

US Rates Watch

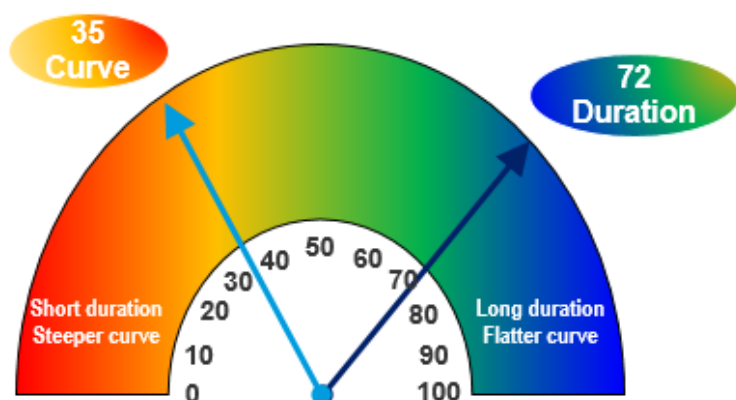
Flow of funds data evidence basis trade;
official selling continues

Questioning the resilience of the foreign bid

Flow of funds data for Q2 show the importance of foreign buyers in the market with banks selling and the Fed running down its balance sheet. Recently though, we see limited demand from foreign investors at auctions and net selling from official accounts. The “household” sector remains an important buyer filling in the gap. While some of this bid may reflect demand from individual households, it is also likely another indicator of the growing hedge fund basis trade as we discuss below.

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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Futures positioning proxy shows bias is higher rates

Our futures positioning proxy (for construction details see our report: [Gauging positioning in Treasury Futures](#)) shows a bias for rates to sell off in FV – US given the relative concentration of ITM shorts vs OTM longs (Exhibit 11 and Exhibit 12). There is a less prominent bias at the front-end of the curve which suggests the potential for additional bear-steepening.

11 September 2023

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COB = close of business

CTA= Commodity trading advisor

ED= Eurodollars

FoF = flow of funds

FV = Treasury 5Y contract

ITM=in the money

JGB = Japanese government bonds

MoF= ministry of finance

OTM= out of the money

PPTS = percentage points

QT= quantitative tightening

SFR = SOFR futures contract

TGA= Treasury General Account

TIC= Treasury International Capital

TR FI funds = Total return fixed income funds

TU = Treasury 2Y futures contract

TY = Treasury 10Y contract

US = Treasury 20Y contract

UST= Treasury security

UXY = Treasury ultra 10Y contract

WN = Treasury 30Y contract

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Refer to important disclosures on page 19 to 20.

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Timestamp: 11 September 2023 05:00AM EDT

Modest covering in AM/ LF positions

Asset manager (AM) longs moderated slightly the week ending Sept 5th, to the greatest extent in TU and shorts were added in SOFR contracts. Similarly, leveraged funds (LF) saw a reduction in shorts in WN and TU. Overall, asset manager longs and leveraged hedge funds shorts remain historically stretched (Exhibit 7).

CTAs still look short but momentum bottoming

Our cross-over momentum signal and top-down model (see our report: [CTA impact on the rates market](#)) continue to suggest that CTAs are short (Exhibit 13). Our cross over momentum signal though shows a bottoming, indicating that CTAs may not have much more of a short position to add going forward. Non-reportable CFTC positioning contradicts the extent of short positioning implied from our models but does show a reduction in longs on the week (Exhibit 16).

Q2 FoF shows household & foreign buying

Flow of funds data for Q2 out on Friday showed buying from the household sector, foreign investors, and private pensions. As shown in Exhibit 17, foreign investors were the strongest structural buyers in the second quarter while the Fed and banks saw the largest reductions in UST holdings.

The foreign bid in Q2 stemmed primarily from France, Japan, and Canada (Exhibit 18). We anticipate that demand from Japan has likely slowed since then with MoF data reflecting a moderating bid from Japanese banks. Demand from other regions though has the potential to increase should FX hedged pickup of USTs continue to improve as implied by forwards (Exhibit 20). For now though, foreign bid particularly in auctions continues to be weak (Exhibit 50, Exhibit 53).

The household sector increased US Treasury holdings by \$170bn based on our estimates for valuation change in Q2. While part of this may reflect individual households allocating more to US Treasury securities, it also likely is another piece of evidence pointing to a growing basis trade in the market. As shown in Exhibit 19, household UST holdings previously peaked in mid-2019 with hedge fund UST holdings. As discussed in our report [Back to basis](#), this was the same time that we saw the leveraged hedge fund futures short peak. Similar dynamics appear to be occurring now where hedge funds are seeing a growth in short futures positions alongside asset manager longs.

The official sector may view the growth of the basis trade as a risk to financial stability as flagged in a recent Fed note. We think it is important that regulators understand two key points : 1- leveraged fund shorts are providing liquidity to meet strong demand from asset managers, 2- leveraged funds are playing an important role helping to absorb historically elevated amounts of UST supply given large deficits and Fed QT. We discuss this in greater detail in our report here: [UST demand in 2H '23: higher supply, few buyers](#).

Private pensions bought about \$25bn of USTs in Q2, however this had very limited impact on their overall fixed income allocations and in part was a result of rebalancing (Exhibit 55). This leaves the funded status of DB private pensions highly vulnerable to changes in rates (see our report: [Pension de-risking opportunity may narrow with lower rates](#)).

Fund performance shows divergent positioning

On an AUM-weighted basis, total return fixed income funds outperformed alongside the rate selloff (Exhibit 38). The largest outperformance was from two income funds (PIMCO and BlackRock) which have a relatively large AUM and likely maintain significant duration underweight positions. In general, there was a roughly even split between the number of funds that underperformed vs outperformed. Correlation between relative benchmark performance and the 10y rate remains lower vs levels to start Q3, but have been creeping up modestly in recent weeks, perhaps reflecting an increase in underweight positioning (Exhibit 42).

Flows into US fixed income remain robust overall at a weekly pace of \$3.5bn (Exhibit 33). Inflows were concentrated in mixed allocation and short-term UST funds while outflows were largest in IG and muni funds. Inflation funds saw about \$400bn in inflows, the largest amount since the end of July. While one data point doesn't make a trend we are particularly attentive to the fund flows into the inflation market as they have a more significant impact given smaller market size and heavy concentration in the front-end/belly of the inflation curve.

Official sector selling continues

Official holdings declined about \$5bn on the week ending September 6th, bringing the total decline in holdings over the past four weeks to \$23bn (Exhibit 32). This may reflect a reduction in securities holdings for FX intervention purposes (see our report: [FX intervention: another potential headwind to UST demand](#)). The Fed's foreign reverse repo facility declined by \$6bn over that period.

Data for the month of August showed very limited activity from Japanese banks and lifters (Exhibit 31). MoF data for the week ending September 1 similarly showed that Japanese holdings of foreign bonds were roughly unchanged (Exhibit 27).

Primary dealers cash UST holdings increase notably

Dealers saw an increase in securities holdings the week ending August 30th (Exhibit 47). In 10y equivalent terms & adjusted for market value this was a \$10bn increase or a 1.3 z-score uptick (calculated over the last 10 years). As discussed in our report [Subtle repo ripple](#), we suspect the higher repo volumes & ON RRP drop reflects a dealer community long collateral on month end & in need MMF funding.



