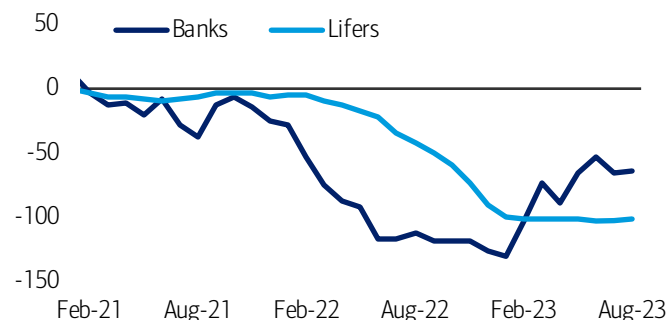


Source: BofA Global Research, TIC, Note: adjusted for level of rates

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Exhibit 31: Cumulative change in Japanese investor foreign bond holdings (\$bn)

While banks and lifers have reduced foreign bond holdings in the last year, banks have recently turned modest buyers while lifer demand has been flat

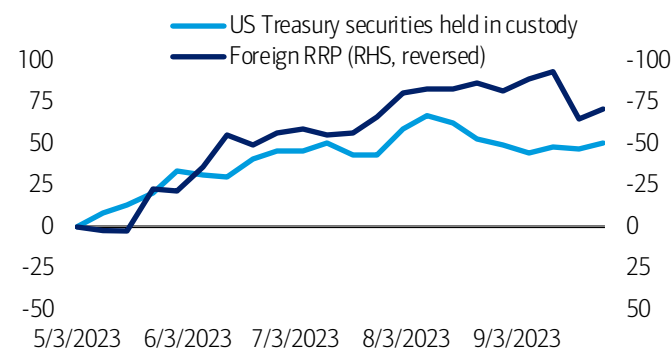


Source: BofA Global Research, Bloomberg, Note: JPY flow converted to USD using end of month FX level, last data point is June '23

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Exhibit 32: Cumulative change in custody holdings and foreign RRP since May 2023 (\$bn)

Increase in custody holdings has been offset by decline in foreign RRP



Source: BofA Global Research, Federal Reserve, Bloomberg

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Fund flows and returns

Exhibit 33: US fixed income fund flows (\$million)

US FI funds saw outflows on the week, primarily led by corp IG & HY funds, inflows seen in mixed allocation, govt short & long funds

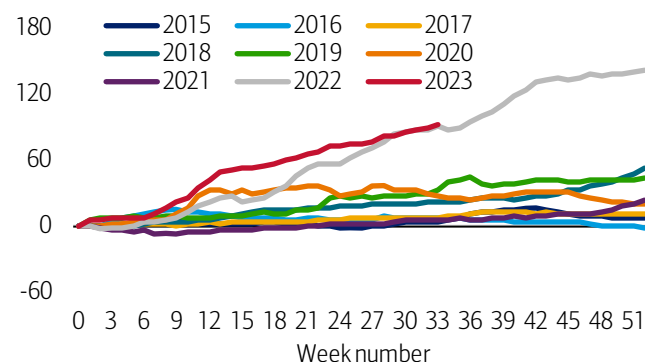
	9/27/2023	Rolling 4w average	Rolling 8w average	Rolling 12w average	Rolling 52w average
Gov: short	2,209	1,393	1,614	1,282	1,104
Gov: intermediate	445	248	340	247	313
Gov: long	1,640	708	691	1,162	1,148
Corp: IG	(4,173)	(1,083)	(686)	(213)	292
Corp:HY	(3,041)	(502)	(363)	(98)	(47)
Corp: all quality	(1)	52	38	58	24
MBS	136	170	148	259	207
Inflation	(566)	(190)	(383)	(265)	(490)
Muni	(1,296)	(623)	(184)	(13)	(226)
Mixed allocation	2,827	1,831	1,618	1,621	1,148
All USFI	(2,158)	2,187	2,940	4,013	2,977

Source: BofA Global Research, EPFR

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Exhibit 34: Sovereign fund inflows by year (\$bn)

Flows YTD are on track with highs of last year

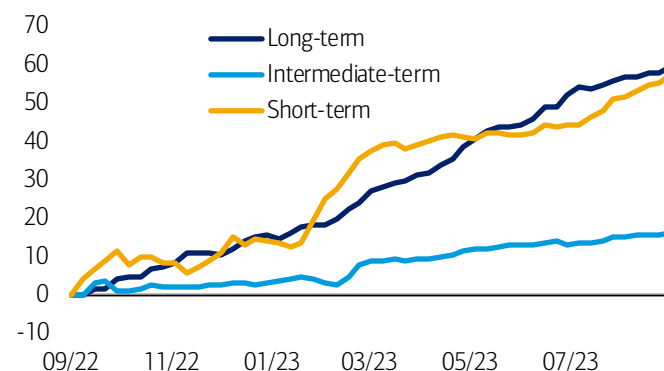


Source: BofA Global Research, EPFR

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Exhibit 35: Sovereign inflows by tenor (\$bn)

