

US Rates Watch

US Vol – vol higher on meta-stable outlook

Recent dynamic of rates

The recent dynamic of rates and breakevens suggests c.10% likelihood of hard landing scenarios, c.30-35% likelihood of soft landing, c.50-60% steady resilience = no-landing, and 5-15% likelihood of reacceleration. We see the no-landing scenarios that seem to be baseline currently as inherently meta-stable and transient, and likely to resolve itself into one of the two more orthodox states, i.e., either reacceleration (Fed hikes, higher rates, higher vol, and a bear flattening of the curve) or landing scenarios (Fed cuts, lower rates and lower vol). We continue to be biased towards the latter medium term.

Likelihood of reacceleration still low

A key expression of the pickup in the likelihood of reacceleration scenarios would be a shift in the 2s10s curve dynamic into higher bear flattening frequencies. These have stayed steady over the past two months. We think the low likelihood that the market may be assigning to reacceleration scenarios reflects a macro data backdrop that, despite the recent bias towards resilience, does not support a high degree of conviction (i.e., recent resilience against a backdrop of high macro data dispersion). We think this context is unlikely to change near term as high macro data dispersion is generally a hallmark of a late cycle dynamic with the Fed in restrictive territory.

Expectations for vol going forward

Vol is fair at current levels relative to our expectations, with the balance of risks likely tilted higher near-term. In general terms, this implies a bias towards selling vol on excursions beyond the fair ranges (e.g., fading inversions of the term structure of volatility > -5bp, selling left vs right side vol as 1y1y pushes >130bp).

Trade recommendations

We continue to favor payer ladders and steepeners in conditional form to hedge higher rate scenarios under still relatively low likelihood of reacceleration (i.e., under high macro data dispersion). Portfolios should not overlook scenarios where the pendulum swings back towards landing scenarios at a 6-12m horizon. In this context, we favor receiver spreads in the belly.

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Abbreviations:

10yT – 10-year Treasury

ULC – Upper left corner

URC – Upper right corner

LLC – Lower left corner

LRC – Lower right corner

ITM – In the money

OTM – Out of the money

GFC – Great Financial Crisis

c. – circa (approximately)

CDF – Cumulative Distribution Function

PDF – Probability Density Function

BE – Inflation Breakevens

ERP – Equity Risk Premium

AMs – Asset Managers

ETF – exchange traded fund

RV - Relative value

For a list of open trades and trades closed in the last 12 months, please see our [Global Rates Weekly report](#).

All levels as of April 12.

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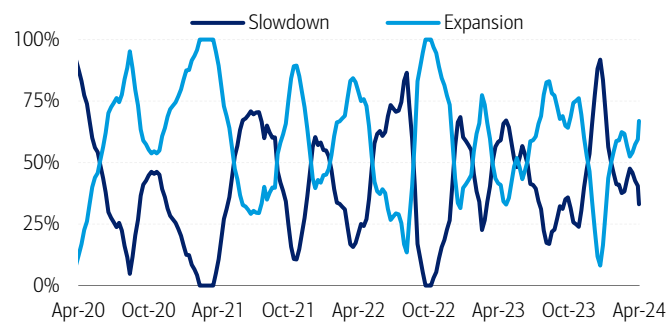
Recent dynamic of rates

Expectations for outlook in '24 continue to swing between soft landing and no landing (as they were over most of '23), with the latter dominating in recent weeks (Exhibit 1, which together with the 10y rate PDFs in Exhibit 59 suggests c.10% likelihood of hard landing, c.30-35% likelihood of soft landing, c.50-60% steady resilience = no-landing, and 5-15% likelihood of reacceleration). The recent dynamic has reflected:

- A context of resilience data, but one that also implies a relatively unorthodox macro backdrop where above potential growth rates coexist with expectations for a downward drift of inflation (albeit more slowly than expected going into '24).
- Increasing likelihood of an on-hold Fed for longer, as expectations for policy easing over the next 3-6m fade (see Exhibit 2)
- A context of diffused uncertainty supported by heightened geopolitical risks.

Exhibit 1: Decomposition of 10y breakeven dynamic into frequencies bear widening (expansion) and bull tightening (slowdown) moves

Normalized frequency of expansion moves has dominated the dynamic of breakevens since early Feb

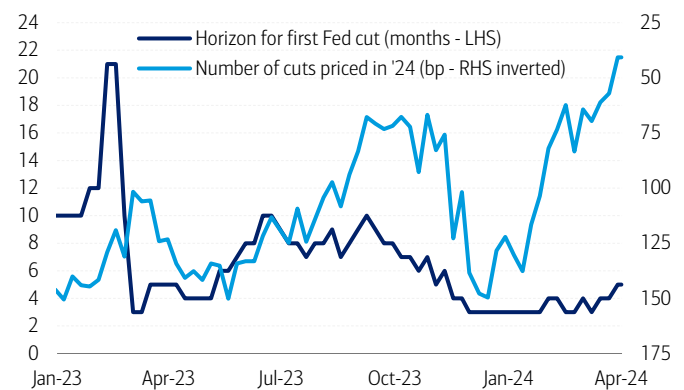


Source: BofA Global Research

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Exhibit 2: Pricing of Fed policy

Cuts priced only at a 5m horizon currently, with only c.2 cuts expected in '24



Source: BofA Global Research

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Higher growth & lower inflation expectations = meta stable state ...

The unorthodox nature of the macro backdrop noted above is significant as it suggests a meta-stable sort of market dynamic, and implicitly also a high level of skepticisms from the market around the outlook. Generally, one expects some level of positive correlation between growth and inflation fundamentals (higher growth generally drives inflation higher, and vice versa). An un-orthodox context of above potential growth rates along with expectations for a drift lower of inflation over time is likely transient, and will potentially resolve itself into one of the two more orthodox states, i.e., either:

1. A scenario where above potential rates of growth start to feed on inflation = reacceleration = a repricing of neutral rate expectations higher & potentially a shift in expectations for the Fed towards more hikes (vs cuts priced in on the curve currently). Vol pushes higher in this context, rates selloff with the 10y potentially > 5.5% in outright reacceleration scenarios, and the curve bear flattens.
2. A scenario where growth fades as monetary policy lags exert themselves, which will support expectations for a downward drift of inflation = soft landing (or potential hard) = increase of scope for Fed policy cuts. Vol drifts lower with the left side leading the way in these scenarios, and rates rally with 10y yields fair at levels closer to c.4% in this context.

Over 1Q the market saw the balance of risks tilted toward landing scenarios (#2), and that supported a buy the dip stance in rates and a lower vol context (see Exhibit 12). The resilience in recent data has pushed the market into pricing higher likelihoods of steady resilience & no-landing scenarios. However, the market as stayed shy of pricing a higher likelihood of reacceleration scenarios (#1).