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	Amount
M, Sep 11				<i>Fed Blackout Period</i>	13-week bills	69	0		
					26-week bills	62	0		
					3-year notes	44	2		
Tu, Sep 12	NFIB Small Business Optimism	-	91.3	<i>Fed Blackout Period</i>	42-day bills	60	0	Bills	29
					9-year 11-month notes	35	-3		
W, Sep 13	MBA Mortgage Applications	-	-	<i>Fed Blackout Period</i>	17-week bills				
	Consumer Price Index (yoy)	3.60%	3.60%		29-year 11-month bonds	20	-3		
	CPI Ex Food & Energy (yoy)	4.30%	4.30%						
	Consumer Price Index (mom)	0.60%	0.50%						
	CPI Ex Food & Energy (mom)	0.20%	0.20%						
	Monthly Budget Statement	-\$300bn	-						
Th, Sep 14	Initial Jobless Claims	212k	-	<i>Fed Blackout Period</i>	4-week bills			Bills	28
	Producer Price Index (mom)	0.40%	0.40%		8-week bills				
	PPI Ex Food & Energy (mom)	0.10%	0.20%						
	PPI Ex Food, Energy, Trade (mom)	0.20%	-						
	Advance Retail Sales	-	0.10%						
	Retail Sales Less Autos	-	0.40%						
	Retail Sales Less Autos and Gas	-	0.00%						
	Core Control	-	0.20%						
	Business Inventories	-	0.10%						
F, Sep 15	Import Price Index (mom)	0.60%	0.30%	<i>Fed Blackout Period</i>				Coupons	64
	Import Price Index ex Petroleum (mom)	-0.10%	-						
	Empire Manufacturing	0	-10.7						
	Industrial Production	0.20%	0.10%						
	Manufacturing Production	0.20%	0.10%						
	Capacity Utilization	79.40%	79.30%						
	U. of Michigan Sentiment	71.2	69.4						

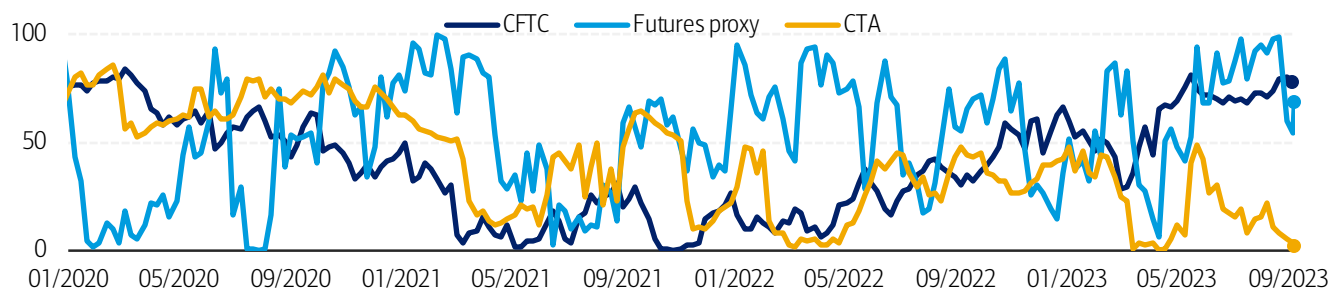
Source: BoFA Global Research, Bloomberg, US Treasury

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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

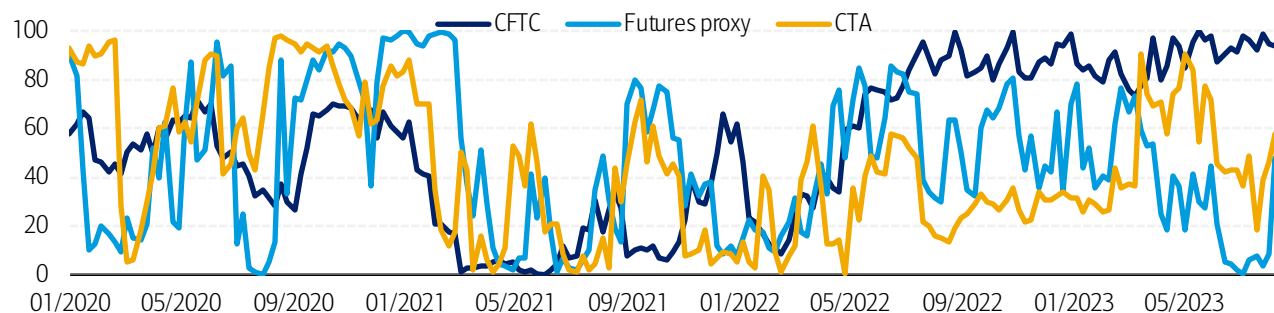


Source: BoFA Global Research

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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

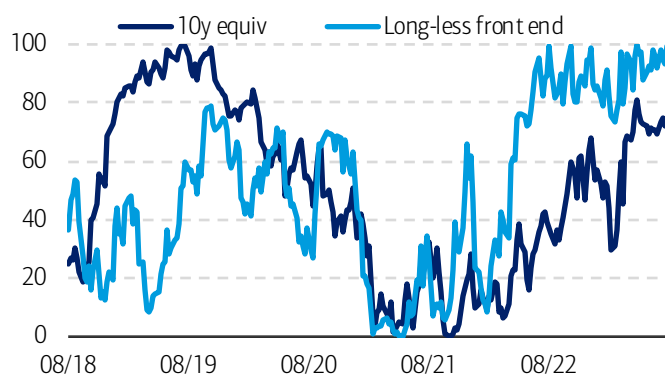


Source: BofA Global Research

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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

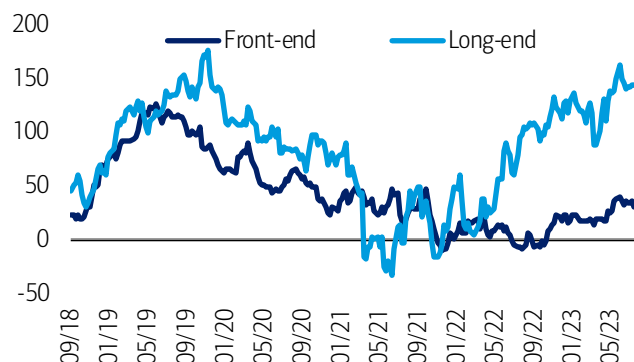


Source: BofA Global Research, Bloomberg

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

Longs are more concentrated in the back-end

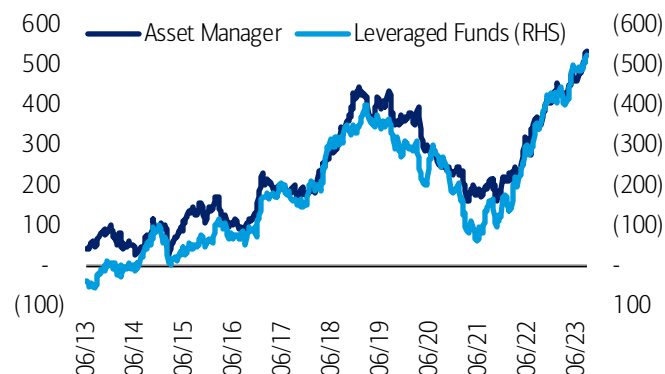


Source: BofA Global Research, Bloomberg

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

Asset manager longs correspond with leveraged fund shorts

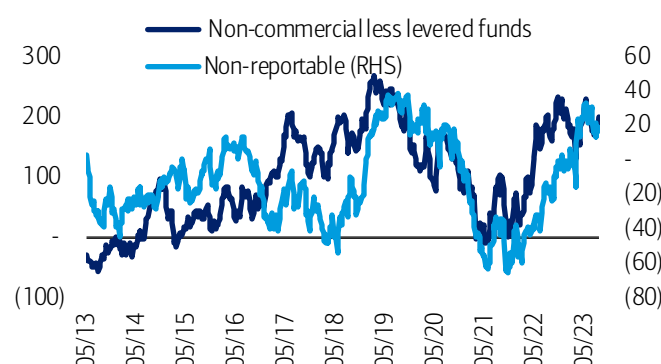


Source: BofA Global Research, Bloomberg

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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	1	-1	0	1	2
10 to 20	20	1	4	3	3	4
20 to 30	30	5	2	2	1	2
30 to 40	40	2	4	3	3	4
40 to 50	50	2	2	2	2	2
50 to 60	60	-1	-1	0	0	0
60 to 70	70	0	-1	0	0	0
70 to 80	80	-2	-2	-2	-3	-5
80 to 90	90	-2	-1	-2	-2	-5
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)