Inflows have been concentrated in long-term and short-term funds

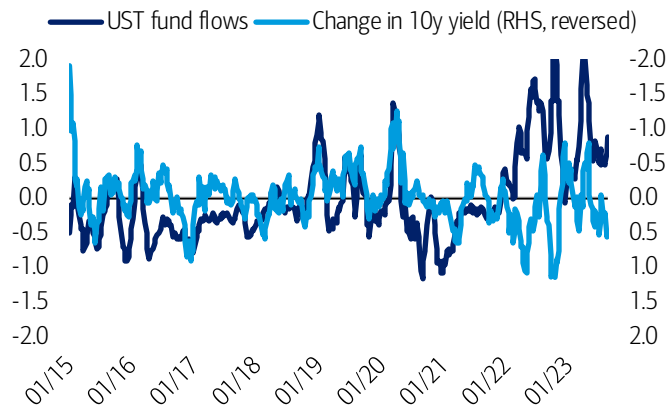


Source: BofA Global Research, EPFR

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Exhibit 36: Fund flows and rate change (Z-score)

Fund flows recently have been historically strong alongside rates rally

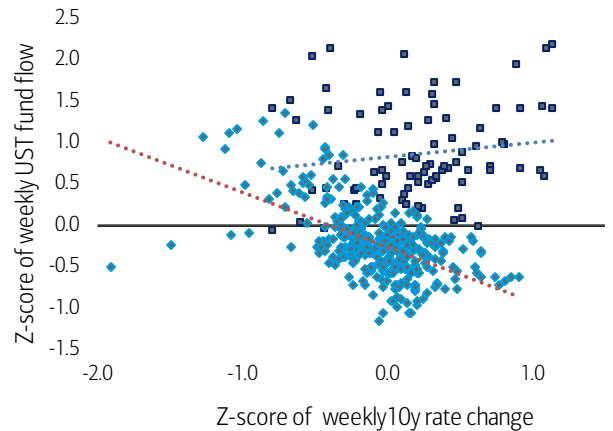


Source: BofA Global Research, EPFR

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Exhibit 37: Fund flows and rate change

Since start of '22, fund flows are less negatively correlated to change in rates



Source: BofA Global Research, EPFR, Bloomberg, Note: dark = post '22, light = '15-'22

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Exhibit 38: Total return FI fund performance vs benchmark

