

# US Rates Watch

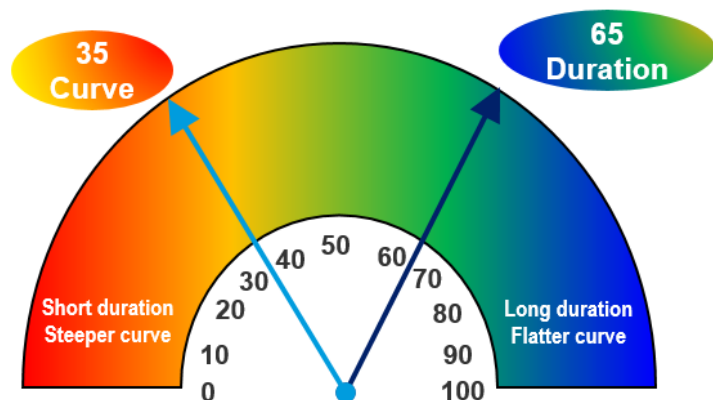
## Positioning varies by investor type, fund flows may underpin auction performance

### Real money vs fast money positioning varies

Our indicators point to a divergence of positioning between investor types. Our FX & Rates Sentiment Survey (see: [Dipping in](#)) and speculative CFTC positioning data, adjusted for the leveraged fund basis trade, both suggest real money investors are long duration despite the recent selloff. However, momentum signals and our top-down model indicate CTAs are likely still at historic shorts. Open interest points to a bias for rates to continue to sell-off at the back end of the curve due to a high concentration of out of the money longs. Back-end fund inflows retreat on the week and may have contributed to the poor 30y auction performance. Investment funds continue to be dominant players in UST auctions.

#### Exhibit 1: Curve-o-meter

Back-end longs are vulnerable to covering, CTAs remain is steepener but open interest suggests this position is not out of the money



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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### Pain trade suggests back-end selloff may continue

Open interest increased on the week through Thursday, with both new longs and shorts created. TU and FV saw the largest increase in positions while TY saw the most positions closed—particularly longs destroyed. Our futures positioning proxy (for construction details see: [Gauging positioning in Treasury Futures](#)) points to the strongest bias for rates to sell-off concentrated at the back-end of the curve (Exhibit 12) where OTM longs are the largest share of open interest. The bias is less strong in the front-end and belly of the curve where shorts are more prominent and moneyiness is mixed (Exhibit 11).

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

AUM = Assets under management

## CFTC & survey indicate real money still long

Asset manager longs and leveraged fund shorts retreated somewhat the week ending Tuesday (Exhibit 7). Asset manager longs declined the most in TY and WN. Leveraged fund shorts extended in US and were covered in WN. Speculative investors ex-leveraged funds also saw a slight moderation in longs, but their positioning remains long at around the 70th percentile over the past 5 years (Exhibit 6). This is consistent with the most recent FX and Rates Sentiment Survey (see: [Dipping in](#)) which suggests that the global real money community remains long US rates despite the recent selloff.

## Momentum continues to suggest CTAs near max short

Our indicators reflect minimal change in CTA positioning on the week (Exhibit 15). Momentum continues to suggest that CTAs are near historic shorts, relatively consistent with our top-down model (see: CTA impact on the rates market, Exhibit 13). Non-reportable positioning though indicates less of a prominent short (Exhibit 16).

## UST fund inflows may help support auction performance

In the week ending Wednesday, inflows to short-term sovereign funds picked up but long-term sovereign funds saw net outflows (Exhibit 29). We continue to think that the larger fund flow picture is important in gauging overall investor demand for USTs.

As shown in Exhibit 42 and Exhibit 44, investment funds have taken down over 70% of new issuance at auctions across tenors—a meaningful pickup over recent years. This corresponds with strong sustained inflows into sovereign funds more broadly. So far year-to-date '23 inflows have been in-line with the historic inflows observed in 2022 (Exhibit 30), but may be showing signs of slowing down (Exhibit 31). Net outflows from longer-term funds on the week may be a contributor to the weaker demand observed in the recent 30y auction.

On an AUM-weighted basis, total return fixed income funds modestly outperformed over the week ending Thursday alongside a modest rally in rates (Exhibit 33). Consistent with that, we saw benchmark-relative returns at a fund level diverge from what we have observed over the last 4 weeks (Exhibit 32). Funds like DoubleLine Total Return Bond Fund, Western Asset Core Bond Fund, and TCW Total Return Bond Fund may retain a duration overweight given the recent outperformance on the week vs the past several.

## Ex-Japan, UST FX hedged pickup looks less negative

MoF data shows that Japanese investors bought \$3bn of foreign bonds the week ending Aug 4th (Exhibit 24) and custody holdings show a further \$8bn increase the week ending Aug 9th (Exhibit 25). Japanese buying may be the result of pension rebalancing from equity to bonds based on recent performance.

The increase in custodial holdings, indicating official sector buying is more surprising, as it comes alongside upward pressure on the USD (Exhibit 25). Instead, the increase in official sector UST holdings may reflect a repositioning on the curve (into steepeners) as the data is not reported in 10y equivalents.

While UST hedged pickup from Japanese investors remains deeply negative (Exhibit 18), we have seen some improvement from the perspective of EUR, GBP, and CAD investors. Pickup is now modestly positive from the perspective of CAD investors (Exhibit 21) and forwards suggest that it will continue to improve across regions in coming months (Exhibit 17). This could help support demand from other regions besides Japan. However, foreign auction participation remains below average for now (Exhibit 42).

**Exhibit 2: On deck next week**

Calendar of upcoming events

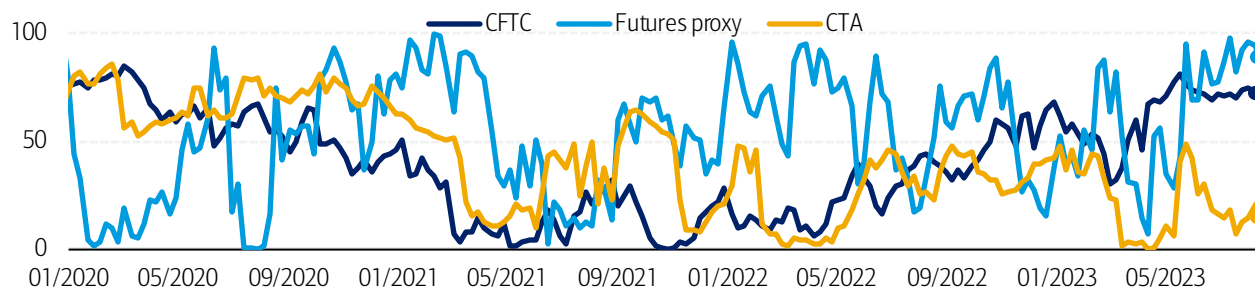
|            | US Data                               |        |              | Fed Speaker / Event                             | Treasury Auction |               |         | Treasury Settlements |        |
|------------|---------------------------------------|--------|--------------|---|------------------|---------------|---------|----------------------|--------|
|            | Series                                | BofA   | BB Consensus |   | Security         | Amount (\$bn) | Prior Δ | Security             | Amount |
| M, Aug 14  |                                       |        |              | No major events                                 | 13 week bills    | 69            | 2       |                      |        |
|            |                                       |        | And is       |   | 26 week bills    | 62            | 2       |                      |        |
|            | Import Price Index (mom)              | 0.6%   | 0.20%        | Fed's Kashkari (voter) speaks at API Conference | 42-day bills     | 60            | 5       | Bills                | 27     |
|            | Import Price Index ex Petroleum (mom) | -0.20% | -            |   |                  |               |         | Coupons              | 19     |
|            | Empire Manufacturing                  | -0.7   | -0.7         |   |                  |               |         |                      |        |
|            | Advance Retail Sales                  | 0.60%  | 0.40%        |   |                  |               |         |                      |        |
|            | Retail Sales Less Autos               | 0.70%  | 0.40%        |   |                  |               |         |                      |        |
|            | Retail Sales Less Autos and Gas       | 0.60%  | 0.40%        |   |                  |               |         |                      |        |
|            | Core Control                          | 0.60%  | 0.50%        |   |                  |               |         |                      |        |
|            | Business Inventories                  | -      | 0.20%        |   |                  |               |         |                      |        |
| Tu, Aug 15 | NAHB Housing Market Index             | 57     | 56           |   |                  |               |         |                      |        |
|            | Net Long-term TIC Flows               | -      | -            |   |                  |               |         |                      |        |
|            | MBA Mortgage Applications             | -      | -            | FOMC Meeting minutes                            | 17 week bills    | -             |         |                      |        |
|            | Housing Starts                        | 1500k  | 1440k        |   |                  |               |         |                      |        |
|            | Building Permits                      | 1470k  | 1464k        |   |                  |               |         |                      |        |
|            | Industrial Production                 | 0.40%  | 0.40%        |   |                  |               |         |                      |        |
|            | Manufacturing Production              | 0.20%  | 0.00%        |   |                  |               |         |                      |        |
|            | Capacity Utilization                  | 79.10% | 79.20%       |   |                  |               |         |                      |        |
|            | FOMC Minutes                          | -      | -            |   |                  |               |         |                      |        |
| W, Aug 16  |                                       |        |              |   |                  |               |         |                      |        |
|            | Initial Jobless Claims                | 256k   | -            | No major events                                 | 4 week bills     | -             |         | Bills                | 36     |
|            | Leading Indicators                    | -      | -0.40%       |   | 8 week bills     | -             |         |                      |        |
| Th, Aug 17 |                                       |        |              |   |                  |               |         |                      |        |