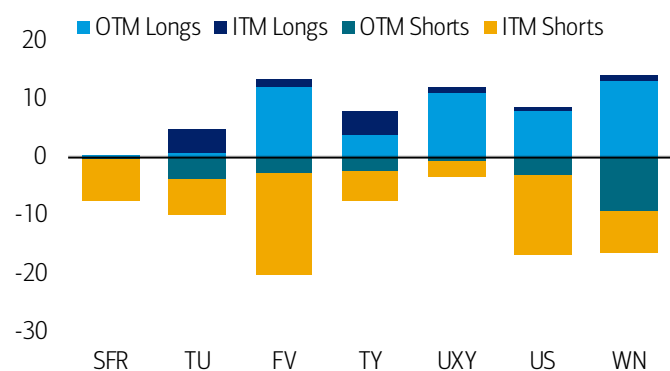
Positioning is contrarian signal: shorter positioning is usually followed by stronger 10y performance

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

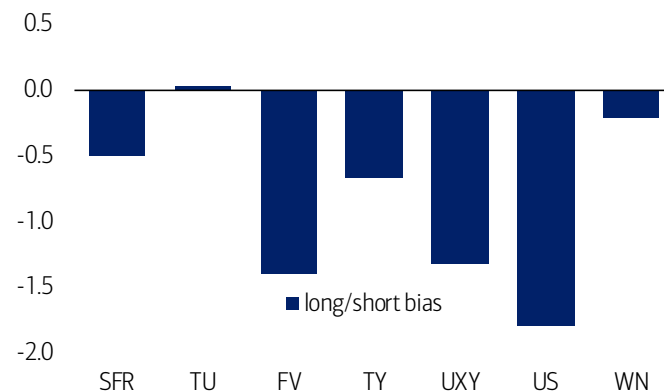
Shorts are largely ITM while longs are OTM except in TU



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

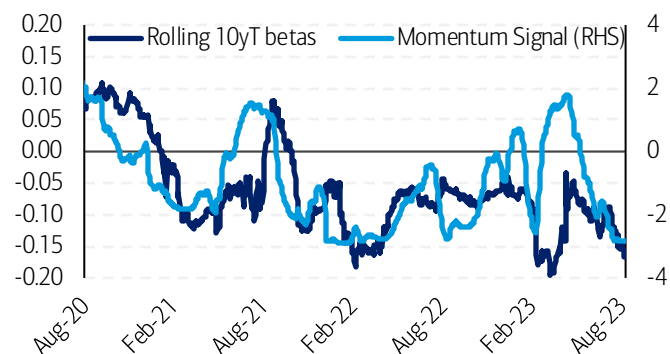
Bias for rates to sell off across the curve, particularly in US



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

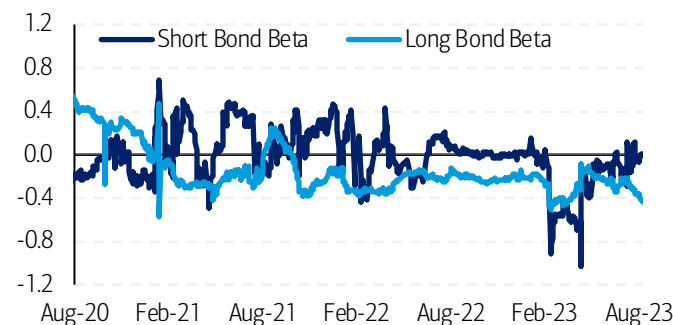
CTA added shorts on the week while drop in momentum signal moderated



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

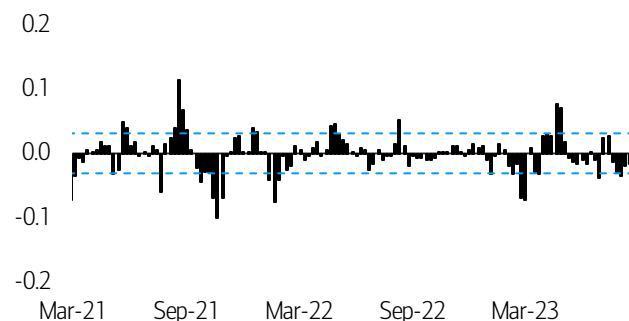
Top-down model suggests CTAs added shorts in long duration bonds



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

Change in 10yT beta remained negative on the week

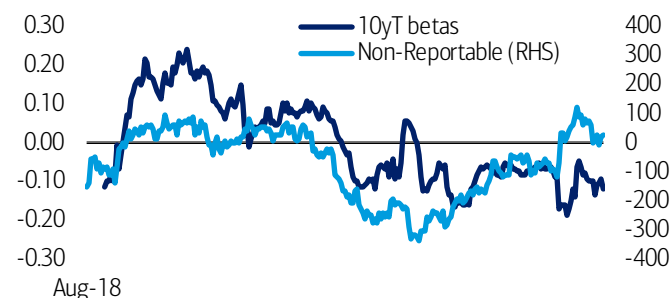


Source: BofA Global Research

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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



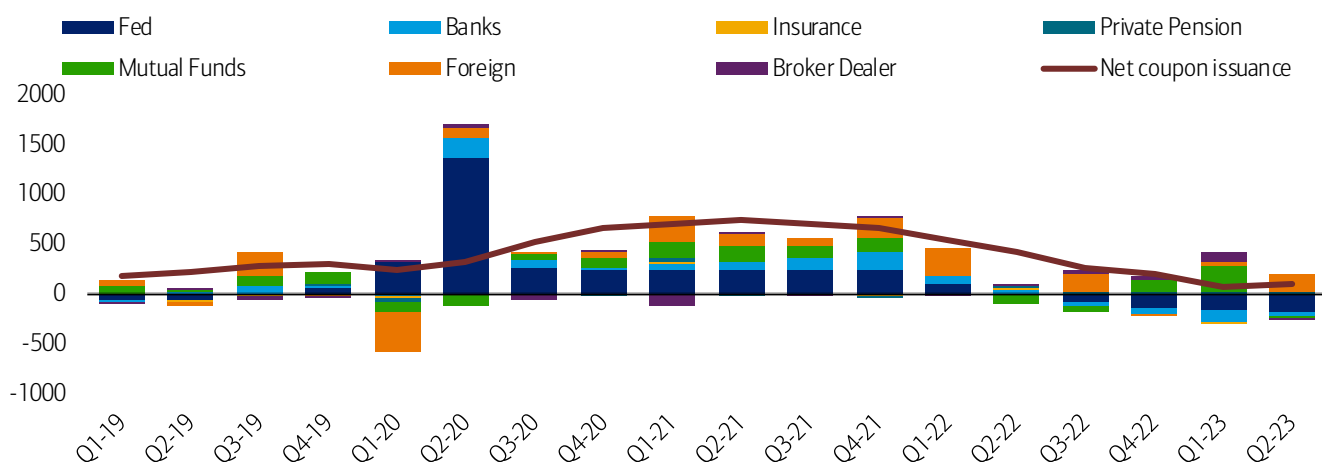
Source: BofA Global Research, Bloomberg

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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

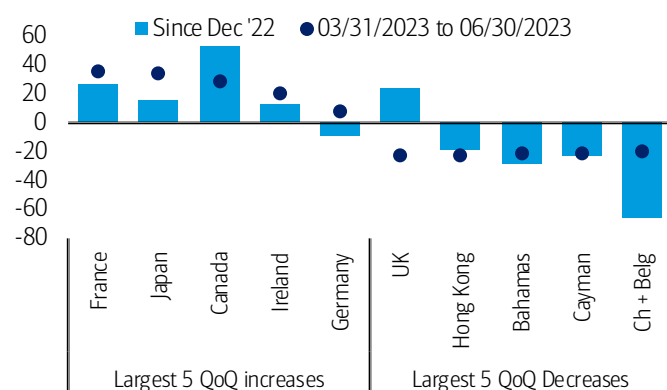


Source: BofA Global Research, Bloomberg. Note: change in levels adjusted for change in rates over the quarter

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Exhibit 18: Largest QoQ changes in foreign TSY holdings (\$bn)