... but market still pricing a low likelihood of reacceleration

As we just noted, the market has stayed shy of pricing reacceleration at this point: it has faded Fed cuts in '24 down to c.2 cuts only (Exhibit 2) and has demanded a higher premium to buy the dip in USTs, but seems to continue to assign a relatively low likelihood to outright reacceleration (c.5-15% in our estimation).

From here, the risk is that higher no-landing odds will eventually feed into also a higher likelihood of outright reacceleration scenarios (#1), and shift policy expectations from cuts to further policy tightening (higher rates, higher vol, and a further bear flattening of the curve). Indeed, a key expression of the pickup in the likelihood of reacceleration scenarios would be a shift in the 2s10s curve dynamic into higher bear flattening frequencies. However, we have not seen clear signs that as bear flattening frequencies have stayed steady over the past two months (see Exhibit 3 and Exhibit 15).

We think the low likelihood that the market may be assigning to reacceleration scenarios reflects a macro data backdrop that, despite the recent bias towards resilience, does not support a high degree of conviction (i.e., recent resilience against a backdrop of high macro data dispersion). Indeed, in our gauge for the level of conviction the market may be able to extract from the recent macro data, we see the lowest levels of potential conviction around the outlook since early '17 (see Exhibit 4). We think this context is unlikely to change near term as high macro data dispersion is generally a hallmark of a late cycle dynamic with the Fed in restrictive territory.

Exhibit 3: Frequency of different moves in the recent 2s10s dynamic

Higher frequency of bear flattening moves over the lasty 2m

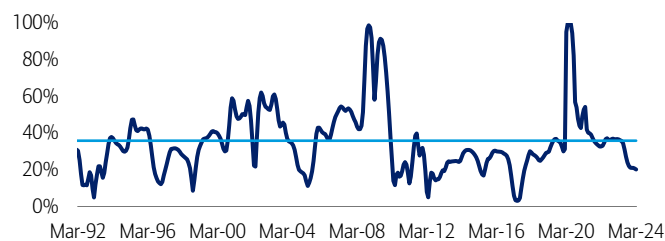
	bull-Steep	bear-Flat	bull-Flat	bear-Steep
2w	6%	34%	12%	48%
1m	23%	32%	14%	32%
2m	28%	34%	18%	21%

Source: BofA Global Research

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Exhibit 4: Gauge for the level of conviction the market may extract out of the current macro backdrop

Lowest levels of potential conviction since the late '16 / early '17 selloff



Source: BofA Global Research

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Recent forecast revisions

Our recent rates forecast revisions are in line with this context (see [Cut mulligan](#)). They acknowledge the potential for the Fed to stay on hold for longer (higher frontend yields) but reflect also: (1) a high threshold for the market to price outright reacceleration as baseline; and (2) the potential for a return to more orthodox landing scenarios by end-'24, which leaves the backend relatively anchored medium term (see Exhibit 5).

Exhibit 5: UST rates forecasts (%)

We revise up our front-end US rates forecasts, higher frontend yields, anchored backend yields

	2Q24	3Q24	4Q24	1Q25	4Q25
2yT	4.85	4.70	4.50	4.25	3.75
5yT	4.50	4.45	4.35	4.25	4.00
10yT	4.30	4.25	4.25	4.25	4.25
30yT	4.65	4.65	4.75	4.75	4.75

Source: BofA Global research

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Implications for the dynamic of volatility

Volatility was biased lower in 1Q (on landing expectations and the pricing of policy easing near term) but the recent dynamic has seen support for vol from a range of factors including: (1) a widening of the range of outcomes, (2) a relatively meta-stable macro backdrop described above; and (3) a context of diffused uncertainty supported by geopolitical risks.



We see this support for volatility not only in rates space (see Exhibit 6) but also in risky asset space (Exhibit 7). The dynamic of risky assets has seen a material support from the discounting component of valuations and rate cuts expectations over the last couple of quarters, dampening vols lower. However, as that support faded recently (fewer cuts priced in) and the volatility of the discounting component of valuations increased, the bias in risky asset vol shifted from a short vol bias to a flat/marginally long bias.

Exhibit 6: US rates vol moves month-to-date

Higher vol left by the gamma sector

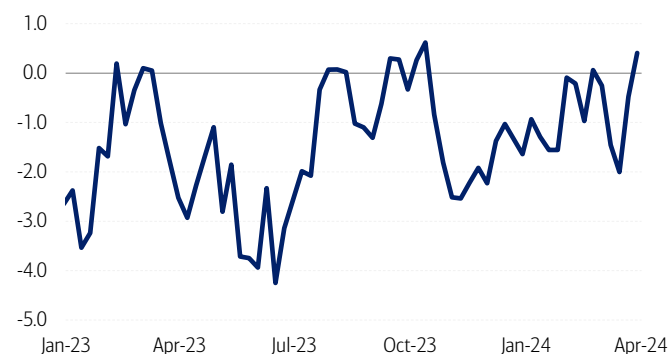
	1y	2y	3y	5y	7y	10y	30y
1m	10	19	19	19	18	18	18
3m	10	16	15	15	13	13	13
6m	11	12	12	12	10	9	9
1y	11	11	10	8	7	7	7
2y	9	8	9	8	7	7	6
3y	8	7	8	7	7	7	6
4y	7	6	6	6	6	6	6
5y	7	5	5	5	5	6	6
10y	3	4	4	4	4	3	4
15y	3	3	3	3	3	3	3
30y	2	3	3	2	3	2	3

Source: BofA Global Research

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Exhibit 7: Proxy for equity vol positioning extracted from ETF flows

Recent shift in bias from short vol to flat/marginally long vol



Source: BofA Global Research

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In the recent dynamic we have seen: (1) the outperformance of gamma, particularly in the belly and right side (see Exhibit 10); with (2) the re-inversion of the term structure of volatility (see Exhibit 14), and (3) a marginal outperformance of the left side vs the right side in intermediate expiries as the range of scenarios for the Fed medium term widened.

On our RV metrics, vol is looking rich on the right side vs the dynamic over the last 3m when we consider the directionality of vol with the forwards (see Exhibit 17), but still looks relatively cheap vs the last 6-12m (see Exhibit 19 and Exhibit 21). The richness of the left vs the right side of the grid continues to drive pickups to the forwards for bull-flatteners (see Exhibit 32) and bear-steepeners (see Exhibit 38). Relative to delivered vols, however, we see implieds trading rich on the right side of the grid (see Exhibit 54 and Exhibit 55 for implied vs 21 and 63 business days delivered vol, respectively).