Over the last week, AUM weighted fund performance was below benchmark

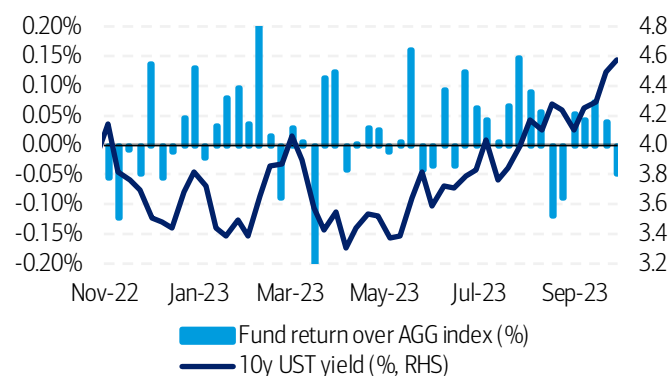
	AUM (\$Bn)	9/28/2023	Vs. Agg	Last 4w	Vs. Agg
Vanguard Total Bond Market II Index Fund	255	-0.59%	-0.04%	-2.43%	0.06%
Vanguard Total Bond Market Index Fund	202	-0.59%	-0.04%	-2.51%	-0.02%
PIMCO Income fund	128	-0.56%	-0.01%	-1.45%	1.04%
The Bond Fund of America	74	-0.47%	0.08%	-2.47%	0.02%
MetWest Total Return Bond Fund	59	-0.60%	-0.05%	-2.82%	-0.33%
PIMCO Total Return Fund	54	-0.65%	-0.10%	-2.42%	0.08%
Dodge & Cox Income Fund	58	-0.68%	-0.13%	-2.37%	0.12%
PGIM Total Return Bond Fund	41	-0.71%	-0.16%	-2.48%	0.02%
BlackRock Strategic Income Opportunities Fund	35	-0.46%	0.08%	-1.07%	1.43%
Baird Aggregate Bond Fund	40	-0.56%	-0.01%	-2.53%	-0.04%
JPMorgan Core Bond Fund	39	-0.41%	0.14%	-2.29%	0.20%
DoubleLine Total Return Bond Fund	32	-0.59%	-0.04%	-2.65%	-0.16%
Fidelity Series Investment Grade Bond Fund	35	-0.65%	-0.10%	-2.51%	-0.01%
Fidelity Total Bond Fund	32	-0.57%	-0.02%	-2.33%	0.17%
Western Asset Core Plus Bond Portfolio	23	-1.36%	-0.81%	-4.29%	-1.80%
Baird Core Plus Bond Fund	24	-0.52%	0.03%	-2.33%	0.16%
John Hancock Bond Fund	22	-0.69%	-0.14%	-2.69%	-0.19%
TIAA-CREF Bond Index Fund	22	-0.59%	-0.04%	-2.53%	-0.03%
BlackRock Total Return Fund	18	-0.65%	-0.10%	-2.73%	-0.23%
JPMorgan Core Plus Bond Fund	17	-0.53%	0.02%	-2.50%	-0.01%
Bridge Builder Core Bond Fund	16	-0.62%	-0.07%	-2.54%	-0.04%
T Rowe Price New Income Fund	16	-0.45%	0.10%	-2.23%	0.26%
Western Asset Core Bond Fund	14	-0.81%	-0.26%	-3.43%	-0.93%
CREF Bond Market Account	11	-0.58%	-0.03%	-2.35%	0.15%
Fidelity Investment Grade Bond Fund	9	-0.65%	-0.10%	-2.54%	-0.04%
DoubleLine Core Fixed Income Fund	7	-0.67%	-0.12%	-2.52%	-0.02%
TCW Total Return Bond Fund	3	-0.90%	-0.36%	-3.40%	-0.91%
Janus Henderson Flexible Bond Fund	3	-0.58%	-0.03%	-2.70%	-0.21%
Weighted avg	1285	-0.60%	-0.05%	-2.39%	0.11%
Agg		-0.55%		-2.49%	
10y return		-0.81%		-4.67%	

Source: BofA Global Research, Bloomberg, Note: Excess returns are fund total returns over Bloomberg Barclays Agg Index

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Exhibit 39: Total return funds, excess return vs. 10y rate

Weekly asset-weighted total returns for total return funds. Funds return was below benchmark on the week

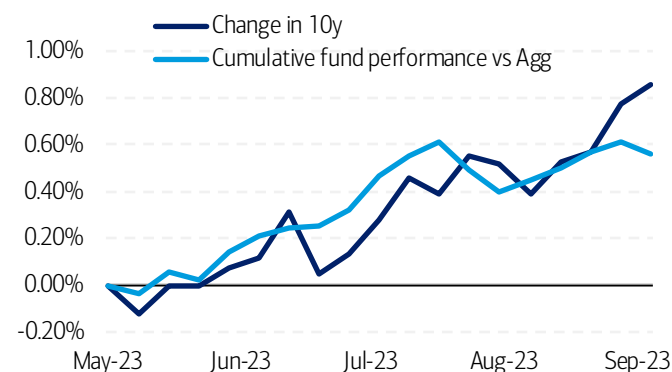


Source: BofA Global Research, Bloomberg. Note: Excess returns are fund total returns over Bloomberg Barclays Agg index

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Exhibit 40: Cumulative return of TR FI funds over benchmark vs 10yT

Funds have modestly outperformed since start of the year



Source: BofA Global Research, Bloomberg. Note: Excess returns are fund total returns over Bloomberg Barclays Agg index

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Exhibit 41: Total return funds' published UST allocations vs benchmark from Q1 and Q2 '23