France, Japan, and Canada made up bulk of foreign buying in Q2

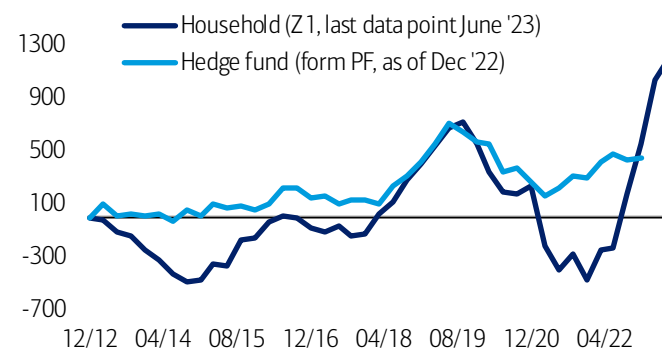


Source: BofA Global Research, TIC. Note: adjusted for level of rates

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Exhibit 19: Change in UST holdings (\$bn)

Hedge funds likely increased UST holdings in last year based on Flow of Funds data



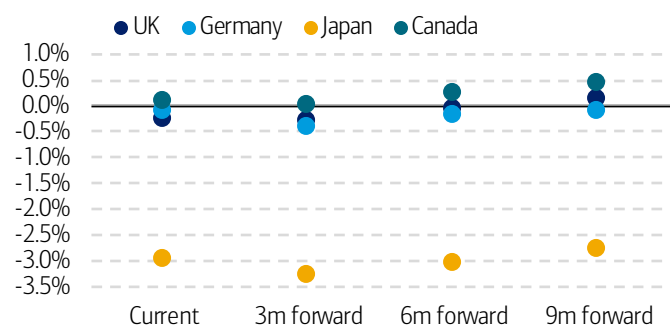
Source: BofA Global Research, Federal Reserve

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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

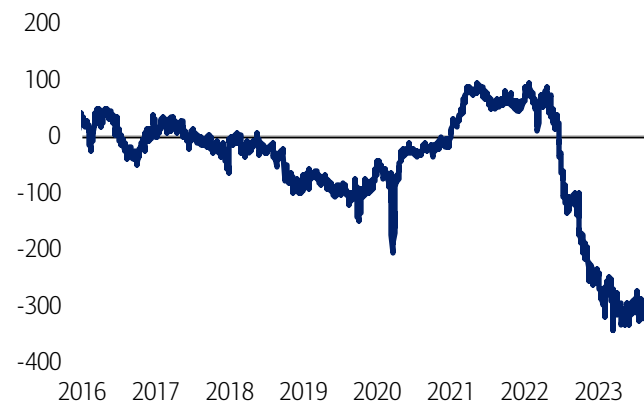


Source: BofA Global Research, Bloomberg. Note: pickup vs 10y local alternative except Japan which is relative to 20y JGB using 3m forward FX hedge

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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

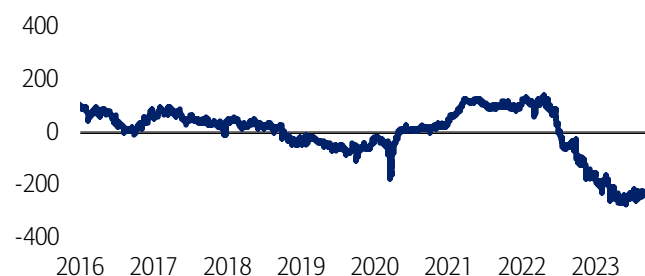


Source: BofA Global Research, Bloomberg

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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

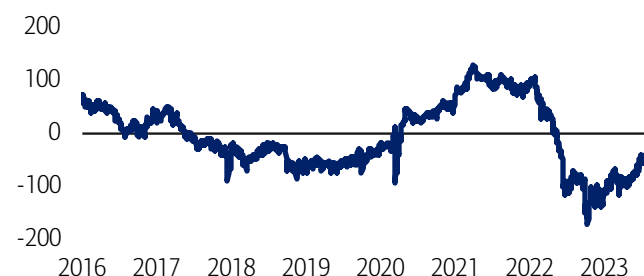


Source: BofA Global Research, Bloomberg

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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

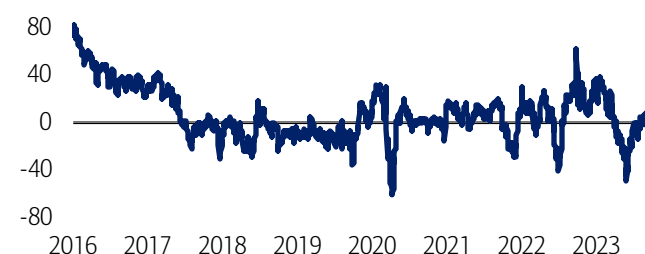


Source: BofA Global Research, Bloomberg

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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

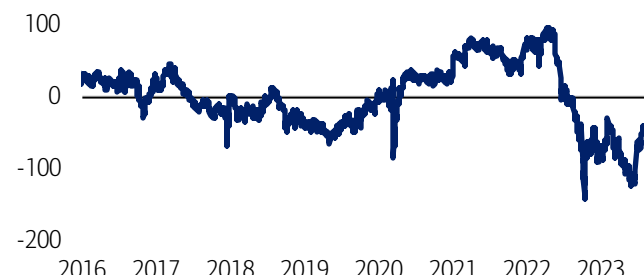


Source: BofA Global Research, Bloomberg

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

10y TSY offers negative pickup vs 10y Gilt but shows improvement recently



Source: BofA Global Research, Bloomberg

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Exhibit 26: 3m rolling JPY currency hedge

From the perspective of Japanese investor, pickup has been unattractive except vs the EU periphery

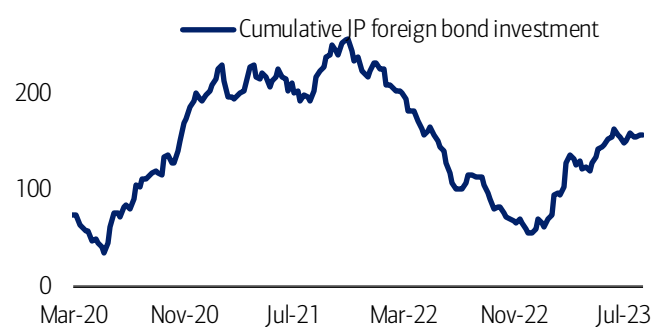
	9/7/2023		As of 1 wk ago		As of 1 mo ago		As of 1 yr ago	
	Pickup to 10y JGB	Pickup to 20Y JGB	Pickup to 10y JGB	Pickup to 20Y JGB	Pickup to 10y JGB	Pickup to 20Y JGB	Pickup to 10y JGB	Pickup to 20Y JGB
10y UST	-2.26%	-2.99%	-2.27%	-2.99%	-2.26%	-2.95%	-0.51%	-1.21%
10y GER	-2.13%	-2.86%	-2.12%	-2.84%	-2.02%	-2.71%	0.36%	-0.34%
10y FRA	-1.61%	-2.34%	-1.60%	-2.32%	-1.50%	-2.19%	0.93%	0.23%
10y BEL	-1.51%	-2.24%	-1.50%	-2.22%	-1.38%	-2.06%	0.98%	0.29%
10y ITA	-0.42%	-1.15%	-0.45%	-1.17%	-0.41%	-1.10%	2.65%	1.95%
10y SPA	-1.11%	-1.84%	-1.11%	-1.82%	-1.02%	-1.71%	1.52%	0.82%
10y UK	-2.00%	-2.73%	-1.97%	-2.69%	-1.78%	-2.46%	-0.08%	-0.77%
10y CAN	-2.30%	-3.04%	-2.35%	-3.07%	-2.27%	-2.96%	-0.80%	-1.50%