Receiver skew looks rich on the left side of the grid reflecting still higher odds of cuts vs hikes medium term (see Exhibit 24, Exhibit 26 and Exhibit 30), while payer skew looks fair/slightly rich on the right side (see Exhibit 25, Exhibit 27 and Exhibit 30) reflecting the potential for higher rates tied to no-landing and re-acceleration scenarios. Receiver volumes outpace payer volumes over the last week by a factor of 1.6 (see Exhibit 60 and Exhibit 61)

In forward space, vol trades at a premium vs ATM on the ULC of the grid (see Exhibit 46), and on Z-Scores trades cheap vs the recent dynamic only on the URC of the grid (see Exhibit 47).

Going forward ...

We think left side volatility trades fair in the 120-130bp context for 1y1y (130bp currently) in a context where the Fed is expected to cut medium term. For the left side to trade flat to the right (at levels c.100bp) we continue to believe the market needs to see fed cuts. Our economist's baseline has the first cut now only in 4Q24, so the left side is likely to trade rich to the right for most of '24.

A Fed on-hold for longer also sustains 1y10y vol in the upper end of the range for longer (i.e., 100-115bp range, currently 108bp). The potential for a drift lower into the 85-100bp range is now likely backloaded into 4Q24.



Gamma is likely to continue to trade relatively flat vs intermediates over the next quarter (between -5bp and +5bp for the spread between 1m10y and 1y10y, currently -2bp).

Vol is therefore fair at current levels relative to our expectations, with the balance of risks likely tilted higher near-term. In general terms, this implies a bias towards selling vol on excursions beyond the ranges notes above (e.g., fading inversions of the term structure of volatility > -5bp, selling left vs right side vol as 1y1y pushes >130bp).

Trade recommendations

A context where market expectations are bound between soft landing (consistent with c.4-4.25% for 10yT yields) and steady resilience / no landing scenarios (consistent with c.5-5.25% for 10yT yields) has supported payer ladders as a hedge for potential selloffs in this range. We continue to find these trades attractive on the belly & backend of the curve, e.g., costless 6m10y payer ladders which have a downside breakeven of c..5.05% for 10y SOFR rates, or 5.5% for 10yT as constant spreads. The risk to these trades is the scope for the market to build-up a higher likelihood of reacceleration scenarios which may drive 10yT yield > 5.5%, with potentially unlimited downside on these positions. As we highlighted above, we see a high threshold in the current context for the pricing of these scenarios as baseline.

Another position that has been explored as a hedge for higher yields has been steepeners (see [How much can the curve bear steepen](#)). Up to a certain point, improved fundamentals (i.e., resilient data) along with relatively steady Fed expectations creates the potential for bear steepening moves, beyond that point data strength starts to impact the policy pricing more significantly and drive a higher frequency of bear flattening moves. The transition between these two regimes for the curve (bear steepening and bear flattening) is linked to the pricing of material higher odds of reacceleration (reacceleration scenarios generally imply more scope for the Fed to tighten and higher frequencies of bear flattening moves). In outright space our bias has been for 5s30s steepeners, and conditionally we have favored 2s10s cap spreads with expiries between 1-2y.

In the above paragraphs we have focused on higher yield regimes, but portfolios should not overlook scenarios where the pendulum swings back towards landing scenarios at a 6-12m horizon. In this context, we favor receiver spreads in the belly, e.g., 1y5y receiver spreads atm/atm-40bp with a cost of 17bp of delta indicative and a max upside on the position of 23bp (at constant spreads this trade positions for a mean reversion of 10yT yields to the 4-4.25% yields consistent with soft landing scenarios). The downside risk on this position is limited to the upfront premium.



Levels and Recent Moves

Exhibit 8: ATM Normal Volatility Grid

108bp for 1y10y volatility on Friday's close

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	82	116	120	125	118	110	99
3M	99	120	121	121	115	109	98
6M	114	125	123	119	113	108	97
1Y	130	128	125	117	113	108	97
2Y	124	121	118	113	109	106	94
3Y	119	117	114	110	106	103	92
4Y	114	112	110	106	103	100	90
5Y	111	108	107	103	101	98	88
10Y	94	93	91	88	86	84	76
30Y	70	69	68	65	64	59	56

Source: BofA Global Research

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Exhibit 9: ATM Volatility Grid – 3m Z-Scores

Grid broadly fair/rich on Z-Scores except for the ULC

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	-0.8	-0.1	0.4	1.4	1.4	1.4	2.1
3M	-0.7	0.1	0.6	1.2	1.2	1.2	1.8
6M	-0.4	0.5	0.7	1.0	0.9	0.9	1.3
1Y	0.2	0.7	0.6	0.6	0.5	0.5	0.9
2Y	0.6	0.6	0.5	0.5	0.6	0.6	1.0
3Y	0.7	0.7	0.7	0.8	0.8	1.0	1.3
4Y	0.6	0.7	0.8	1.1	1.1	1.4	1.7
5Y	0.7	0.8	0.9	1.3	1.5	1.8	2.1
10Y	1.2	1.3	1.4	1.7	1.8	2.1	2.2
30Y	2.1	2.1	2.1	2.1	2.1	2.1	2.1

Source: BofA Global Research

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Exhibit 10: ATM Normal Volatility Grid – CoW

Belly of the gamma sector leading the outperformance in the past week

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	11.9	13.2	16.3	20.7	18.9	17.1	15.5
3M	6.6	10.2	12.3	14.3	13.4	12.5	11.4
6M	8.4	10.6	10.6	10.7	10.0	9.3	8.3
1Y	7.6	8.4	8.1	7.6	7.2	6.8	6.0
2Y	7.0	6.2	6.1	5.8	5.6	5.4	4.9
3Y	6.1	5.4	5.3	5.1	5.1	5.0	4.2
4Y	4.3	4.2	4.2	4.2	4.3	4.4	3.7
5Y	3.7	3.7	3.7	3.7	3.9	4.2	3.8
10Y	2.0	1.9	1.9	1.8	2.0	2.3	2.5
30Y	1.9	1.9	1.8	1.8	1.7	1.6	1.6

Source: BofA Global Research

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Exhibit 11: ATM Straddle Premiums (indicative only)