Funds moderated underweight UST position from Q1 to Q2

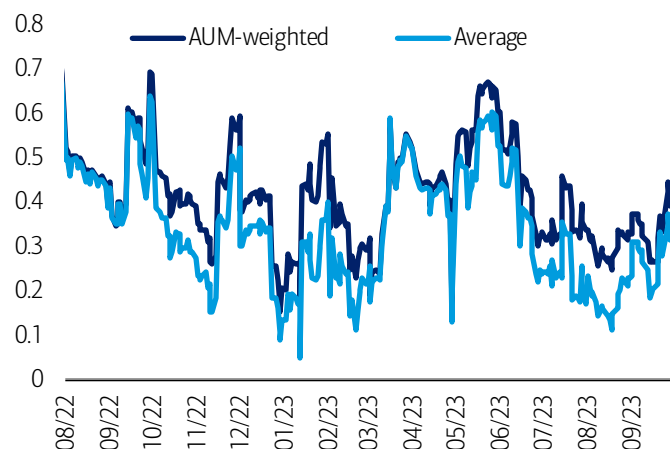
		AUM (\$bn)	Q1 '23 (%)	Q2 '23 (%)	Change (PPTS)
VTBIX	Vanguard Total Bond Market II Index Fund	255.0	2.4	2.1	-0.3
VBMFX	Vanguard Total Bond Market Index Fund	201.9	1.7	1.4	-0.3
PIMIX	PIMCO Income fund	128.2	-43.4	-34.1	9.3
ABNDX	The Bond Fund of America	74.0	-11.3	-14.0	-2.7
MWTIX	MetWest Total Return Bond Fund	59.2	-16.5	-18.7	-2.2
DODIX	Dodge & Cox Income Fund	57.7	-28.1	-32.7	-4.6
PTTRX	PIMCO Total Return Fund	53.9	-15.4	-18.6	-3.2
PDBAX	PGIM Total Return Bond Fund	41.1	-33.7	-34.2	-0.5
BAGIX	Baird Aggregate Bond Fund	39.5	-16.9	-17.7	-0.8
PGBOX	JPMorgan Core Bond Fund	39.2	-5.0	-2.2	2.8
BSIIX	BlackRock Strategic Income Opportunities Fund	34.7	-17.3	-23.4	-6.1
FSIGX	Fidelity Series Investment Grade Bond Fund	34.5	-7.5	-10.1	-2.6
DBLTX	DoubleLine Total Return Bond Fund	32.1	-32.7	-32.8	-0.1
FTBFX	Fidelity Total Bond Fund	31.7	-12.0	-12.5	-0.4
BCOIX	Baird Core Plus Bond Fund	24.3	-18.5	-18.4	0.1
WACPX	Western Asset Core Plus Bond Portfolio	22.6	-33.7	-38.0	-4.3
JHBIX	John Hancock Bond Fund	22.1	-22.8	-22.5	0.3
TBIIX	TIAA-CREF Bond Index Fund	21.5	0.8	0.3	-0.5
MAHQX	BlackRock Total Return Fund	17.5	-13.7	88.0	101.7
ONIAI	JPMorgan Core Plus Bond Fund	16.6	-5.1	-2.9	2.2
BBTBX	Bridge Builder Core Bond Fund	16.0	-22.1	-23.0	-0.9
PRCIX	T Rowe Price New Income Fund	15.9	-16.2	-11.8	4.4
WATFX	Western Asset Core Bond Fund	14.2	-30.7	-31.1	-0.4
QCBMIX	CREF Bond Market Account	10.5	-21.1	-22.6	-1.5
FBNDX	Fidelity Investment Grade Bond Fund	8.7	-5.7	-0.3	5.4
DBLFX	DoubleLine Core Fixed Income Fund	6.6	-16.9	-17.9	-1.0
JFLEX	Janus Henderson Flexible Bond Fund	2.9	-11.3	-17.9	-6.7
TGLMX	TCW Total Return Bond Fund	2.6	-38.5	-39.6	-1.1
AUM weighted		1284.9	-13.2	-11.8	1.4

Source: BofA Global Research, funds' publicly available reports

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Exhibit 42: Rolling 30-day correlation between excess return and change in 10y UST yield

A higher correlation between the two would suggest that when UST yields increase, excess return is higher (more short), recent decline may suggest moderation in short positioning

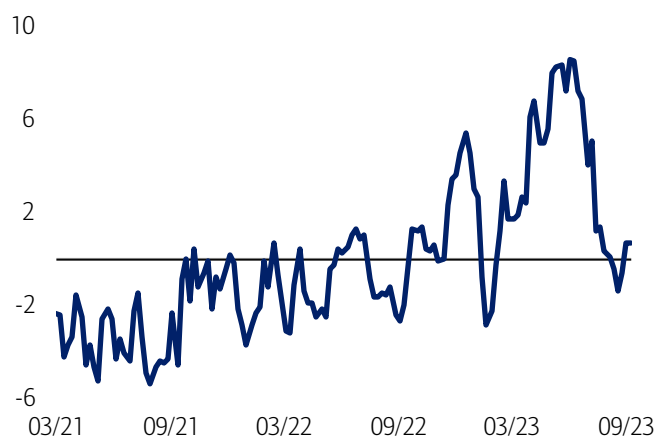


Source: BofA Global research, Bloomberg

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Exhibit 43: Primary dealer 2-6y holdings of TIPS (\$bn)