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 bias for rates to sell off, CFTC data adjusted for LFs is long, top down CTA model is lagged and shows historic shorts that may have been previously covered

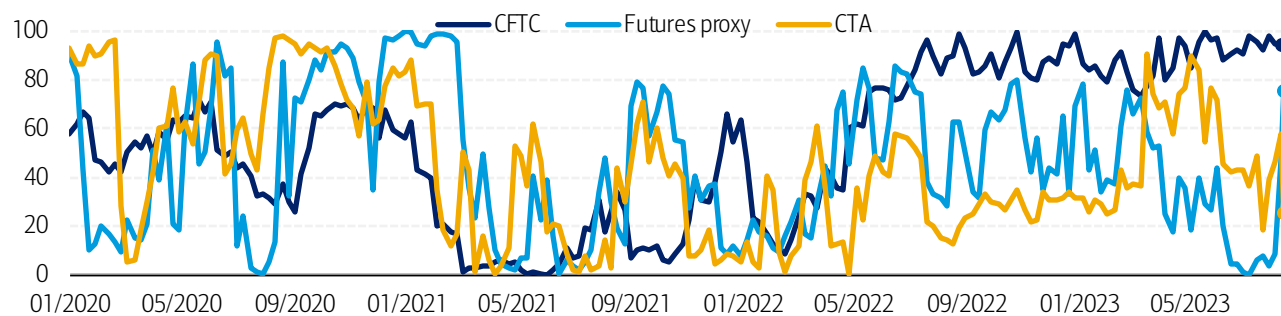


Source: BofA Global Research

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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

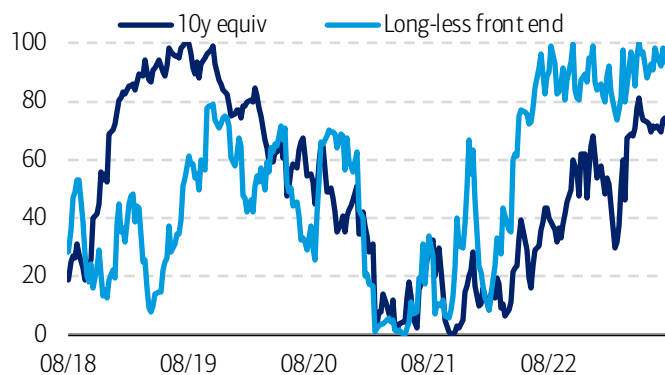


Source: BofA Global Research

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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

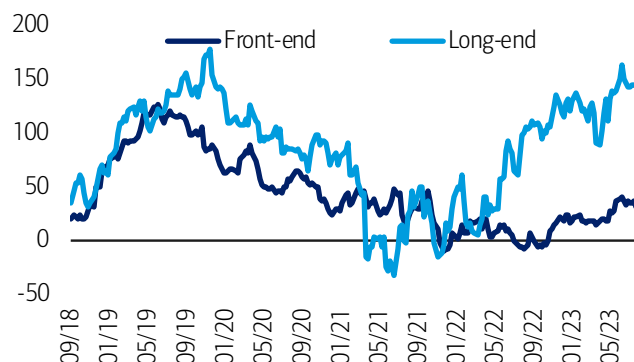


Source: BofA Global Research, Bloomberg

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

Longs are more concentrated in the back-end

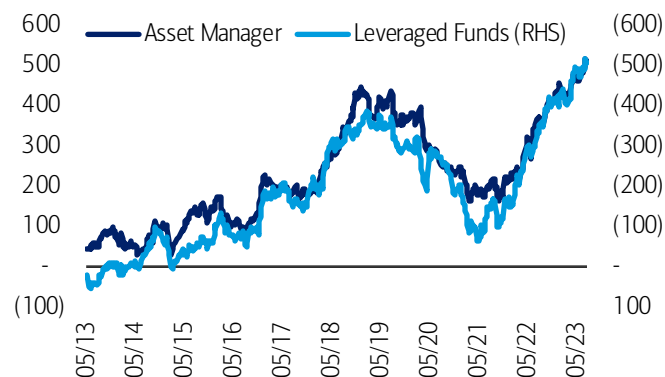


Source: BofA Global Research, Bloomberg

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

Asset manager longs correspond with leveraged fund shorts

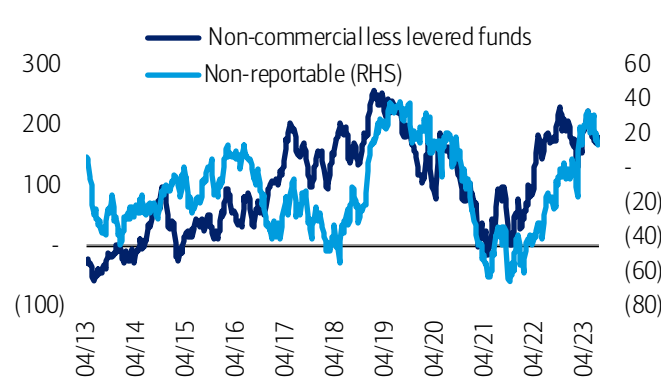


Source: BofA Global Research, Bloomberg

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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)