6.7% straddle premiums for 1y10y

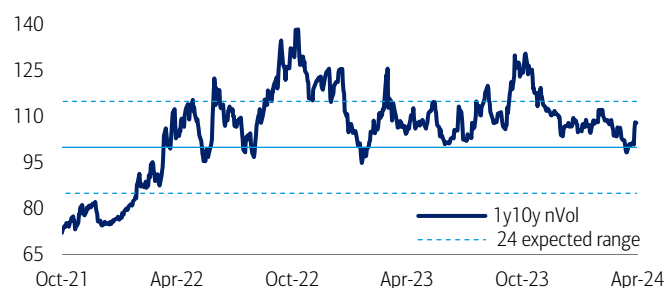
	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	0.2%	0.5%	0.8%	1.3%	1.6%	2.1%	4.0%
3M	0.4%	0.9%	1.3%	2.1%	2.7%	3.5%	6.8%
6M	0.6%	1.3%	1.9%	2.9%	3.8%	4.9%	9.5%
1Y	1.0%	1.8%	2.6%	4.0%	5.2%	6.7%	13.1%
2Y	1.2%	2.4%	3.4%	5.2%	6.8%	8.9%	17.4%
3Y	1.4%	2.7%	3.9%	6.0%	7.8%	10.2%	20.1%
4Y	1.5%	2.9%	4.1%	6.4%	8.4%	11.0%	21.9%
5Y	1.5%	3.0%	4.3%	6.7%	8.8%	11.5%	23.2%
10Y	1.5%	3.0%	4.3%	6.6%	8.8%	11.5%	24.1%
30Y	1.0%	1.9%	2.8%	4.4%	5.9%	7.6%	19.1%

Source: BofA Global Research

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Exhibit 12: 1y10y vol dynamic since the COVID recession

100-115bp fair in 1H24. Lower 85-100bp range backloaded into late '24



Source: BofA Global Research; Bloomberg

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Exhibit 13: 3m10y vs. 3m2y normal volatility spread

Left side still rich vs right side



Source: BofA Global Research; Bloomberg

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Exhibit 14: 1y10y vs. 1m10y normal volatility

Vol term structure back to inverted

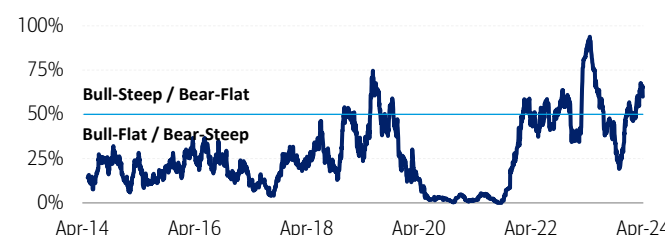


Source: BofA Global Research; Bloomberg

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Exhibit 15: 2s10s c.60% front-end driven over last 2 months

Front-end degree of freedom increasing in recent weeks



Source: BofA Global Research

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Volatility Grid Relative Value

PCA Z-SCORES

Exhibit 16: 3m Z-Scores w/ PCA framework

Gamma in the belly rich on 3m Z-Scores

	1y	2y	3y	5y	7y	10y	30y
3m	-3.1	2.9	4.3	2.4	2.1	0.8	0.6
6m	-3.6	3.4	4.4	2.6	-0.3	-2.9	-2.0
1y	-0.6	0.6	0.7	-0.1	-0.6	-0.8	-2.0
2y	-2.0	-3.0	-4.0	-2.4	-1.8	-1.0	0.0
5y	-2.9	-3.0	-2.7	0.2	1.8	2.4	2.6
10y	-0.5	-0.1	0.6	1.7	2.4	2.9	3.4

Source: BofA Global Research

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Exhibit 18: 6m Z-Scores w/ PCA framework

Gamma in the belly rich on 6m Z-Scores

	1y	2y	3y	5y	7y	10y	30y
3m	-1.5	1.2	3.2	2.3	1.7	0.5	1.0
6m	-2.7	1.5	1.6	0.5	0.0	-0.5	0.3
1y	-0.9	-0.3	-1.0	-2.5	-2.0	-1.0	-0.7
2y	-0.7	-1.4	-2.6	-3.0	-1.5	-0.7	-0.6
5y	-0.6	-0.5	-0.3	-0.5	0.3	1.7	3.4
10y	0.9	0.8	1.0	1.3	1.5	1.9	3.5

Source: BofA Global Research

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Exhibit 20: 1y Z-Scores w/ PCA framework

Gamma in the belly rich on 1y Z-Scores

	1y	2y	3y	5y	7y	10y	30y
3m	-0.3	1.1	2.1	1.4	0.4	-0.2	0.6
6m	-1.3	1.5	1.6	-0.2	-0.8	-1.4	0.0
1y	-0.5	0.1	-0.9	-2.7	-1.5	-1.9	0.2
2y	-0.8	-1.5	-2.1	-2.4	-1.6	-0.8	0.5
5y	-0.9	-0.5	-0.1	0.3	0.9	1.6	1.9
10y	1.3	1.3	1.4	1.6	1.8	2.0	2.3

Source: BofA Global Research

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Exhibit 22: 3m Z-Scores w/ modified PCA framework ...

Grid broadly fair/cheap

	1y	2y	3y	5y	7y	10y	30y
1m	-0.2	0.0	-0.5	0.4	-0.4	-0.8	0.2
3m	-0.4	-1.7	-0.3	-0.3	-0.9	-0.5	1.6
6m	-1.0	-1.1	-0.2	0.1	-1.0	-0.6	0.1
1y	-1.5	-1.3	1.9	-0.5	0.1	0.8	0.1
2y	-1.0	-0.9	-0.8	-0.6	0.5	-2.2	0.2
3y	-0.4	1.1	-1.8	-0.3	0.1	1.5	-0.5
4y	-0.6	1.6	-0.5	-0.3	1.4	-0.5	-0.5
5y	0.2	-2.3	1.0	-0.6	0.0	0.5	-0.5
10y	3.1	0.2	0.8	1.3	0.3	0.0	-0.2
15y	0.8	0.8	2.6	-1.3	-1.5	1.4	-0.4
30y	0.3	1.1	0.8	0.9	0.4	-1.3	1.9

Source: BofA Global Research

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Exhibit 17: 3m Z-Scores w/ PCA framework w/o rates directionality

Grid broadly fair/rich, with richness more significant on the right

	1y	2y	3y	5y	7y	10y	30y
3m	0.5	1.4	1.7	1.9	1.9	1.9	2.7
6m	0.8	1.6	1.6	1.7	1.5	1.4	1.7
1y	0.8	1.0	1.0	1.0	0.8	0.7	0.7
2y	0.3	0.3	0.3	0.5	0.5	0.6	0.6
5y	-0.4	-0.2	-0.1	0.3	0.6	1.0	1.0
10y	-0.3	-0.2	0.0	0.3	0.5	1.0	1.4

Source: BofA Global Research

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Exhibit 19: 6m Z-Scores w/ PCA framework w/o rates directionality

Gamma in the belly fair/rich, intermediates cheap

	1y	2y	3y	5y	7y	10y	30y
3m	0.2	0.6	0.7	0.6	0.3	0.1	0.1
6m	-0.1	0.4	0.3	0.1	-0.1	-0.2	-0.2
1y	-0.3	-0.2	-0.3	-0.5	-0.6	-0.6	-0.3
2y	-0.5	-0.7	-0.8	-0.8	-0.8	-0.7	-0.3
5y	-0.7	-0.7	-0.6	-0.4	-0.2	0.2	0.6
10y	0.0	0.0	0.1	0.2	0.4	0.8	1.4