Primary dealer holdings have modestly recovered from the decline since end of June



Source: BofA Global research, Note: cumulative change since 2021 reflects adjustment for change in market value

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Bank balance sheets

Exhibit 44: Changes to bank balance sheet assets (\$bn)

Domestic bank balance decline driven by cash, while securities holdings increased modestly

		Current	1w change	Rolling 4w avg wkly chg	Rolling 8w avg wkly chg	Rolling 12w avg wkly chg	Rolling 52w avg wkly chg
All (\$bn, NSA)	Total Assets	22746	-170	-9	1	-6	2
	Cash	3237	-168	-5	3	-1	3
	UST & Agency	1519	19	4	2	0	-3
	MBS	2563	-7	-4	-2	-3	-5
	Loans and Leases	12179	3	10	8	4	9
	Other	3248	-18	-13	-9	-7	-2
Large Domestic (\$bn, NSA)	Total Assets	13211	-89	0	2	-4	-3
	Cash	1528	-85	3	6	1	2
	UST & Agency	1118	15	4	2	1	-3
	MBS	1936	-5	-4	-2	-2	-2
	Loans and Leases	6739	-6	4	1	-1	2
	Other	1889	-7	-7	-5	-3	-3
Small Domestic (\$bn, NSA)	Total Assets	6513	-28	-2	3	2	2
	Cash	420	-32	-3	-2	-1	0
	UST & Agency	288	1	-1	0	0	-1
	MBS	599	-2	-1	-1	-1	-3
	Loans and leases	4413	5	4	7	4	6
	Other	794	0	-1	0	0	0
All Domestic (\$bn, NSA)	Total Assets	19724	-117	-2	6	-2	-1
	Cash	1948	-117	0	4	0	2
	UST & Agency	1406	15	3	1	0	-3
	MBS	2535	-7	-5	-2	-3	-5
	Loans and leases	11152	-1	8	7	4	8
	Other	2683	-7	-8	-4	-3	-3
Foreign (\$bn, NSA)	Total Assets	3022	-53	-7	-5	-4	2
	Cash	1289	-51	-5	-1	-1	1
	UST & Agency	113	4	1	0	0	0
	MBS	28	1	1	0	0	0
	Loans and leases	1028	4	2	0	0	1
	Other	565	-11	-5	-5	-3	1

Source: BofA Global Research, Federal Reserve, Bloomberg

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Exhibit 45: Select bank balance sheet liabilities (\$bn, NSA)

Liability decline driven by deposits

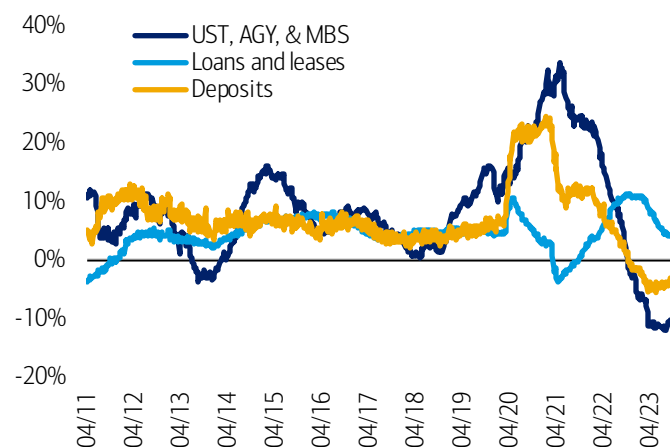
		Current	1w change	Rolling 4w avg wkly chg	Rolling 8w avg wkly chg	Rolling 12w avg wkly chg	Rolling 52w avg wkly chg
Deposits (\$bn, NSA)	All	17238	-85	-3	4	-2	-11
	Domestic	15949	-92	-5	4	-3	-11
	Large Domestic	10694	-66	-6	-2	-9	-10
	Small Domestic	5256	-26	2	6	6	-1
	Foreign	1289	7	2	0	1	0
Other borrowing (\$bn, NSA)	All	2281	-7	5	3	-4	11
	Domestic	1310	11	8	6	-1	9
	Large Domestic	874	11	12	9	4	7
	Small Domestic	436	0	-4	-3	-5	3
	Foreign	971	-18	-3	-3	-3	1