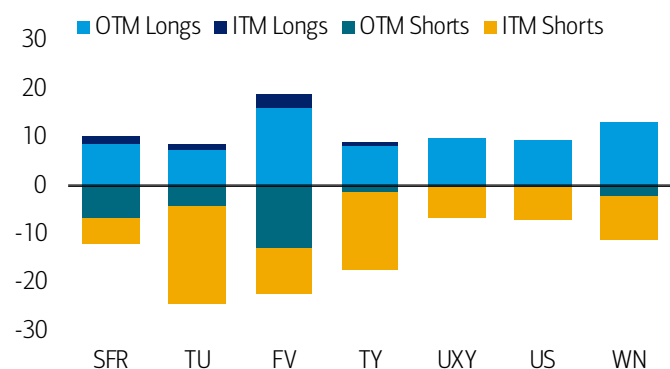
Positioning is a momentum signal: longer positioning is usually followed by stronger 10y performance

|           | 0   | 1w | 4w | 8w | 12w | 16w |
|-----------|-----|----|----|----|-----|-----|
| 0 to 10   | 10  | 1  | -1 | 0  | 1   | 2   |
| 10 to 20  | 20  | 0  | 3  | 3  | 3   | 4   |
| 20 to 30  | 30  | 3  | 3  | 2  | 1   | 1   |
| 30 to 40  | 40  | 6  | 5  | 4  | 3   | 4   |
| 40 to 50  | 50  | 1  | 2  | 2  | 2   | 2   |
| 50 to 60  | 60  | -2 | -1 | 0  | 0   | 0   |
| 60 to 70  | 70  | 1  | -1 | 0  | 0   | 0   |
| 70 to 80  | 80  | -2 | -3 | -4 | -5  | -7  |
| 80 to 90  | 90  | -4 | -2 | -2 | -3  | -5  |
| 90 to 100 | 100 | -1 | -2 | -2 | -1  | -2  |

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

On the week, longs are OTM across contracts. while shorts are largely ITM except in SFR and FV

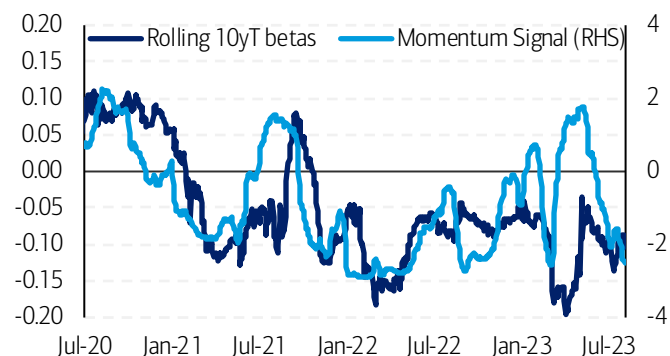


Source: BofA Global Research, Bloomberg

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### Exhibit 13: CTA positioning in 10yT

CTA little changed on the week while momentum signal dropped



Source: BofA Global Research

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### Exhibit 10: 10y rate change for given percentile of leveraged fund positioning (higher percentile = longer)

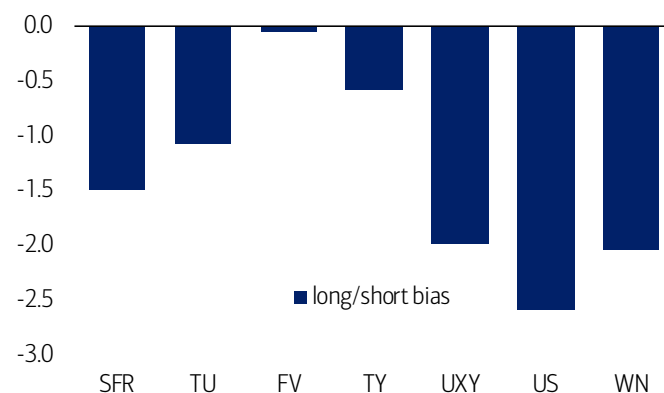
Positioning is contrarian signal: shorter positioning is usually followed by stronger 10y performance

|           | 0   | 1w | 4w | 8w | 12w | 16w |
|-----------|-----|----|----|----|-----|-----|
| 0 to 10   | 10  | 1  | 2  | 1  | 1   | 1   |
| 10 to 20  | 20  | -1 | -4 | -2 | -2  | -2  |
| 20 to 30  | 30  | -4 | -3 | -3 | -3  | -4  |
| 30 to 40  | 40  | -4 | -4 | -4 | -3  | -4  |
| 40 to 50  | 50  | 3  | 3  | 2  | 0   | 0   |
| 50 to 60  | 60  | 1  | 1  | 1  | 0   | 0   |
| 60 to 70  | 70  | 3  | 2  | 2  | 3   | 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 12: Analysis of proxies for futures positioning

Bias for rates to sell off across the curve, particularly strong at back-end

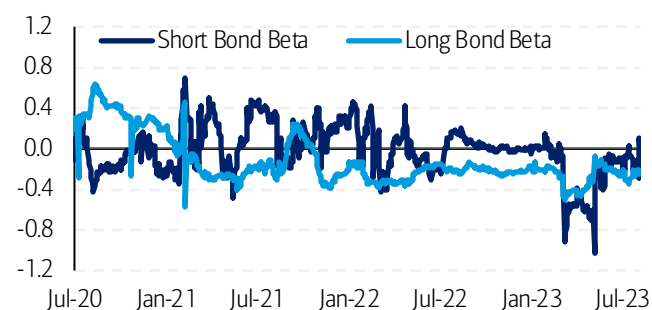


Source: BofA Global Research, Bloomberg. Note: reflects average positioning of futures stack over last 5 days

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### Exhibit 14: CTA positioning in longer duration and shorter duration bonds

Top-down model suggests CTAs little changed in long duration bonds

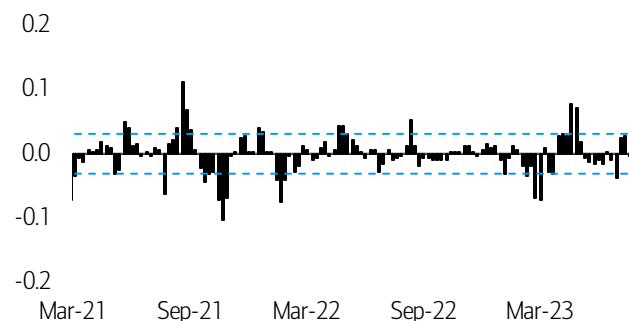


Source: BofA Global Research

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**Exhibit 15: Changes in CTA 10yT beta**

Change in 10yT beta near zero on the week

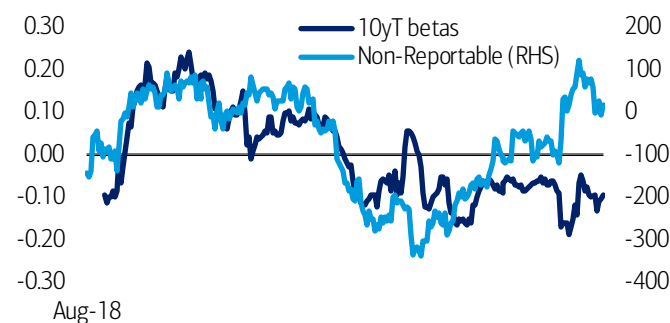


Source: BofA Global Research

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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



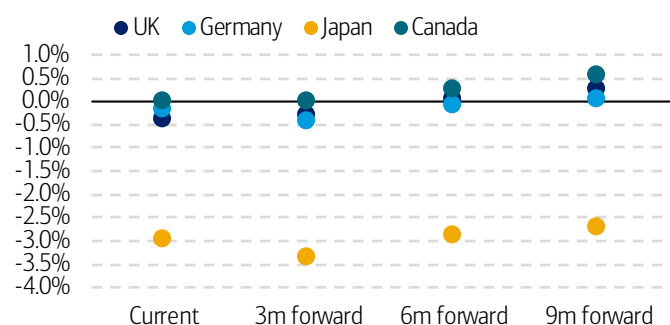
Source: BofA Global Research, Bloomberg

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## FX hedged pickup and foreign flows