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 21: 1y Z-Scores w/ PCA framework w/o rates directionality

Grid broadly fair/cheap when directionality is considered except for LRC

	1y	2y	3y	5y	7y	10y	30y
3m	0.0	-0.3	-0.3	-0.3	-0.6	-0.8	-0.6
6m	-0.5	-0.6	-0.6	-0.7	-0.9	-1.0	-0.9
1y	-0.9	-1.0	-1.1	-1.3	-1.2	-1.2	-0.8
2y	-1.3	-1.5	-1.5	-1.5	-1.3	-1.2	-0.6
5y	-1.3	-1.2	-1.1	-0.9	-0.7	-0.3	0.9
10y	0.2	0.1	0.2	0.5	0.8	1.2	2.1

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 23: ... and w/o directionality with rates

Grid broadly fair/cheap, some richness in LLC

	1y	2y	3y	5y	7y	10y	30y
1m	0.1	-0.5	-0.6	0.6	-0.5	-0.6	0.0
3m	-0.6	-1.2	-0.8	-0.8	-0.9	-0.5	1.5
6m	-1.1	-1.5	-0.5	-0.4	-0.8	-0.4	0.1
1y	-1.6	-1.3	1.8	-0.7	-0.5	0.4	0.1
2y	-0.8	-0.9	-0.6	-0.6	0.3	-2.1	0.2
3y	-0.5	1.2	-1.5	-0.5	0.2	1.7	-0.7
4y	-0.8	0.5	-0.6	-0.4	1.4	-0.1	-0.8
5y	0.3	-2.0	-0.4	-0.3	0.0	0.7	-1.1
10y	2.7	0.9	0.4	1.0	0.6	0.4	-0.1
15y	0.9	0.9	2.8	-1.2	-1.1	1.2	-0.4
30y	0.6	1.0	0.9	1.1	-1.0	-1.5	1.5

Source: BofA Global Research

BofA GLOBAL RESEARCH

Skew Relative Value

Exhibit 24: Skew 25% delta

Receivers still rich on the upper left side

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	8.7	8.7	7.4	3.9	2.4	0.6	0.2
3M	13.3	10.8	9.2	4.1	2.0	-0.5	-0.8
6M	15.1	10.9	9.2	4.8	2.5	-0.3	-0.8
1Y	10.1	6.9	5.4	2.2	0.8	-1.6	-2.0
2Y	-0.7	-1.6	-1.5	-2.1	-2.5	-3.3	-3.2
5Y	-7.0	-6.7	-5.9	-5.9	-5.9	-6.0	-5.1
10Y	-6.2	-5.8	-5.5	-6.1	-6.4	-6.9	-5.4
30Y	-7.6	-7.0	-6.1	-6.4	-6.4	-6.8	-8.3

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 25: Skew 75% delta

Payers rich on the right side

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	-5.4	-4.3	-2.5	1.2	2.8	4.0	3.5
3M	-11.2	-8.1	-5.9	0.0	2.0	4.4	4.3
6M	-9.1	-5.2	-3.1	1.7	3.9	6.3	6.1
1Y	-3.4	0.1	1.6	4.6	5.8	7.6	7.4
2Y	6.5	7.4	7.4	7.7	8.1	8.9	8.3
5Y	13.8	13.7	13.3	12.9	12.6	12.4	10.4
10Y	15.2	14.9	14.9	15.1	14.9	14.7	12.1
30Y	18.1	17.8	17.6	17.5	17.4	15.6	13.3

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 26: Breakeven Widths for Costless Receiver Ladders

107bp breakeven width for 1y10y receiver ladders

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	29	39	39	39	35	32	29
3M	66	72	71	65	60	55	49
6M	109	107	103	92	86	77	68
1Y	152	143	136	122	114	107	94
2Y	176	167	163	155	149	142	126
5Y	224	220	218	210	204	198	179
10Y	267	262	259	246	239	229	213

Source: BofA Global Research

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Exhibit 27: Breakeven Widths for Costless Payer Ladders

127bp breakeven width for 1y10y payer ladders

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	21	31	33	37	35	34	31
3M	42	54	57	61	60	59	54
6M	72	84	85	88	88	88	79
1Y	126	130	130	128	126	127	113
2Y	195	193	189	183	182	178	161
5Y	323	318	311	301	294	284	251
10Y	427	420	416	410	403	394	342

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 28: 3m Z-Score Receiver Skew (w/o fwds & ATM direction)

Receivers generally fair/rich

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	0.5	1.8	1.7	1.4	1.2	1.4	0.3
3M	-0.6	0.2	0.6	-0.3	0.0	0.5	-0.7
6M	0.3	0.1	0.1	0.0	1.2	0.6	0.3
1Y	1.7	1.7	0.8	0.5	1.1	1.8	0.0
2Y	0.3	1.5	1.6	1.8	1.7	1.6	1.4
5Y	0.2	0.1	0.0	0.1	0.4	1.8	1.3
10Y	-0.4	-0.4	-0.3	0.0	0.2	0.5	1.1

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 29: 3m Z-Score Payer Skew (w/o direction w/ fwds & ATM)

Payer skew broadly fair/cheap

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	0.2	0.1	0.2	0.7	0.6	0.5	1.0
3M	-0.5	-0.8	-0.9	-0.5	-0.7	-0.8	0.0
6M	-0.6	-0.9	-0.5	0.4	0.0	-0.4	0.2
1Y	-1.3	-1.1	-1.8	1.3	0.6	0.3	-0.4
2Y	-2.0	-2.3	-2.4	0.3	-0.6	-1.2	-0.1
5Y	-0.6	-0.3	-0.4	-1.3	-2.8	-2.2	-3.2
10Y	-0.9	-0.9	-1.1	-1.6	-1.6	-1.3	-1.4

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 30: Ratio of Payer/Receiver BE widths for Costless Ladders

Ratios of breakeven widths < 100% for short and intermediate expiries on the left side and belly

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	73%	81%	86%	95%	99%	105%	107%
3M	63%	75%	79%	94%	100%	109%	110%
6M	66%	78%	83%	95%	102%	114%	116%
1Y	83%	91%	95%	105%	111%	118%	120%
2Y	111%	115%	116%	119%	122%	126%	128%
5Y	144%	145%	143%	143%	144%	143%	140%
10Y	160%	160%	161%	167%	169%	172%	160%

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 31: 3m Z-Score Ratio of Payer/Receiver Skew

3m Z-Scores show rich payer skew over receiver skew particularly in the belly of the grid