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 little changed on the week

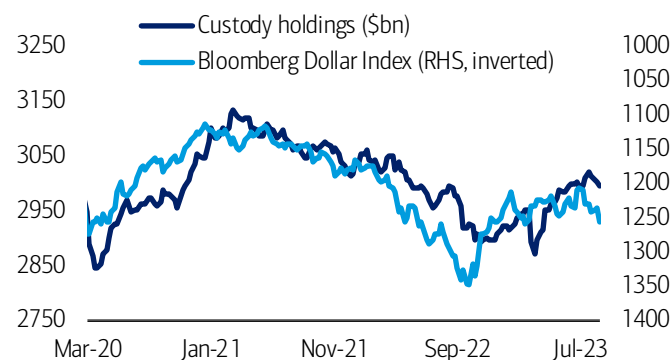


Source: BofA Global Research, Bloomberg

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

Custody holdings dropped on the week

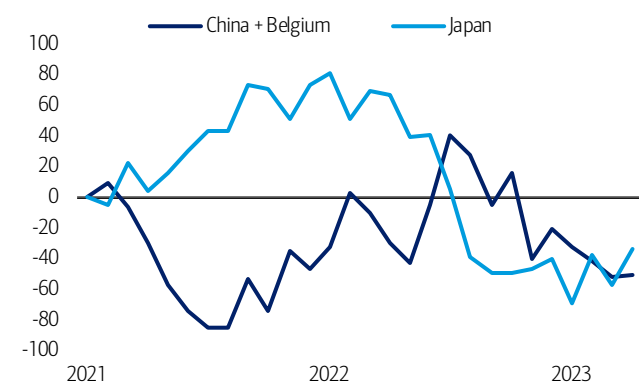


Source: BofA Global Research, NY Fed

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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

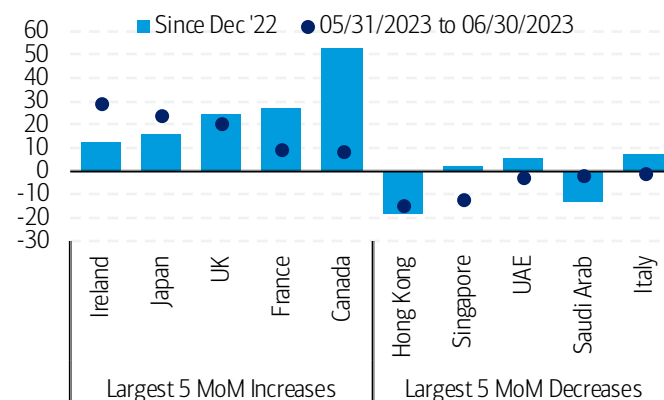


Source: BofA Global Research, Bloomberg, TIC, note: references the valuation-adjusted flow

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

Ireland was largest buyer, Hong Kong largest seller in June

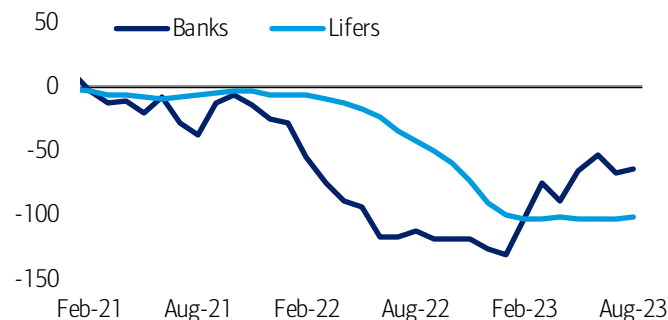


Source: BofA Global Research, TIC, Note: adjusted for level of rates

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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

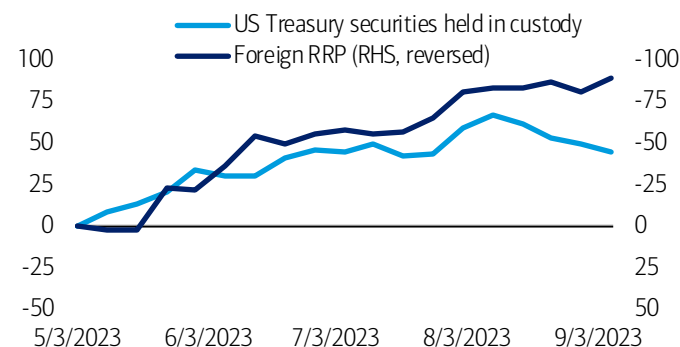


Source: BofA Global Research, Bloomberg. Note: JPY flow converted to USD using end of month FX level, last data point is June '23

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

Both custody holdings & RRP dipped further on the week



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 inflows primarily led by govt short & mixed allocation funds, outflows primarily seen in corp IG

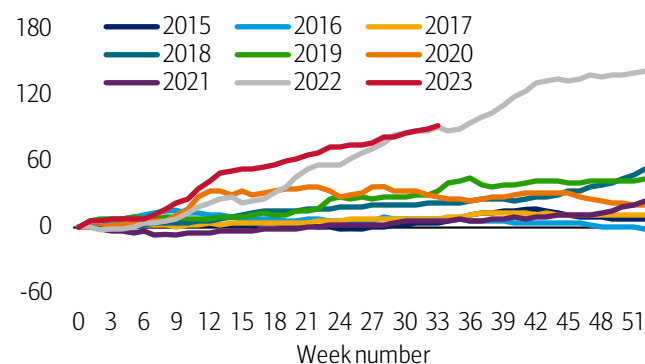
	9/6/2023	Rolling 4w average	Rolling 8w average	Rolling 12w average	Rolling 52w average
Gov: short	1,469	1,696	1,153	938	1,311
Gov: intermediate	337	456	224	260	322
Gov: long	126	790	968	1,094	1,137
Corp: IG	(1,531)	(880)	47	239	275
Corp:HY	229	(138)	(110)	57	(73)
Corp: all quality	88	30	50	58	19
MBS	(172)	57	251	288	152
Inflation	423	(475)	(204)	(259)	(525)
Muni	(751)	(187)	166	181	(320)
Mixed allocation	2,552	1,530	1,434	2,022	1,025
All US FI	3,505	3,115	3,951	4,747	2,795

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

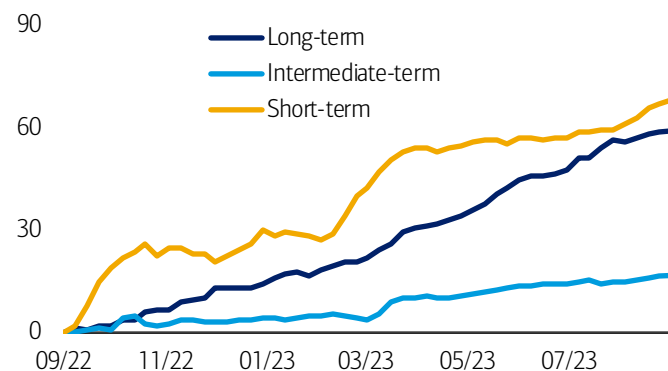


Source: BofA Global Research, EPFR

BofA GLOBAL RESEARCH

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

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

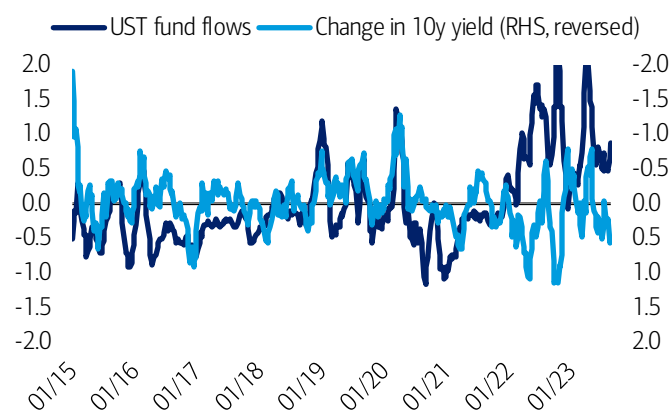


Source: BofA Global Research, EPFR

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

Fund flows recently have been historically strong despite rate selloff

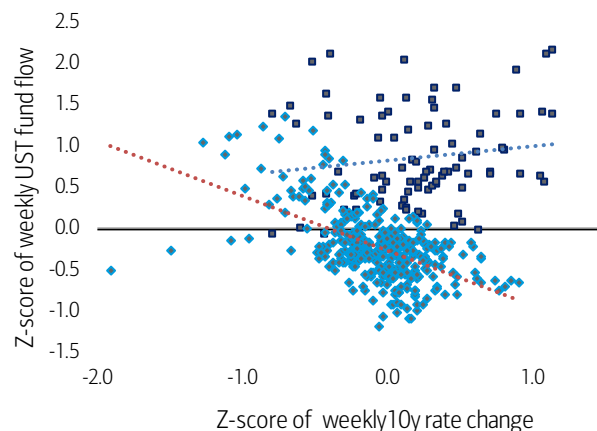


Source: BofA Global Research, EPFR

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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 modestly outperformed benchmark