**Exhibit 17: 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

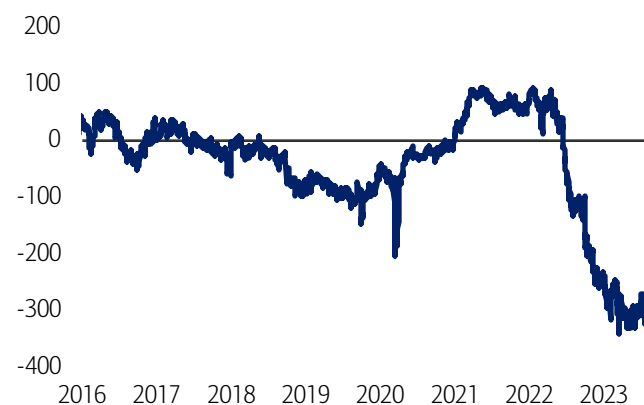


Source: BofA Global Research, Bloomberg. Note: pickup vs 10y local alternative except Japan which is relative to 20y JGB using 3m forward FX hedge

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**Exhibit 18: 10Y UST pickup to 20Y JGB, with 3m fx hedge (bps)**

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

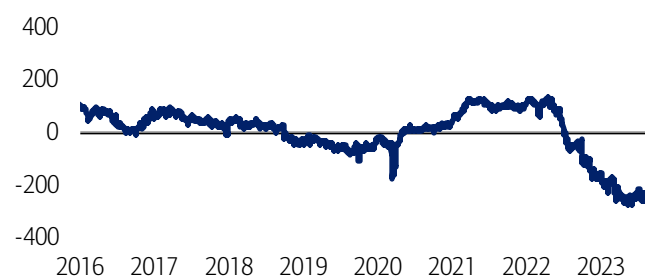


Source: BofA Global Research, Bloomberg

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**Exhibit 19: 10Y UST pickup to 10Y JGB, with 3m fx hedge (bps)**

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

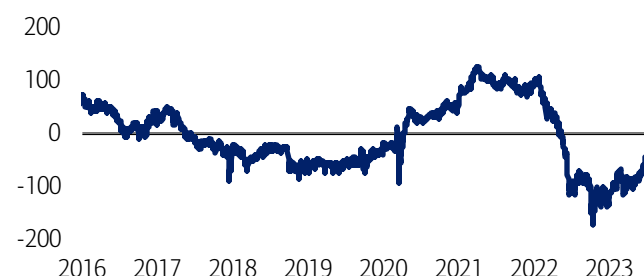


Source: BofA Global Research, Bloomberg

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

10y TSY offers negative pickup vs 10y Bund

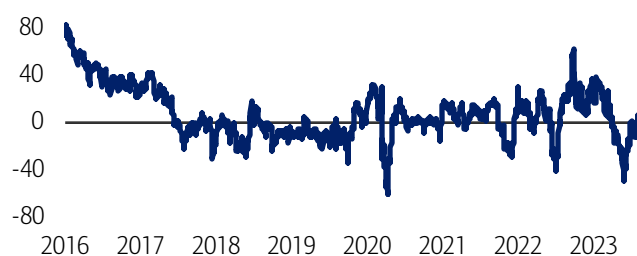


Source: BofA Global Research, Bloomberg

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**Exhibit 21: 10Y UST pickup to 10Y CAD govie, with 3m fx hedge (bps)**

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

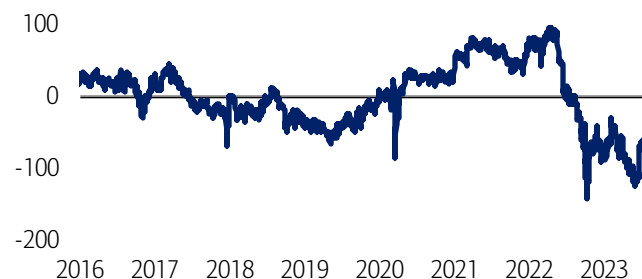


Source: BofA Global Research, Bloomberg

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**Exhibit 22: 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 23: 3m rolling JPY currency hedge**

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

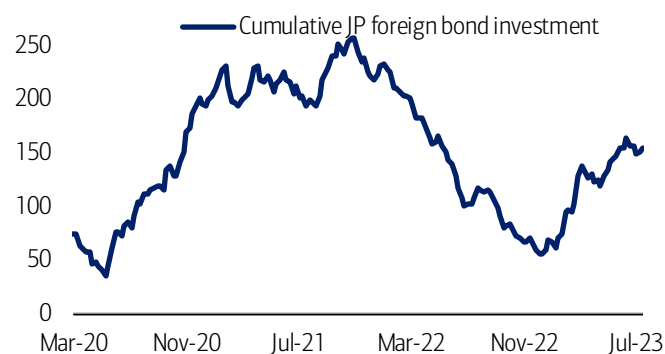
|         | 8/10/2023         |                   | As of 1 wk ago    |                   | As of 1 mo ago    |                   | As of 1 yr ago    |                   |
|---------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|         | 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 | -2.30%            | -2.99%            | -2.43%            | -3.12%            | -2.42%            | -3.06%            | -0.58%            | -1.18%            |
| 10y GER | -2.11%            | -2.80%            | -2.10%            | -2.79%            | -1.94%            | -2.58%            | 0.18%             | -0.42%            |
| 10y FRA | -1.59%            | -2.28%            | -1.58%            | -2.27%            | -1.42%            | -2.06%            | 0.74%             | 0.14%             |
| 10y BEL | -1.47%            | -2.15%            | -1.46%            | -2.15%            | -1.29%            | -1.94%            | 0.78%             | 0.18%             |
| 10y ITA | -0.51%            | -1.20%            | -0.47%            | -1.16%            | -0.29%            | -0.93%            | 2.29%             | 1.69%             |
| 10y SPA | -1.11%            | -1.80%            | -1.08%            | -1.77%            | -0.93%            | -1.57%            | 1.28%             | 0.68%             |
| 10y UK  | -1.92%            | -2.61%            | -1.94%            | -2.63%            | -1.81%            | -2.45%            | -0.58%            | -1.18%            |
| 10y CAN | -2.32%            | -3.01%            | -2.43%            | -3.12%            | -2.40%            | -3.04%            | -0.81%            | -1.41%            |

Source: BofA Global Research, Bloomberg

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**Exhibit 24: Japan investment in foreign bonds, cumulative weekly (\$bn)**

Long &amp; medium term bonds (\$bn) holdings picked up on the week

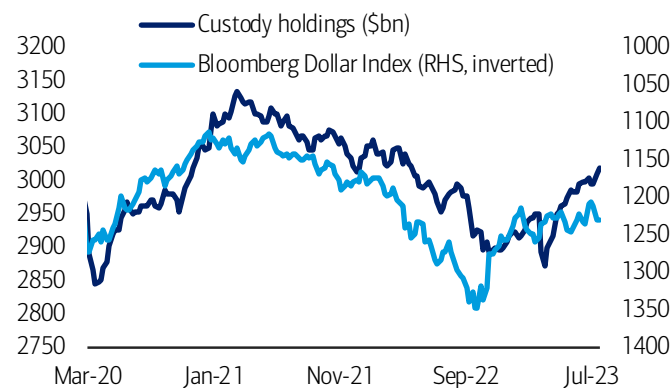


Source: BofA Global Research, Bloomberg

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**Exhibit 25: Weekly UST custody holdings, foreign official (\$bn)**