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	0.1	0.5	0.9	0.8	0.5	0.3	0.6
3M	-0.6	0.5	0.4	1.3	1.1	0.4	0.6
6M	-0.5	0.4	0.6	1.4	0.9	0.8	0.6
1Y	0.1	0.5	0.9	1.6	1.6	0.6	0.0
2Y	-1.5	0.1	-0.2	-1.4	-0.8	-1.6	-1.1
5Y	1.0	1.0	0.8	-0.2	-0.6	-1.2	-0.6
10Y	0.4	0.4	0.5	0.5	0.5	0.5	0.6

Source: BofA Global Research

BofA GLOBAL RESEARCH



Conditional Curve Trades

Exhibit 32: Bull Flattener (pickup to forwards for ATM)

Buy longer maturity receiver, sell shorter maturity receiver

ATM	2/5s	2/10s	2/30s	5/10s	5/30s	10/30s
3M	-0.5	4.0	7.9	4.4	8.3	4.2
6M	3.6	8.7	14.2	5.4	11.0	6.2
1Y	8.7	14.4	21.8	6.3	14.4	8.5
1.5Y	9.1	15.5	24.5	7.1	16.7	10.1
2Y	8.5	15.7	25.9	7.5	18.3	11.2

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 34: Bull Steepener (pickup to forwards for ATM)

Sell longer maturity receiver, buy shorter maturity receiver

ATM	2/5s	2/10s	2/30s	5/10s	5/30s	10/30s
3M	0.5	-4.0	-7.9	-4.4	-8.3	-4.2
6M	-3.6	-8.7	-14.2	-5.4	-11.0	-6.2
1Y	-8.7	-14.4	-21.8	-6.3	-14.4	-8.5
1.5Y	-9.1	-15.5	-24.5	-7.1	-16.7	-10.1
2Y	-8.5	-15.7	-25.9	-7.5	-18.3	-11.2

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 36: Bear Flattener (pickup to forwards for ATM)

Sell longer maturity payer, buy shorter maturity payer

ATM	2/5s	2/10s	2/30s	5/10s	5/30s	10/30s
3M	0.5	-4.2	-8.3	-4.8	-8.7	-4.4
6M	-3.6	-9.3	-15.3	-5.8	-12.0	-6.5
1Y	-8.9	-15.7	-23.9	-7.1	-15.9	-9.5
1.5Y	-9.7	-17.5	-27.4	-8.1	-18.8	-11.4
2Y	-9.5	-17.7	-29.2	-8.7	-20.8	-12.8

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 38: Bear Steepener (pickup to forwards for ATM)

Buy longer maturity payer, sell shorter maturity payer

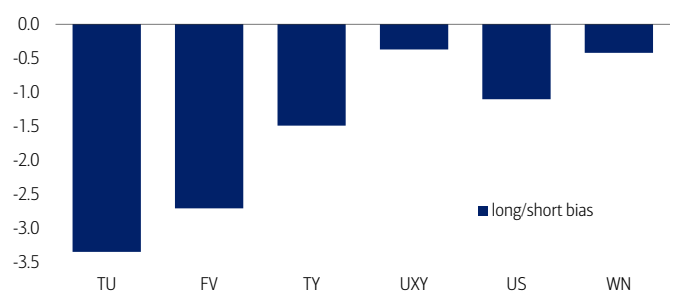
ATM	2/5s	2/10s	2/30s	5/10s	5/30s	10/30s
3M	-0.5	4.2	8.3	4.8	8.7	4.4
6M	3.6	9.3	15.3	5.8	12.0	6.5
1Y	8.9	15.7	23.9	7.1	15.9	9.5
1.5Y	9.7	17.5	27.4	8.1	18.8	11.4
2Y	9.5	17.7	29.2	8.7	20.8	12.8

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 40: Analysis of proxies for futures positioning

Short bias, particularly at the frontend



Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 33: Bull Flattener (pickup to forwards for -25bp OTM)

Buy longer maturity receiver, sell shorter maturity receiver

-25bp	2/5s	2/10s	2/30s	5/10s	5/30s	10/30s
3M	1.9	9.3	14.6	7.7	13.2	6.2
6M	6.5	14.4	21.2	8.5	15.9	8.1
1Y	11.6	19.2	28.0	8.7	18.5	10.4
1.5Y	11.2	19.4	29.8	9.1	20.4	11.8
2Y	9.9	18.5	30.0	9.1	21.4	13.0

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 35: Bull Steepener (pickup to forwards for -25bp OTM)

Sell longer maturity receiver, buy shorter maturity receiver

-25bp	2/5s	2/10s	2/30s	5/10s	5/30s	10/30s
3M	-1.9	-9.3	-14.6	-7.7	-13.2	-6.2
6M	-6.5	-14.4	-21.2	-8.5	-15.9	-8.1
1Y	-11.6	-19.2	-28.0	-8.7	-18.5	-10.4
1.5Y	-11.2	-19.4	-29.8	-9.1	-20.4	-11.8
2Y	-9.9	-18.5	-30.0	-9.1	-21.4	-13.0

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 37: Bear Flattener (pickup to forwards for +25bp OTM)

Sell longer maturity payer, buy shorter maturity payer

+25bp	2/5s	2/10s	2/30s	5/10s	5/30s	10/30s
3M	3.4	-1.7	-7.7	-5.0	-10.8	-6.3
6M	-2.4	-8.3	-16.3	-6.0	-14.0	-8.7
1Y	-9.3	-16.5	-26.7	-7.3	-18.3	-11.4
1.5Y	-10.4	-18.8	-30.8	-8.7	-21.4	-13.6
2Y	-10.4	-19.6	-32.9	-9.5	-23.7	-14.9

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 39: Bear Steepener (pickup to forwards for +25bp OTM)

Buy longer maturity payer, sell shorter maturity payer

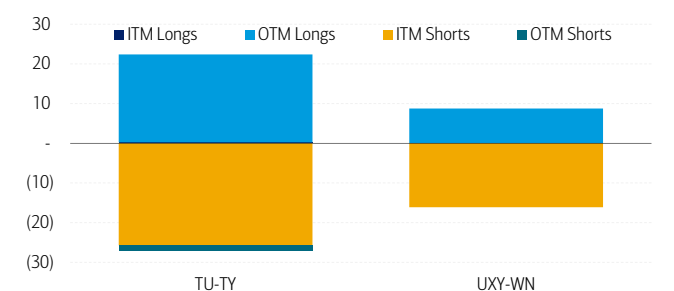
+25bp	2/5s	2/10s	2/30s	5/10s	5/30s	10/30s
3M	-3.4	1.7	7.7	5.0	10.8	6.3
6M	2.4	8.3	16.3	6.0	14.0	8.7
1Y	9.3	16.5	26.7	7.3	18.3	11.4
1.5Y	10.4	18.8	30.8	8.7	21.4	13.6
2Y	10.4	19.6	32.9	9.5	23.7	14.9