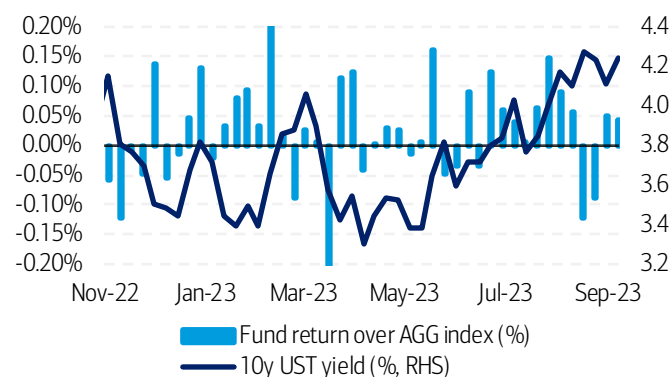
	AUM (\$Bn)	9/7/2023	Vs. Agg	Last 4w	Vs. Agg
Vanguard Total Bond Market II Index Fund	255	-0.80%	0.04%	-0.51%	-0.11%
Vanguard Total Bond Market Index Fund	202	-0.89%	-0.06%	-0.50%	-0.11%
PIMCO Income fund	128	-0.36%	0.48%	-0.19%	0.20%
The Bond Fund of America	75	-0.82%	0.02%	-0.69%	-0.29%
MetWest Total Return Bond Fund	61	-0.93%	-0.10%	-0.78%	-0.38%
PIMCO Total Return Fund	54	-0.76%	0.08%	-0.41%	-0.02%
Dodge & Cox Income Fund	58	-0.81%	0.02%	-0.49%	-0.09%
PGIM Total Return Bond Fund	42	-0.77%	0.07%	-0.33%	0.06%
BlackRock Strategic Income Opportunities Fund	35	-0.35%	0.49%	-0.39%	0.00%
Baird Aggregate Bond Fund	40	-0.84%	0.00%	-0.44%	-0.05%
JPMorgan Core Bond Fund	40	-0.80%	0.04%	-0.51%	-0.12%
DoubleLine Total Return Bond Fund	33	-0.92%	-0.09%	-0.54%	-0.15%
Fidelity Series Investment Grade Bond Fund	35	-0.81%	0.02%	-0.47%	-0.08%
Fidelity Total Bond Fund	32	-0.75%	0.09%	-0.40%	0.00%
Western Asset Core Plus Bond Portfolio	23	-1.53%	-0.69%	-1.47%	-1.07%
Baird Core Plus Bond Fund	25	-0.91%	-0.07%	-0.51%	-0.12%
John Hancock Bond Fund	22	-0.90%	-0.06%	-0.58%	-0.18%
TIAA-CREF Bond Index Fund	22	-0.90%	-0.06%	-0.62%	-0.22%
BlackRock Total Return Fund	18	-0.94%	-0.10%	-0.69%	-0.30%
JPMorgan Core Plus Bond Fund	17	-0.85%	-0.01%	-0.66%	-0.27%
Bridge Builder Core Bond Fund	16	-0.94%	-0.10%	-0.50%	-0.10%
T Rowe Price New Income Fund	16	-0.81%	0.03%	-0.58%	-0.18%
Western Asset Core Bond Fund	15	-1.16%	-0.33%	-0.93%	-0.54%
CREF Bond Market Account	11	-0.82%	0.01%	-0.47%	-0.07%
Fidelity Investment Grade Bond Fund	9	-0.76%	0.08%	-0.40%	-0.01%
DoubleLine Core Fixed Income Fund	7	-0.88%	-0.04%	-0.36%	0.03%
TCW Total Return Bond Fund	3	-1.01%	-0.17%	-0.98%	-0.58%
Janus Henderson Flexible Bond Fund	3	-0.90%	-0.06%	-0.64%	-0.25%
Weighted avg	1293	-0.79%	0.04%	-0.51%	-0.12%
Agg		-0.84%		-0.39%	
10y return		-1.36%		-1.39%	

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 modestly outperformed benchmark on the week

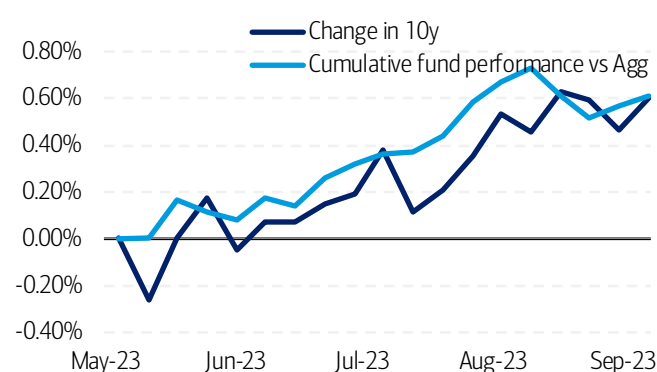


Source: BofA Global Research, Bloomberg. Note: Excess returns are fund total returns over Bloomberg Barclays Agg index

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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

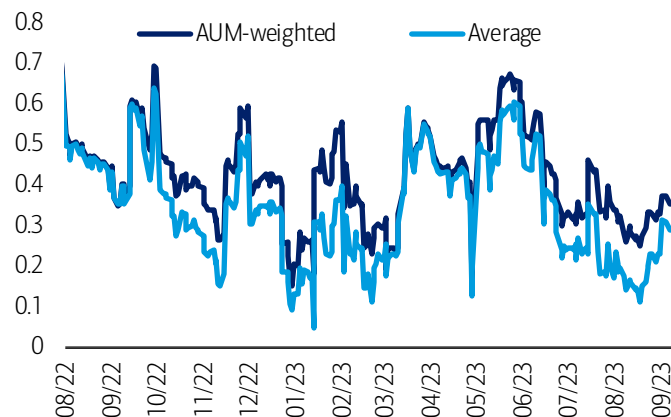
		AUM (\$bn)	Q1 '23 (%)	Q2 '23 (%)	Change (PPTS)
VTBIX	Vanguard Total Bond Market II Index Fund	255.2	2.4	2.1	-0.3
VBMFX	Vanguard Total Bond Market Index Fund	203.4	1.7	1.4	-0.3
PIMIX	PIMCO Income fund	126.7	-43.4	-34.1	9.3
ABNDX	The Bond Fund of America	75.8	-11.3	-14.0	-2.7
MWTIX	MetWest Total Return Bond Fund	61.3	-16.5	-18.7	-2.2
DODIX	Dodge & Cox Income Fund	57.5	-28.1	-32.7	-4.6
PTTRX	PIMCO Total Return Fund	54.6	-15.4	-18.6	-3.2
PDBAX	PGIM Total Return Bond Fund	42.0	-33.7	-34.2	-0.5
BAGIX	Baird Aggregate Bond Fund	40.1	-16.9	-17.7	-0.8
PGBOX	JPMorgan Core Bond Fund	40.1	-5.0	-2.2	2.8
BSIIX	BlackRock Strategic Income Opportunities Fund	35.4	-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	33.4	-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	24.8	-18.5	-18.4	0.1
WACPX	Western Asset Core Plus Bond Portfolio	23.8	-33.7	-38.0	-4.3
JHBI	John Hancock Bond Fund	22.2	-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	18.0	-13.7	88.0	101.7
ONIA	JPMorgan Core Plus Bond Fund	17.0	-5.1	-2.9	2.2
BBTBX	Bridge Builder Core Bond Fund	16.4	-22.1	-23.0	-0.9
PRCIX	T Rowe Price New Income Fund	15.5	-16.2	-11.8	4.4
WATFX	Western Asset Core Bond Fund	14.8	-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	6.8	-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	2.7	-38.5	-39.6	-1.1
AUM weighted		1297.3	-13.2	-11.9	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