Custody holdings picked up on the week

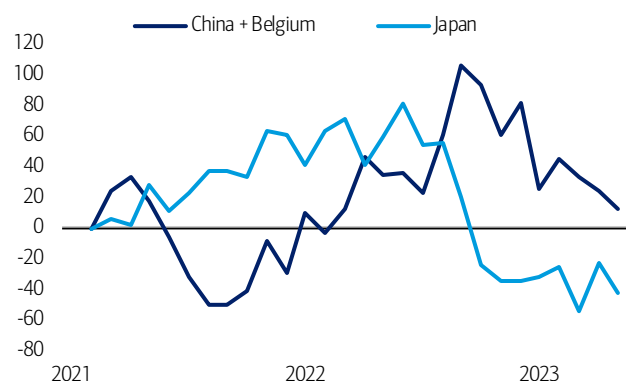


Source: BofA Global Research, NY Fed

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**Exhibit 26: Cumulative UST flows from foreign investors (\$bn)**

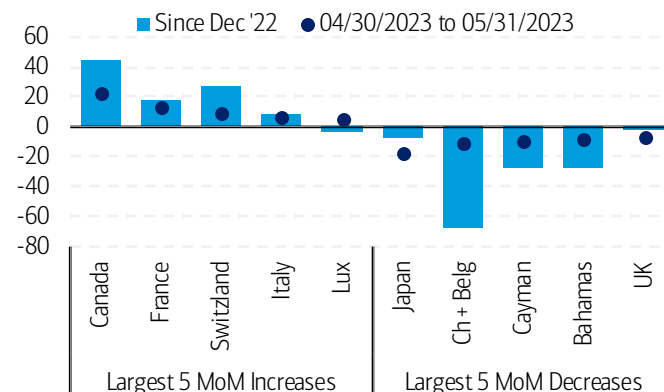
China + Belgium and Japan have turned to net sellers since end of '22



Source: BofA Global Research, Bloomberg, TIC, note: references the valuation-adjusted flow  
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**Exhibit 27: Largest MoM changes in foreign TSY holdings (\$bn)**

Canada was largest buyer, Japan largest seller in May

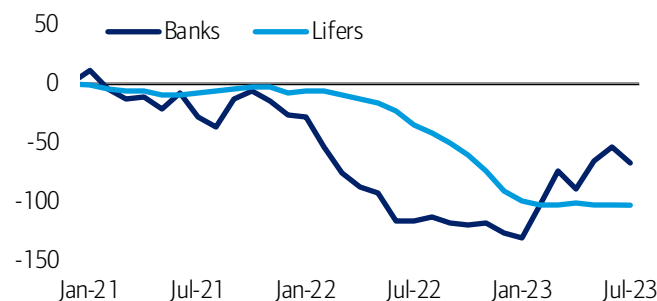


Source: BofA Global Research, TIC, Note: adjusted for level of rates

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**Exhibit 28: 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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**Fund flows and returns****Exhibit 29: US fixed income fund flows (\$million)**

US FI funds saw inflows primarily led by govt short, mixed allocation &amp; muni funds

|                   | 8/9/2023 | Rolling 4w average | Rolling 8w average | Rolling 12w average | Rolling 52w average |
|-------------------|----------|--------------------|--------------------|---------------------|---------------------|
| Gov: short        | 2,027    | 611                | 559                | 422                 | 1,283               |
| Gov: intermediate | 241      | (8)                | 162                | 265                 | 334                 |
| Gov: long         | (336)    | 1,146              | 1,246              | 1,532               | 1,102               |
| Corp: IG          | 830      | 974                | 799                | 667                 | 320                 |
| Corp:HY           | (112)    | (83)               | 155                | 329                 | (270)               |
| Corp: all quality | 67       | 69                 | 72                 | 61                  | 17                  |
| MBS               | 101      | 445                | 403                | 417                 | 121                 |
| Inflation         | 18       | 68                 | (151)              | (310)               | (487)               |
| Muni              | 1,014    | 519                | 364                | 187                 | (407)               |
| Mixed allocation  | 2,049    | 1,337              | 2,267              | 2,526               | 1,051               |
| All USFI          | 5,811    | 4,786              | 5,563              | 5,695               | 2,504               |

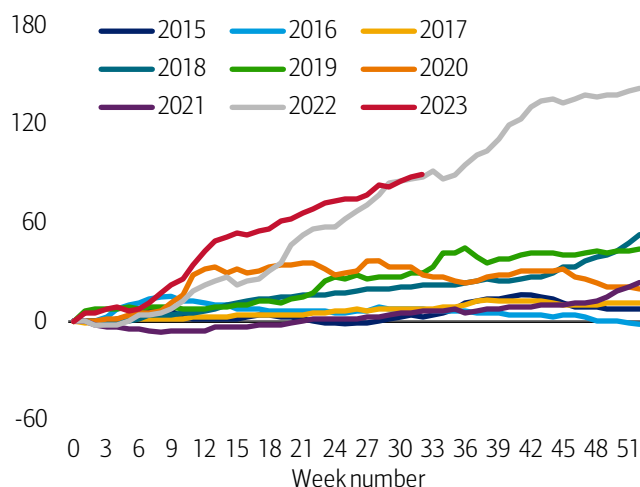
Source: BofA Global Research, EPFR

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**Exhibit 30: Sovereign fund inflows by year (\$bn)**

Flows YTD are on track with highs of last year

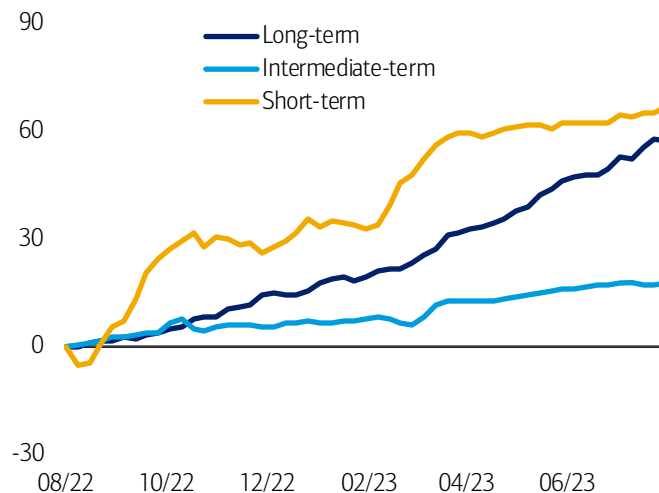


Source: BofA Global Research, EPFR

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**Exhibit 31: 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 32: Total return FI fund performance vs benchmark**