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 41: Proxies for futures positioning across the curve

Frontend OTM longs may drive further bear flattening of the curve



Source: BofA Global Research

BofA GLOBAL RESEARCH

Forward Volatility

Exhibit 42: 6m Forward Volatility

107.5bp for 6m fwd 1y10y

	1y	2y	5y	10y	30y
1m	132.2	134.9	123.2	113.5	100.6
3m	135.1	135.1	122.4	113.3	100.6
6m	137.3	131.5	117.4	109.7	97.5
1y	126.2	125.5	115.3	107.5	95.9
2y	124.7	120.3	112.4	104.6	93.5
5y	110.0	107.7	101.8	95.9	87.2
10y	92.2	90.4	85.6	81.8	76.5

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 43: 6m Fwd vol as % ATM

99% of ATM for 6m fwd 1y10y

	1y	2y	5y	10y	30y
1m	161%	116%	99%	103%	101%
3m	137%	113%	101%	104%	103%
6m	120%	105%	99%	101%	101%
1y	97%	98%	99%	99%	99%
2y	100%	99%	100%	99%	99%
5y	99%	99%	99%	98%	99%
10y	98%	98%	97%	98%	100%

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 44: 3m Z-Score 6m Fwd vol % ATM

-0.3 Z-Score for 6m fwd 1y10y

	1y	2y	5y	10y	30y
1m	0.9	0.8	-0.8	-0.8	-1.2
3m	1.0	0.6	-0.7	-0.7	-1.0
6m	0.6	-0.4	-1.8	-1.3	-1.4
1y	-1.2	-1.1	-0.9	-0.3	-0.7
2y	0.2	-0.1	0.5	0.7	0.1
5y	0.9	0.9	0.9	0.8	0.7
10y	1.0	1.0	0.8	0.8	0.5

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 45: 1y Forward Volatility

104.9bp for 1y fwd 1y10y

	1y	2y	5y	10y	30y
1m	134.2	126.2	115.2	106.8	95.3
3m	130.2	124.6	115.5	106.8	95.3
6m	126.7	122.7	114.9	106.2	94.8
1y	122.5	120.6	113.1	104.9	93.9
2y	121.5	118.5	110.6	102.5	91.8
5y	107.5	105.4	99.3	93.7	85.9
10y	90.6	88.6	83.9	80.0	75.7

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 46: 1y Fwd vol as % ATM

97% of ATM for 1y fwd 1y10y

	1y	2y	5y	10y	30y
1m	163%	109%	92%	97%	96%
3m	132%	104%	95%	98%	97%
6m	111%	98%	97%	98%	98%
1y	94%	94%	97%	97%	97%
2y	98%	98%	98%	97%	97%
5y	97%	97%	96%	96%	98%
10y	96%	96%	95%	96%	99%

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 47: 3m Z-Score 1y Fwd vol % ATM

0.7 Z-Score for 1y fwd 1y10y

	1y	2y	5y	10y	30y
1m	0.9	0.3	-1.2	-1.0	-1.4
3m	1.0	0.3	-0.9	-0.7	-1.2
6m	0.6	0.0	-0.4	-0.1	-0.5
1y	0.2	0.1	0.3	0.7	0.3
2y	0.8	0.8	1.0	1.2	0.8
5y	1.1	1.0	1.0	1.0	1.1
10y	1.1	1.1	1.0	0.9	0.9

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 48: 2y Forward Volatility

101.7bp for 2y fwd 1y10y

	1y	2y	5y	10y	30y
1m	115.5	115.1	110.1	102.7	92.0
3m	117.3	116.4	110.5	102.8	91.9
6m	118.8	116.9	110.4	102.5	91.4
1y	121.1	117.5	109.8	101.7	90.7
2y	114.7	112.4	105.9	98.4	88.6
5y	104.2	102.0	95.4	90.0	83.2
10y	87.7	85.9	81.2	77.1	73.8

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 49: 2y Fwd vol as % ATM

94% of ATM for 2y fwd 1y10y

	1y	2y	5y	10y	30y
1m	140%	99%	88%	93%	93%
3m	119%	97%	91%	94%	94%
6m	104%	93%	93%	95%	95%
1y	93%	91%	94%	94%	94%
2y	92%	93%	94%	93%	94%
5y	94%	94%	93%	92%	95%
10y	93%	93%	92%	92%	97%

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 50: 3m Z-Score 2y Fwd vol % ATM

1.0 Z-Score for 2y fwd 1y10y

	1y	2y	5y	10y	30y
1m	1.0	0.4	-0.9	-0.6	-1.1
3m	1.1	0.5	-0.2	0.0	-0.6
6m	0.9	0.4	0.2	0.5	0.0
1y	0.8	0.6	0.7	1.0	0.6
2y	0.6	0.6	0.8	1.0	0.9
5y	0.9	0.8	0.8	0.9	1.1
10y	1.0	1.0	0.9	0.8	0.9

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 51: 3y Forward Volatility

98.0bp for 3y fwd 1y10y

	1y	2y	5y	10y	30y
1m	108.1	110.3	106.3	99.2	89.0
3m	109.4	111.3	106.5	99.3	89.1
6m	110.3	111.5	105.8	98.6	88.6
1y	114.5	112.8	105.4	98.0	88.1
2y	111.5	108.8	102.9	96.2	87.1
5y	100.3	98.2	91.3	86.4	80.4
10y	85.6	83.8	79.1	74.6	72.3

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 52: 3y Fwd vol as % ATM

90% of ATM for 3y fwd 1y10y

	1y	2y	5y	10y	30y
1m	131%	95%	85%	90%	90%
3m	111%	93%	88%	91%	91%
6m	96%	89%	89%	91%	92%
1y	88%	88%	90%	90%	91%
2y	90%	90%	91%	91%	92%
5y	91%	91%	89%	88%	91%
10y	91%	90%	90%	89%	95%

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 53: 3m Z-Score 3y Fwd vol % ATM

0.8 Z-Score for 3y fwd 1y10y

	1y	2y	5y	10y	30y
1m	0.9	0.4	-0.7	-0.5	-0.8
3m	0.8	0.4	-0.1	0.0	-0.3
6m	0.6	0.2	0.2	0.4	0.2
1y	0.3	0.2	0.5	0.8	0.8
2y	0.1	0.2	0.6	0.9	1.0
5y	0.7	0.7	0.4	0.7	1.1
10y	1.0	1.0	0.9	0.7	0.8