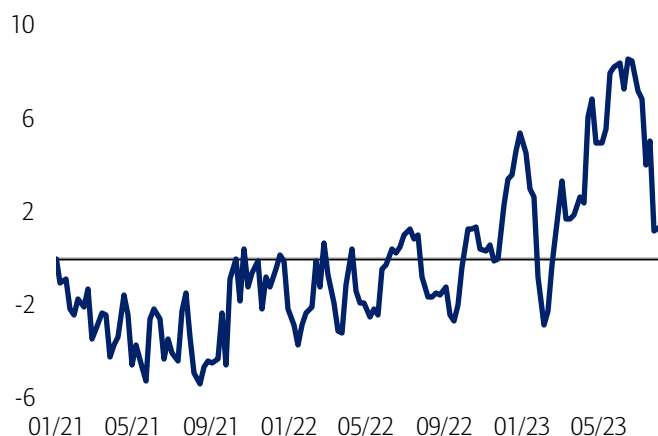


Source: BofA Global Research, Bloomberg

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

Primary dealer holdings have declined meaningfully since end of June and now close to zero



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

BofA GLOBAL RESEARCH

Bank balance sheets

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

Domestic bank balance increase driven by cash and loans

		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	22851	79	9	1	-2	-1
	Cash	3326	63	9	5	-2	1
	UST & Agency	1511	8	3	1	-1	-4
	MBS	2580	3	3	-1	-1	-6
	Loans and Leases	12170	40	6	7	7	10
	Other	3263	-35	-11	-11	-5	-2
Large Domestic (\$bn, NSA)	Total Assets	13243	33	10	-10	-7	-5
	Cash	1541	26	9	-2	-3	0
	UST & Agency	1108	4	2	1	-1	-3
	MBS	1956	4	4	1	1	-2
	Loans and Leases	6748	24	2	1	1	2
	Other	1890	-25	-7	-11	-5	-3
Small Domestic (\$bn, NSA)	Total Assets	6536	14	0	4	4	2
	Cash	453	6	-3	-1	0	0
	UST & Agency	290	0	0	0	0	-1
	MBS	599	-2	-2	-1	-2	-4
	Loans and leases	4399	12	4	6	6	7
	Other	796	-2	1	0	0	0
All Domestic (\$bn, NSA)	Total Assets	19779	47	11	-6	-3	-3
	Cash	1994	33	6	-3	-3	0
	UST & Agency	1397	3	2	1	-1	-4
	MBS	2555	2	3	0	-1	-5
	Loans and leases	11147	36	6	7	7	9
	Other	2687	-27	-6	-11	-4	-3
Foreign (\$bn, NSA)	Total Assets	3071	32	-1	7	0	2
	Cash	1332	30	2	8	1	0
	UST & Agency	114	5	1	0	0	0
	MBS	25	1	0	0	0	0
	Loans and leases	1024	4	0	0	0	1
	Other	576	-8	-5	0	-1	1

Source: BofA Global Research, Federal Reserve, Bloomberg

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

Both deposits and other borrowing increased

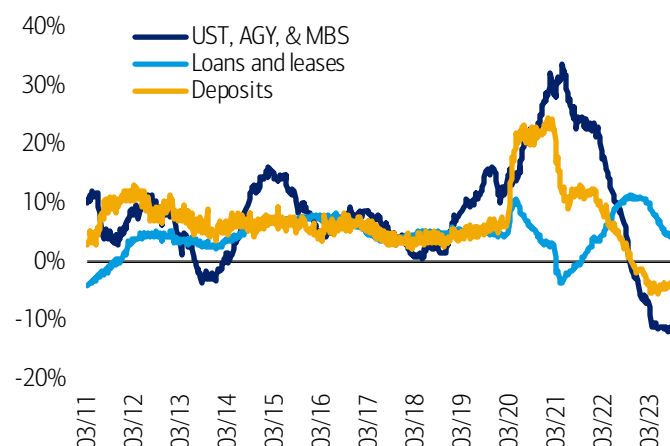
		Current	1w change	Rolling 4w avg wkly chg	Rolling 8w avg wkly chg	Rolling 12w avg wkly chg	Rolling 52w avg wkly chg
Deposits (\$bn, NSA)	All	17282	39	-11	-9	5	-15
	Domestic	16003	41	-11	-10	3	-13
	Large Domestic	10747	28	-11	-17	-3	-11
	Small Domestic	5256	13	0	7	7	-2
	Foreign	1279	-2	0	2	2	-1
Other borrowing (\$bn, NSA)	All	2275	13	14	-1	-13	12
	Domestic	1300	20	16	2	-9	10
	Large Domestic	851	22	17	6	-5	6
	Small Domestic	450	-2	-1	-4	-4	3
	Foreign	975	-7	-3	-3	-4	2

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

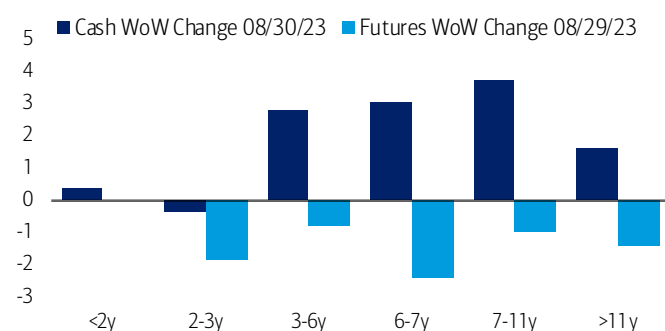


Source: BofA Global Research, Bloomberg, Federal Reserve

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

10y equivalent, \$bn, cash positions higher in the belly & back-end

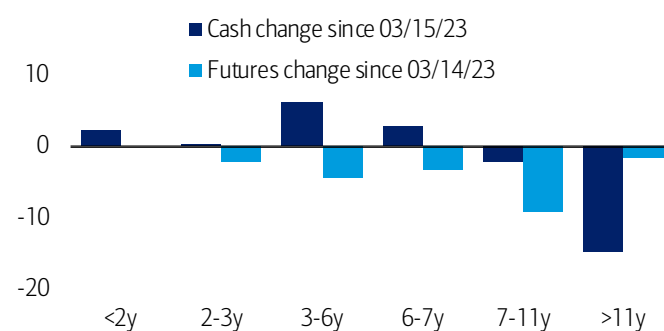


Source: BofA Global Research, NY Fed, CFTC

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Exhibit 48: Dealers change in positions since bank risk events

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

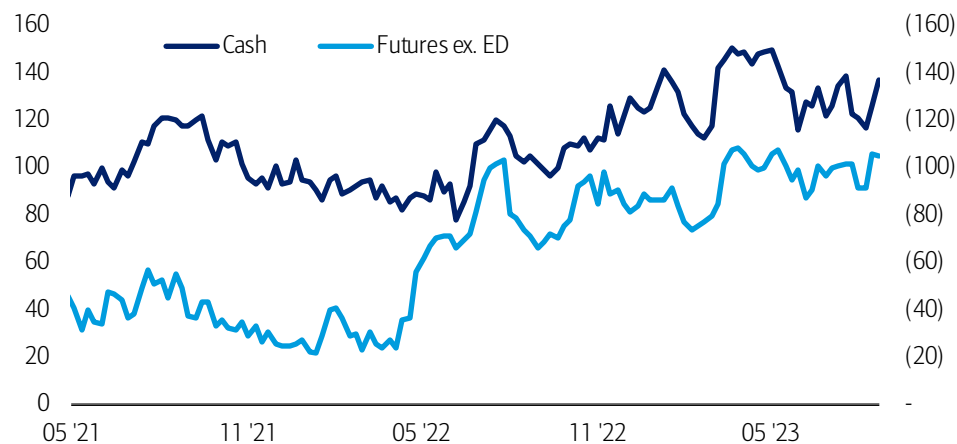


Source: BofA Global Research, NY Fed, CFTC

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Exhibit 49: Dealers total sector positions

10y equivalent, \$bn, futures shorts and cash longs picked up 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