Over the last week, AUM weighted fund outperformed benchmark

|   | AUM<br>(\$Bn) | 8/10/2023 | Vs. Agg | Last 4w | Vs. Agg |
|---|---------------|-----------|---------|---------|---------|
| Vanguard Total Bond Market II Index Fund      | 255           | 0.60%     | 0.10%   | -1.66%  | 0.15%   |
| Vanguard Total Bond Market Index Fund         | 203           | 0.49%     | -0.01%  | -1.64%  | 0.16%   |
| PIMCO Income fund                             | 127           | 0.41%     | -0.09%  | -0.55%  | 1.25%   |
| The Bond Fund of America                      | 76            | 0.61%     | 0.11%   | -1.64%  | 0.16%   |
| MetWest Total Return Bond Fund                | 61            | 0.76%     | 0.26%   | -1.64%  | 0.17%   |
| PIMCO Total Return Fund                       | 55            | 0.55%     | 0.05%   | -1.45%  | 0.36%   |
| Dodge & Cox Income Fund                       | 58            | 0.57%     | 0.07%   | -1.21%  | 0.60%   |
| PGIM Total Return Bond Fund                   | 42            | 0.61%     | 0.10%   | -1.17%  | 0.64%   |
| BlackRock Strategic Income Opportunities Fund | 36            | 0.42%     | -0.08%  | -0.08%  | 1.73%   |
| Baird Aggregate Bond Fund                     | 40            | 0.53%     | 0.03%   | -1.55%  | 0.25%   |
| JPMorgan Core Bond Fund                       | 39            | 0.50%     | 0.00%   | -1.68%  | 0.13%   |
| DoubleLine Total Return Bond Fund             | 34            | 0.70%     | 0.20%   | -1.79%  | 0.02%   |
| Fidelity Series Investment Grade Bond Fund    | 34            | 0.59%     | 0.09%   | -1.49%  | 0.31%   |
| Fidelity Total Bond Fund                      | 31            | 0.51%     | 0.01%   | -1.37%  | 0.44%   |
| Western Asset Core Plus Bond Portfolio        | 24            | 0.63%     | 0.13%   | -2.50%  | -0.69%  |
| Baird Core Plus Bond Fund                     | 25            | 0.61%     | 0.11%   | -1.39%  | 0.41%   |
| John Hancock Bond Fund                        | 22            | 0.61%     | 0.11%   | -1.54%  | 0.27%   |
| TIAA-CREF Bond Index Fund                     | 21            | 0.59%     | 0.09%   | -1.66%  | 0.15%   |
| BlackRock Total Return Fund                   | 18            | 0.60%     | 0.09%   | -1.87%  | -0.06%  |
| JPMorgan Core Plus Bond Fund                  | 17            | 0.57%     | 0.07%   | -1.63%  | 0.17%   |
| Bridge Builder Core Bond Fund                 | 16            | 0.54%     | 0.04%   | -1.50%  | 0.31%   |
| T Rowe Price New Income Fund                  | 16            | 0.58%     | 0.08%   | -1.44%  | 0.37%   |
| Western Asset Core Bond Fund                  | 15            | 0.65%     | 0.15%   | -1.86%  | -0.06%  |
| CREF Bond Market Account                      | 11            | 0.54%     | 0.04%   | -1.47%  | 0.34%   |
| Fidelity Investment Grade Bond Fund           | 9             | 0.50%     | 0.00%   | -1.54%  | 0.27%   |
| DoubleLine Core Fixed Income Fund             | 7             | 0.55%     | 0.05%   | -1.55%  | 0.25%   |
| TCW Total Return Bond Fund                    | 3             | 0.76%     | 0.26%   | -2.08%  | -0.28%  |
| Janus Henderson Flexible Bond Fund            | 3             | 0.63%     | 0.13%   | -1.60%  | 0.20%   |
| Weighted avg                                  | 1297          | 0.56%     | 0.06%   | -1.45%  | 0.35%   |
| Agg   |               | 0.50%     |         | -1.81%  |         |
| 10y return                                    |               | 0.70%     |         | -3.42%  |         |

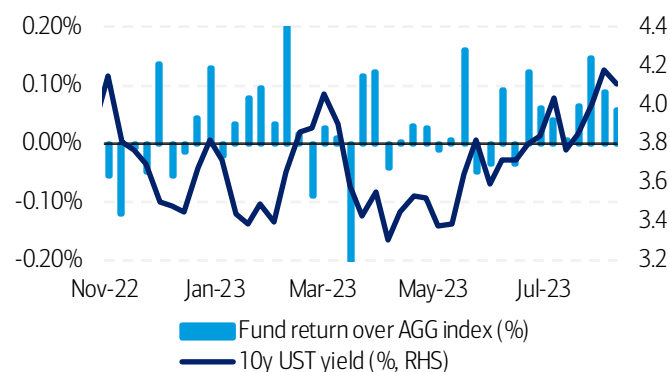
Source: BofA Global Research, Bloomberg. Note: Excess returns are fund total returns over Bloomberg Barclays Agg Index

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**Exhibit 33: Total return funds, excess return vs. 10y rate**

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

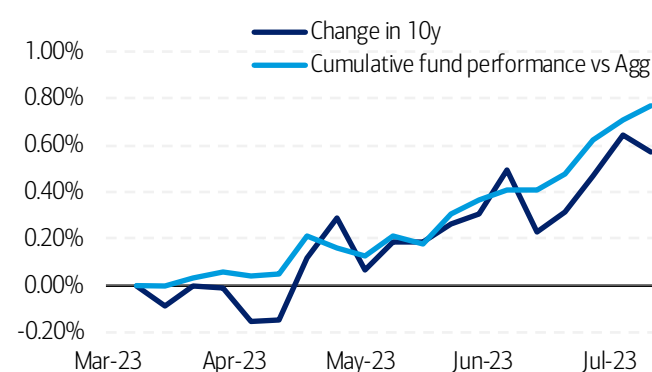


Source: BofA Global Research, Bloomberg. Note: Excess returns are fund total returns over Bloomberg Barclays Agg index

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**Exhibit 34: 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 35: Total return funds' published UST allocations vs benchmark from Q1 and Q2 '23**

Funds moderated underweight UST position from Q1 to Q2

|                     |   | AUM<br>(\$bn) | Q1 '23 (%) | Q2 '23 (%) | Change<br>(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                      | 76.1          | -11.3      | -14.0      | -2.7             |
| MWTIX               | MetWest Total Return Bond Fund                | 61.5          | -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                   | 41.7          | -33.7      | -34.2      | -0.5             |
| BAGIX               | Baird Aggregate Bond Fund                     | 39.8          | -16.9      | -17.7      | -0.8             |
| PGBOX               | JPMorgan Core Bond Fund                       | 39.5          | -5.0       | -2.2       | 2.8              |
| BSIIX               | BlackRock Strategic Income Opportunities Fund | 35.6          | -17.3      | -23.4      | -6.1             |
| FSIGX               | Fidelity Series Investment Grade Bond Fund    | 34.2          | -7.5       | -10.1      | -2.6             |
| DBLTX               | DoubleLine Total Return Bond Fund             | 33.5          | -32.7      | -32.8      | -0.1             |
| FTBFX               | Fidelity Total Bond Fund                      | 31.4          | -12.0      | -12.5      | -0.4             |
| BCOIX               | Baird Core Plus Bond Fund                     | 24.6          | -18.5      | -18.4      | 0.1              |
| WACPX               | Western Asset Core Plus Bond Portfolio        | 24.2          | -33.7      | -38.0      | -4.3             |
| JHBIX               | John Hancock Bond Fund                        | 22.2          | -22.8      | -22.5      | 0.3              |
| TBIIX               | TIAA-CREF Bond Index Fund                     | 21.3          | 0.8        | 0.3        | -0.5             |
| MAHQX               | BlackRock Total Return Fund                   | 17.9          | -13.7      | 88.0       | 101.7            |
| ONIAI               | JPMorgan Core Plus Bond Fund                  | 16.9          | -5.1       | -2.9       | 2.2              |
| BBTBX               | Bridge Builder Core Bond Fund                 | 16.3          | -22.1      | -23.0      | -0.9             |
| PRCIX               | T Rowe Price New Income Fund                  | 15.8          | -16.2      | -11.8      | 4.4              |
| WATFX               | Western Asset Core Bond Fund                  | 14.9          | -30.7      | -31.1      | -0.4             |
| QCBMIX              | CREF Bond Market Account                      | 10.7          | -21.1      | -22.6      | -1.5             |
| FBNDX               | Fidelity Investment Grade Bond Fund           | 8.9           | -5.7       | -0.3       | 5.4              |
| DBLFX               | DoubleLine Core Fixed Income Fund             | 6.9           | -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                    | 2.8           | -38.5      | -39.6      | -1.1             |
| <b>AUM weighted</b> |   | 1297.0        | -13.3      | -11.9      | 1.4              |