Source: BofA Global Research, Federal Reserve, Bloomberg

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Exhibit 46: YoY change in securities, loans, and deposits

Securities growth usually only positive when deposit growth is positive

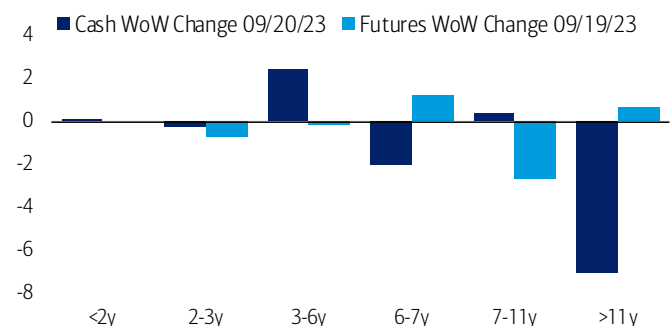


Source: BofA Global Research, Bloomberg, Federal Reserve

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Primary dealer balance sheet**Exhibit 47: Dealers WoW change in positions**

10y equivalent, \$bn, cash positions lower at back-end

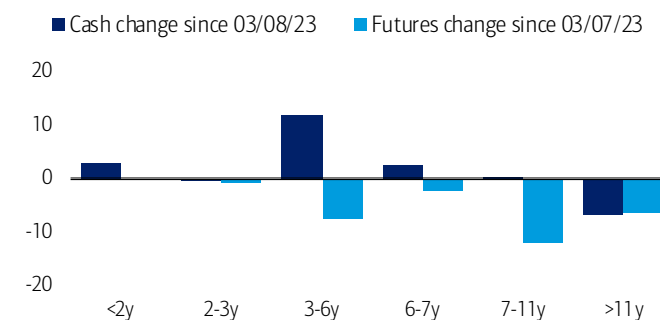


Source: BofA Global Research, NY Fed, CFTC

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Exhibit 48: Dealers change in positions since bank risk events

10y equivalent, \$bn, cash positions higher in 3-6y sector



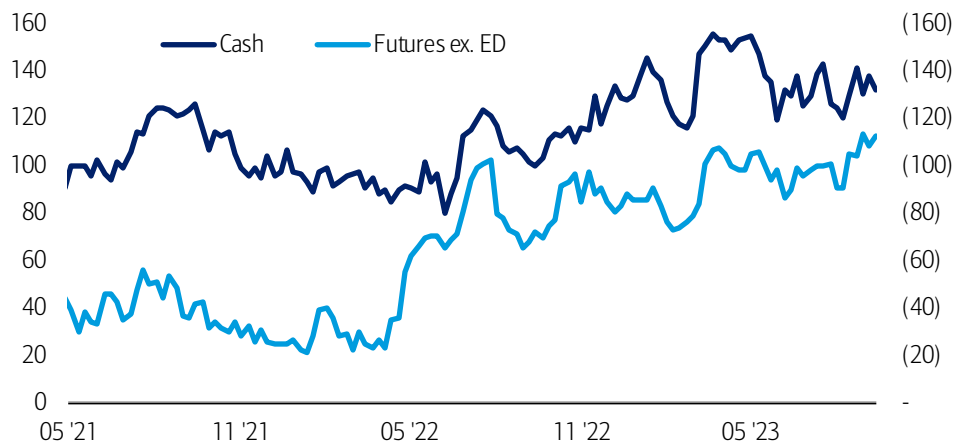
Source: BofA Global Research, NY Fed, CFTC

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Exhibit 49: Dealers total sector positions

10y equivalent, \$bn, short futures ticked up, long cash dropped on the week



Source: BofA Global Research, NY Fed, CFTC

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Auction statistics

Exhibit 50: Auction summary statistics

Z-score calculated on levels, Investment fund participation in auctions remains robust