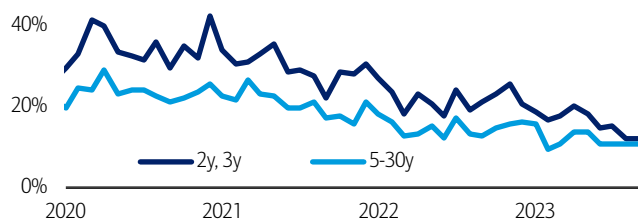
		Primary Dealer	Indirect Bidder	Direct Bidder	Investment Fund	Foreign	Depository Institution
2y	8/31/2023	13.3%	68.5%	18.2%	69.9%	12.4%	0.0%
	MoM Change	0.0%	0.0%	0.0%	-0.1%	-1.2%	-0.1%
	1Y Z-score	-1.3	1.1	-0.7	1.3	-0.9	-0.5
3y	8/15/2023	10.8%	69.4%	19.8%	71.2%	16.6%	0.0%
	MoM Change	0.0%	0.0%	0.0%	-3.0%	3.2%	0.0%
	1Y Z-score	-1.5	1.1	0.3	1.3	0.0	-0.4
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	8/15/2023	12.4%	67.7%	19.9%	69.1%	17.5%	0.0%
	MoM Change	0.0%	0.0%	0.0%	-7.9%	9.9%	0.0%
	1Y Z-score	-0.7	0.4	0.4	0.6	0.3	0.8
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	8/15/2023	10.9%	69.0%	20.1%	69.6%	15.4%	0.0%
	MoM Change	0.0%	0.0%	0.0%	-8.1%	6.5%	0.0%
	1Y Z-score	-0.1	-0.2	0.6	-0.4	0.4	0.8

Source: BofA Global Research, Treasury

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Exhibit 51: Primary dealer – average auction allotment

Dealer participation has declined

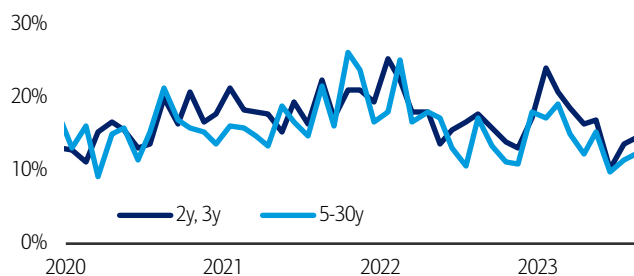


Source: BofA Global Research, Treasury

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Exhibit 53: Foreign investment – average auction allotment

Foreign participation still below average despite modest uptick in recent weeks

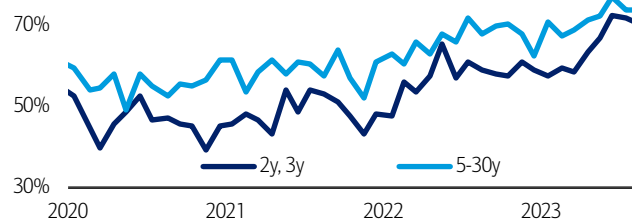


Source: BofA Global Research, Treasury

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Exhibit 52: Investment fund – average auction allotment

Fund participation still elevated

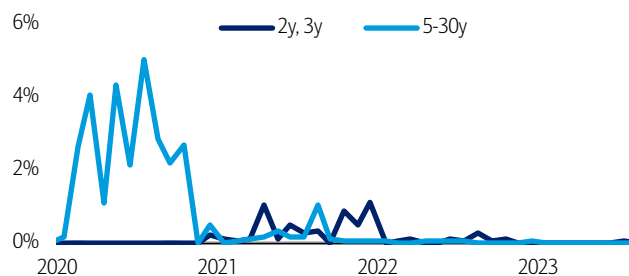


Source: BofA Global Research, Treasury

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Exhibit 54: Depository institutions – average auction allotment

Participation is minimal



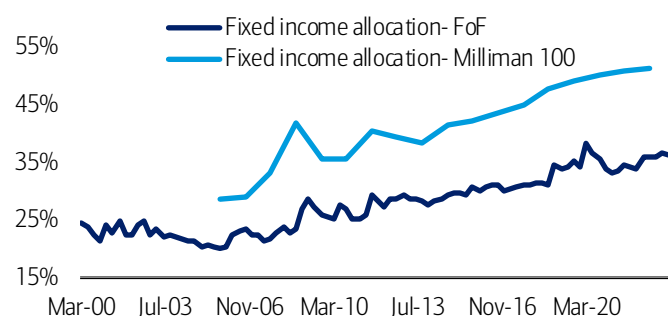
Source: BofA Global Research, Treasury

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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

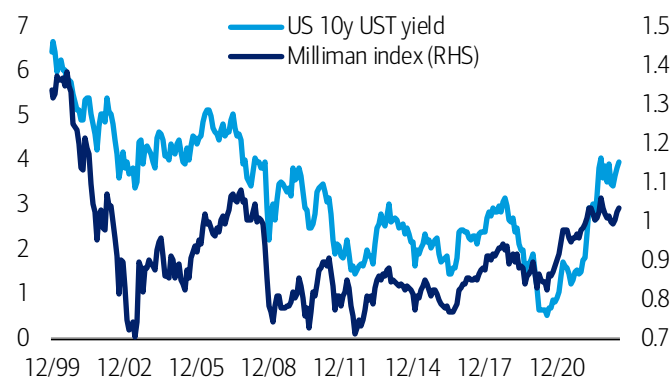


Source: BofA Global Research, Milliman, Federal Reserve

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

Funded status historically improves with an increase in interest rates

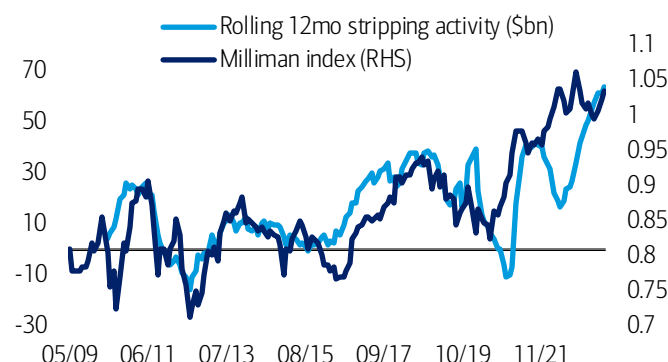


Source: BofA Global Research, Bloomberg

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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

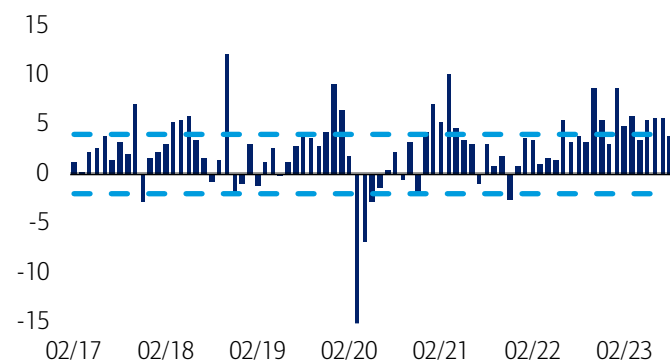


Source: BofA Global Research, Bloomberg

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

Stripping activity cooled modestly in August

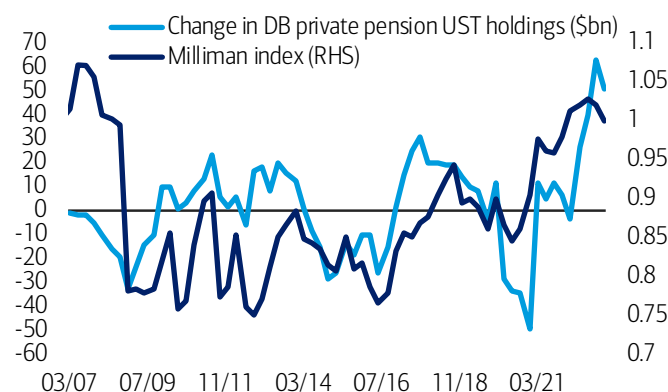


Source: BofA Global Research, Note: dashed line is 1stdev

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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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