Source: BofA Global Research, funds' publicly available reports

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# Bank balance sheets

## Exhibit 36: Changes to bank balance sheet assets (\$bn)

Bank balance sheet increase driven by cash and loans

|   |                     | Current | 1w<br>change | Rolling 4w<br>avg wkly<br>chg | Rolling 8w<br>avg wkly<br>chg | Rolling<br>12w avg<br>wkly chg | Rolling 52w<br>avg wkly<br>chg |
|---|---------------------|---------|--------------|-------------------------------|-------------------------------|--------------------------------|--------------------------------|
| <b>All (\$bn,<br/>NSA)</b>                | <b>Total Assets</b> | 22812   | 60           | -12                           | -10                           | -7                             | -2                             |
|   | Cash                | 3291    | 44           | 1                             | -8                            | 1                              | -2                             |
|   | UST & Agency        | 1499    | -8           | -2                            | -3                            | -3                             | -4                             |
|   | MBS                 | 2569    | -8           | -4                            | -3                            | -4                             | -6                             |
|   | Loans and Leases    | 12146   | 39           | 8                             | 8                             | 5                              | 11                             |
|   | Other               | 3307    | -7           | -15                           | -5                            | -5                             | -1                             |
| <b>Large<br/>Domestic<br/>(\$bn, NSA)</b> | <b>Total Assets</b> | 13200   | 10           | -34                           | -18                           | -14                            | -6                             |
|   | Cash                | 1505    | 26           | -12                           | -9                            | 0                              | -1                             |
|   | UST & Agency        | 1100    | -5           | 0                             | -2                            | -3                             | -4                             |
|   | MBS                 | 1938    | -10          | -2                            | -1                            | -3                             | -2                             |
|   | Loans and Leases    | 6742    | 9            | 1                             | 1                             | -1                             | 3                              |
|   | Other               | 1917    | -10          | -20                           | -6                            | -8                             | -2                             |
| <b>Small<br/>Domestic<br/>(\$bn, NSA)</b> | <b>Total Assets</b> | 6534    | 46           | 7                             | 6                             | 6                              | 3                              |
|   | Cash                | 463     | 9            | 1                             | 1                             | 0                              | 0                              |
|   | UST & Agency        | 290     | -1           | 0                             | -1                            | 0                              | -1                             |
|   | MBS                 | 605     | 2            | -1                            | -1                            | -1                             | -4                             |
|   | Loans and leases    | 4382    | 31           | 8                             | 7                             | 7                              | 7                              |
|   | Other               | 794     | 5            | 0                             | 0                             | 0                              | 0                              |
| <b>All Domestic<br/>(\$bn, NSA)</b>       | <b>Total Assets</b> | 19735   | 56           | -27                           | -12                           | -8                             | -3                             |
|   | Cash                | 1968    | 35           | -12                           | -8                            | 1                              | 0                              |
|   | UST & Agency        | 1389    | -7           | 0                             | -2                            | -3                             | -4                             |
|   | MBS                 | 2543    | -8           | -3                            | -3                            | -4                             | -6                             |
|   | Loans and leases    | 11124   | 40           | 9                             | 7                             | 6                              | 10                             |
|   | Other               | 2711    | -5           | -21                           | -6                            | -8                             | -2                             |
| <b>Foreign<br/>(\$bn, NSA)</b>            | <b>Total Assets</b> | 3077    | 4            | 16                            | 1                             | 1                              | 1                              |
|   | Cash                | 1323    | 10           | 13                            | 0                             | 0                              | -1                             |
|   | UST & Agency        | 110     | -1           | -1                            | -1                            | 0                              | 0                              |
|   | MBS                 | 26      | 0            | 0                             | 0                             | 0                              | 0                              |
|   | Loans and leases    | 1021    | -1           | -1                            | 0                             | -1                             | 1                              |
|   | Other               | 597     | -3           | 5                             | 1                             | 3                              | 1                              |

Source: BofA Global Research, Federal Reserve, Bloomberg

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## Exhibit 37: Select bank balance sheet liabilities (\$bn, NSA)

Deposits drive balance sheet increase

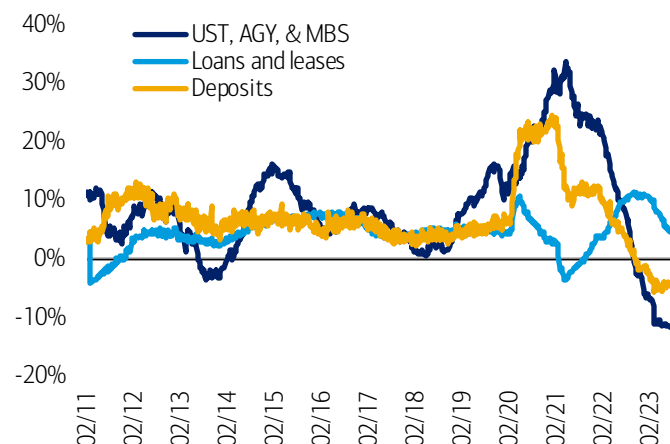
|  |                | Current | 1w<br>change | Rolling 4w<br>avg wkly<br>chg | Rolling 8w<br>avg wkly<br>chg | Rolling<br>12w avg<br>wkly chg | Rolling 52w<br>avg wkly<br>chg |
|--|----------------|---------|--------------|-------------------------------|-------------------------------|--------------------------------|--------------------------------|
| <b>Deposits<br/>(\$bn, NSA)</b>            | All            | 17326   | 122          | -6                            | 14                            | 18                             | -13                            |
|  | Domestic       | 16046   | 134          | -10                           | 11                            | 15                             | -12                            |
|  | Large Domestic | 10790   | 81           | -23                           | 0                             | 4                              | -11                            |
|  | Small Domestic | 5256    | 53           | 13                            | 10                            | 10                             | -2                             |
|  | Foreign        | 1281    | -12          | 4                             | 3                             | 3                              | -1                             |
| <b>Other<br/>borrowing<br/>(\$bn, NSA)</b> | All            | 2221    | -37          | -16                           | -27                           | -21                            | 10                             |
|  | Domestic       | 1236    | -30          | -13                           | -22                           | -21                            | 9                              |
|  | Large Domestic | 781     | -21          | -6                            | -16                           | -15                            | 5                              |
|  | Small Domestic | 455     | -10          | -7                            | -6                            | -7                             | 4                              |
|  | Foreign        | 985     | -6           | -3                            | -5                            | 1                              | 1                              |

Source: BofA Global Research, Federal Reserve, Bloomberg

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**Exhibit 38: YoY change in securities, loans, and deposits**

Securities growth usually only positive when deposit growth is positive

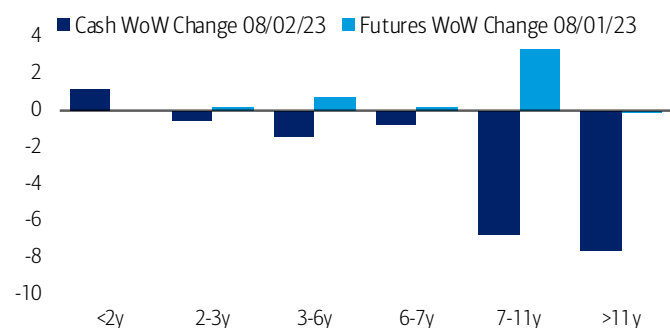


Source: BofA Global Research, Bloomberg, Federal Reserve

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**Primary dealer balance sheet****Exhibit 39: Dealers WoW change in positions**

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

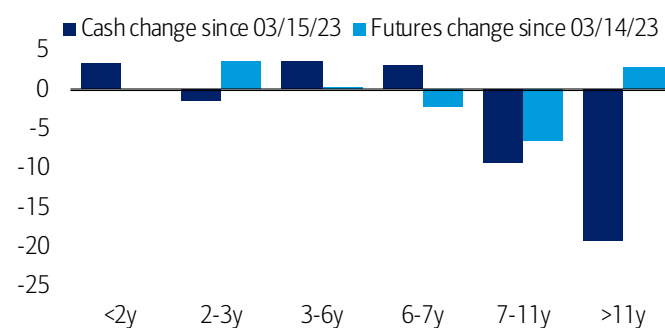


Source: BofA Global Research, NY Fed, CFTC

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**Exhibit 40: Dealers change in positions since bank risk events**