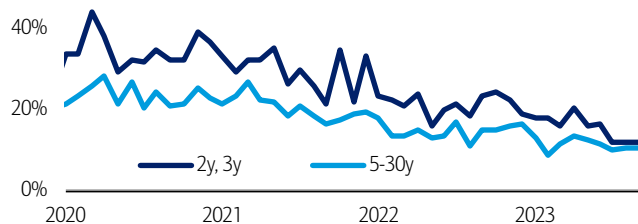
		Primary Dealer	Indirect Bidder	Direct Bidder	Investment Fund	Foreign	Depository Institution
2y	8/31/2023	13.3%	68.5%	18.2%	69.9%	12.4%	0.0%
	MoM Change	0.0%	0.0%	0.0%	-0.1%	-1.2%	-0.1%
	1Y Z-score	-1.3	1.1	-0.7	1.3	-0.9	-0.5
3y	9/15/2023	10.8%	69.4%	19.8%	63.5%	13.5%	0.0%
	MoM Change	0.0%	0.0%	0.0%	-7.7%	-3.1%	0.0%
	1Y Z-score	-1.3	0.9	0.2	-0.1	-0.7	-0.3
5y	8/31/2023	12.2%	19.7%	68.1%	74.9%	10.0%	0.0%
	MoM Change	0.0%	0.0%	0.0%	4.0%	-3.5%	-0.1%
	1Y Z-score	-0.5	1.1	0.1	1.3	-1.2	-0.6
7y	8/31/2023	8.1%	75.3%	16.6%	80.7%	8.3%	0.0%
	MoM Change	0.0%	0.0%	0.0%	12.2%	-6.7%	0.0%
	1Y Z-score	-0.9	1.0	-0.7	1.5	-1.3	-0.5
10y	9/15/2023	12.4%	67.7%	19.9%	67.6%	16.2%	0.0%
	MoM Change	0.0%	0.0%	0.0%	-1.5%	-1.4%	0.0%
	1Y Z-score	-0.7	0.5	0.3	0.3	0.2	-0.6
20y	8/31/2023	9.6%	68.8%	21.7%	75.5%	10.4%	0.0%
	MoM Change	0.0%	0.0%	0.0%	-0.5%	-1.9%	0.0%
	1Y Z-score	-0.3	-0.6	1.5	0.7	-0.9	#DIV/0!
30y	9/15/2023	10.9%	69.0%	20.1%	66.8%	14.9%	0.0%
	MoM Change	0.0%	0.0%	0.0%	-2.7%	-0.5%	0.0%
	1Y Z-score	-0.1	-0.2	0.5	-0.8	0.3	-0.7

Source: BofA Global Research, Treasury

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Exhibit 51: Primary dealer – average auction allotment

Dealer participation has declined

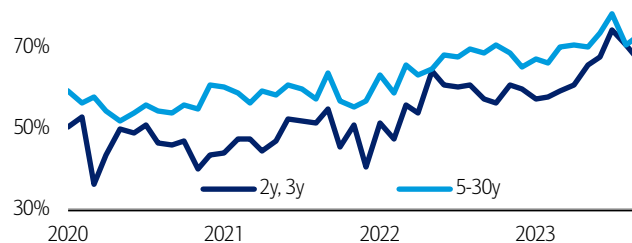


Source: BofA Global Research, Treasury

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Exhibit 52: Investment fund – average auction allotment

Fund participation still elevated

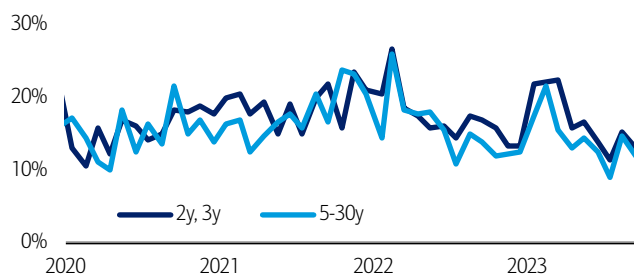


Source: BofA Global Research, Treasury

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Exhibit 53: Foreign investment – average auction allotment

Foreign participation still below average despite modest uptick in recent weeks

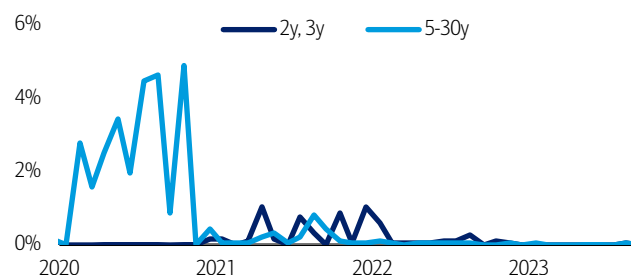


Source: BofA Global Research, Treasury

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Exhibit 54: Depository institutions – average auction allotment

Participation is minimal



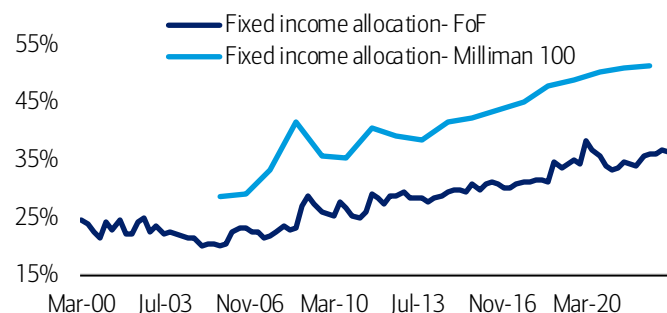
Source: BofA Global Research, Treasury

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Pensions

Exhibit 55: DB private pension fixed income allocation from Flow of Funds and smaller Milliman subset