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

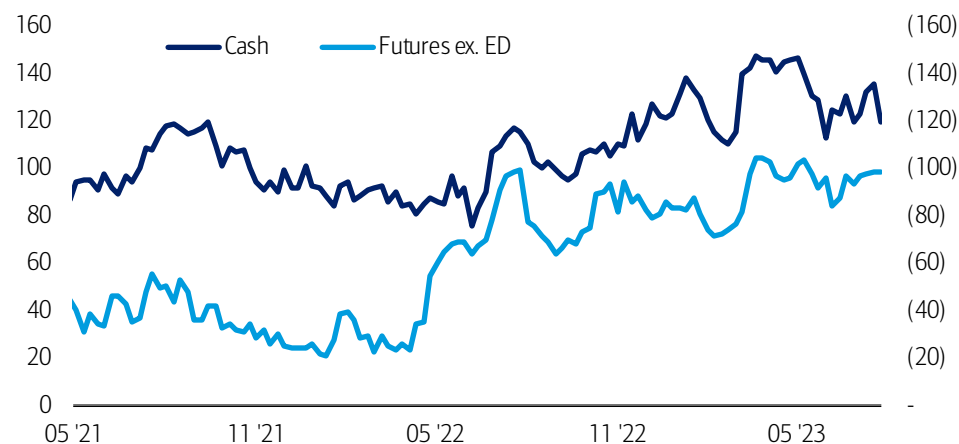


Source: BofA Global Research, NY Fed, CFTC

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**Exhibit 41: Dealers total sector positions**

10y equivalent, \$bn, cash longs dropped on the week while futures shorts little changed



Source: BofA Global Research, NY Fed, CFTC

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# Auction statistics

## Exhibit 42: Auction summary statistics

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

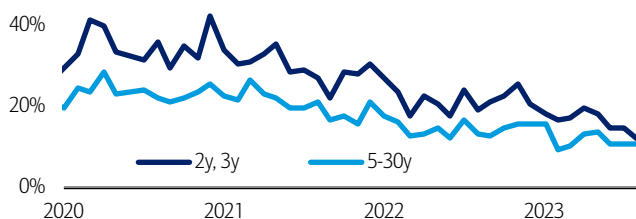
|     |            | Primary Dealer | Indirect Bidder | Direct Bidder | Investment Fund | Foreign | Depository Institution |
|-----|------------|----------------|-----------------|---------------|-----------------|---------|------------------------|
| 2y  | 7/31/2023  | 13.3%          | 68.5%           | 18.2%         | 70.0%           | 13.7%   | 0.1%                   |
|     | MoM Change | 0.0%           | 0.0%            | 0.0%          | -4.8%           | 4.3%    | 0.1%                   |
|     | 1Y Z-score | -1.4           | 1.3             | -0.7          | 1.6             | -0.7    | 1.9                    |
| 3y  | 7/17/2023  | 10.8%          | 69.4%           | 19.8%         | 74.1%           | 13.4%   | 0.0%                   |
|     | MoM Change | -5.9%          | 7.9%            | -1.9%         | 4.0%            | 2.3%    | 0.0%                   |
|     | 1Y Z-score | -1.9           | 1.2             | 0.3           | 2.1             | -0.8    | -0.4                   |
| 5y  | 7/31/2023  | 12.2%          | 19.7%           | 68.1%         | 70.9%           | 13.4%   | 0.1%                   |
|     | MoM Change | 0.0%           | 0.0%            | 0.0%          | -6.8%           | 5.1%    | 0.0%                   |
|     | 1Y Z-score | -0.6           | 1.2             | 0.1           | 0.3             | 0.0     | 1.4                    |
| 7y  | 7/31/2023  | 8.1%           | 75.3%           | 16.6%         | 68.5%           | 14.9%   | 0.0%                   |
|     | MoM Change | 0.0%           | 0.0%            | 0.0%          | -12.6%          | 5.3%    | 0.0%                   |
|     | 1Y Z-score | -1.0           | 1.1             | -0.8          | -0.5            | 0.3     | 1.0                    |
| 10y | 7/17/2023  | 12.4%          | 67.7%           | 19.9%         | 77.1%           | 7.6%    | 0.0%                   |
|     | MoM Change | -5.4%          | 5.4%            | 0.0%          | 8.4%            | -3.0%   | 0.0%                   |
|     | 1Y Z-score | -0.8           | 0.5             | 0.5           | 2.1             | -0.9    | -0.6                   |
| 20y | 7/31/2023  | 9.6%           | 68.8%           | 21.7%         | 76.0%           | 12.3%   | 0.0%                   |
|     | MoM Change | 1.8%           | -5.8%           | 4.1%          | -2.9%           | 1.7%    | 0.0%                   |
|     | 1Y Z-score | -0.2           | -0.7            | 1.6           | 0.6             | -0.4    | -0.3                   |
| 30y | 7/17/2023  | 10.9%          | 69.0%           | 20.1%         | 77.7%           | 8.9%    | 0.0%                   |
|     | MoM Change | 1.9%           | -3.9%           | 2.0%          | -1.2%           | -0.7%   | 0.0%                   |
|     | 1Y Z-score | -0.1           | -0.3            | 0.7           | 1.1             | -1.2    | -0.8                   |

Source: BofA Global Research, Treasury

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## Exhibit 43: Primary dealer – average auction allotment

Dealer participation has declined

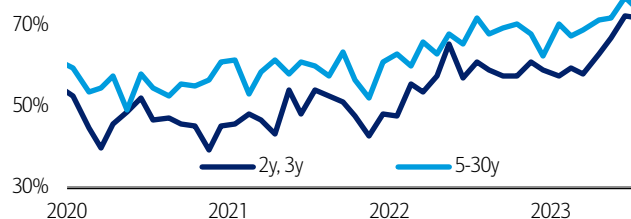


Source: BofA Global Research, Treasury

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## Exhibit 44: Investment fund – average auction allotment

Fund participation still elevated

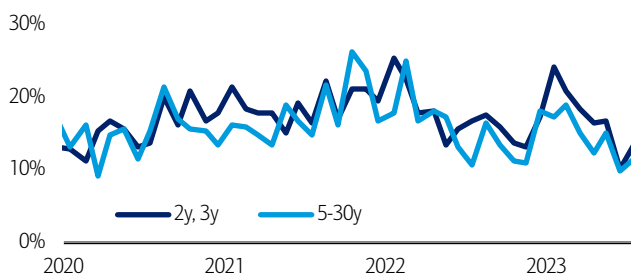


Source: BofA Global Research, Treasury

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## Exhibit 45: Foreign investment – average auction allotment

Foreign participation still below average despite modest uptick in recent weeks

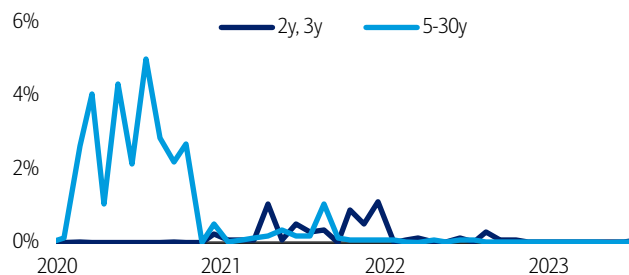


Source: BofA Global Research, Treasury

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## Exhibit 46: Depository institutions – average auction allotment

Participation is minimal



Source: BofA Global Research, Treasury

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