Milliman funds have shown more de-risking than broader private DB pension funds according to FoF

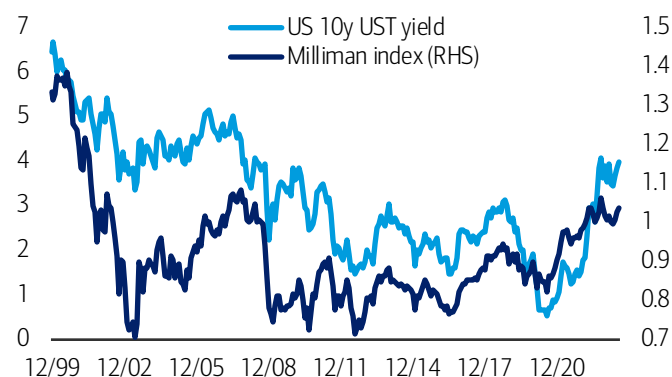


Source: BofA Global Research, Milliman, Federal Reserve

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Exhibit 56: 10y UST yield and Milliman pension funded index

Funded status historically improves with an increase in interest rates

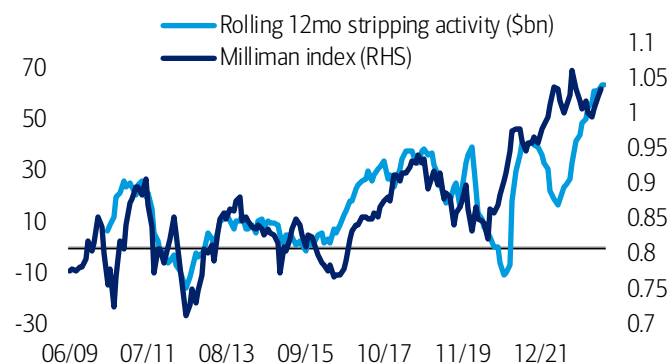


Source: BofA Global Research, Bloomberg

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Exhibit 57: Milliman index and 12mo increase in USTs held in stripped form

Higher pension funded status aligns with higher stripping activity

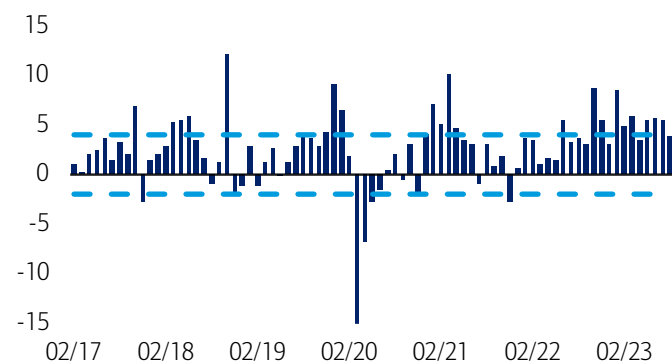


Source: BofA Global Research, Bloomberg

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Exhibit 58: Change in USTs held in stripped form (\$bn)

Stripping activity cooled modestly in August

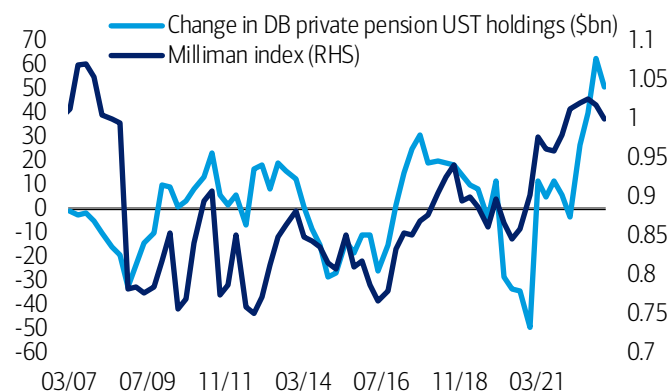


Source: BofA Global Research, Note: dashed line is 1stdev

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Exhibit 59: UST holdings of private DB pensions and funded status

When funded status is higher, pension funds buy more USTs



Source: BofA Global Research, Bloomberg, Federal Reserve

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