Source: BofA Global Research

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Ratios implied/delivered

Exhibit 54: Implied vs. Delivered (21d) Ratio

Ratios of Implied to 21d delivered < 100% on the left, rich on the right

	1y	2y	3y	5y	7y	10y	30y
1m	92%	100%	98%	107%	106%	106%	120%
3m	91%	95%	95%	101%	102%	103%	117%
6m	89%	93%	94%	98%	100%	103%	116%
1y	91%	92%	95%	97%	100%	104%	116%
2y	91%	96%	97%	100%	102%	106%	116%

Source: BofA Global Research

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Exhibit 55: Implied vs. Delivered (63d) Ratio

Ratios of Implied to 63d delivered < 100% on the left, rich on the right

	1y	2y	3y	5y	7y	10y	30y
1m	90%	100%	100%	109%	109%	109%	118%
3m	88%	96%	97%	103%	104%	106%	116%
6m	88%	94%	96%	100%	102%	105%	114%
1y	92%	95%	97%	100%	103%	106%	115%
2y	96%	99%	100%	103%	105%	108%	114%

Source: BofA Global Research

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Exhibit 56: 3m Z-Scores for Implied vs. Delivered (21d) Ratio

Ratios of implied/21d delivered fair/cheap virtually across, cheap particularly on the left side

	1y	2y	3y	5y	7y	10y	30y
1m	-1.2	-0.7	-0.6	-0.2	-0.3	-0.3	0.6
3m	-0.7	-0.6	-0.6	-0.5	-0.5	-0.5	0.2
6m	-0.6	-0.5	-0.6	-0.5	-0.6	-0.6	0.0
1y	-0.6	-0.7	-0.7	-0.7	-0.7	-0.7	-0.2
2y	-0.9	-0.8	-0.7	-0.7	-0.6	-0.6	-0.1

Source: BofA Global Research

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Exhibit 57: 3m Z-Scores for Implied vs. Delivered (63d) Ratio

Ratios of implied/63d cheap broadly fair/rich, rich particularly on the right side on 3m Z-Scores

	1y	2y	3y	5y	7y	10y	30y
1m	-0.6	0.5	0.8	1.8	1.9	2.1	3.5
3m	0.0	0.9	1.0	1.3	1.4	1.5	2.7
6m	0.9	1.1	0.8	0.8	0.8	0.9	1.8
1y	0.7	0.4	0.3	0.3	0.3	0.4	1.2
2y	-0.2	0.0	0.0	0.3	0.4	0.6	1.2

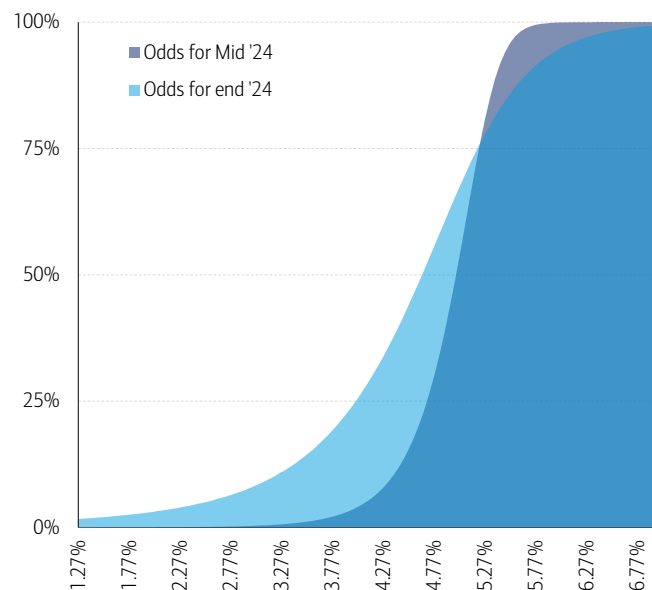
Source: BofA Global Research

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Rates probability distributions

Exhibit 58: CDF for 1y SOFR rates at mid-24 and end-24

1y rate cumulative distribution functions

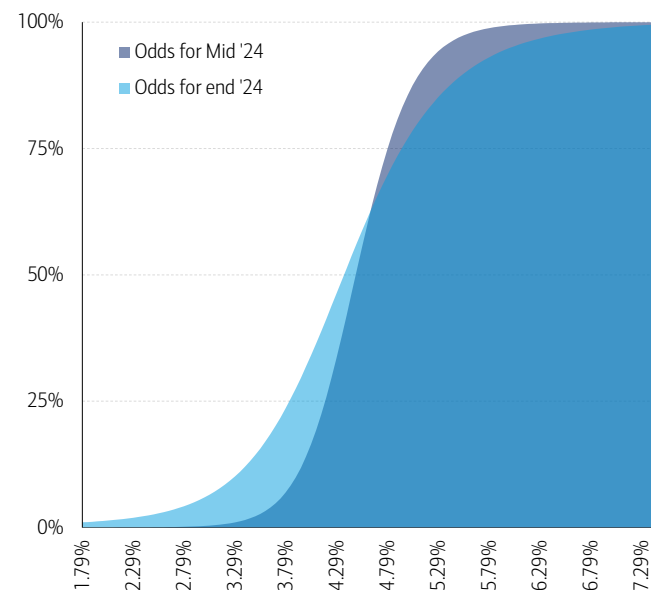


Source: BofA Global Research

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Exhibit 59: CDF for 10y SOFR rates at mid-24 and end-24

10y rate cumulative distribution functions



Source: BofA Global Research

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Trade activity

Exhibit 60: Payer volumes over the last week (\$m notional)

Demand for payers over the last week

Payers	1y	2y	3Y	4Y	5Y	7Y	10Y	20Y	30Y	
<1m	960	340			680		270	315	80	2862
1m	3700	870	230		225	170	4969	57	259	11315
3m	1730	1520			303	42	2848		442	7360
6m	11065	1500	240		2795		1976	25	201	20582
1y	7616	15517	2052		240	354	2576	100	238	28693
2y	4095	333	1955	755	84	520	491		153	8386
3Y	1450	2300	180	480	430	170	810	113	98	6031
4Y	750			83	450	270	467	40		2060
5Y					650	840	1060	170	75	2795
7Y						320	572	273		1165
10Y							210	733	246	1189
20Y										
30Y										
	31366	22380	4657	1318	5857	2686	16249	1826	1792	92438

Source: BofA Global Research; SDR; Bloomberg

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Exhibit 61: Receiver volumes over the last week (\$m notional)

Demand for payers over the last week

Receivers	1y	2y	3Y	4Y	5Y	7Y	10Y	20Y	30Y	
<1m	460	920	110		780		1255		225	5261
1m	7715	3338	950	425	1336	170	5360	57	337	29505
3m	5725	2520	240		625		3251		411	20134
6m	13372	2245	720		1835		2412	25	216	29938
1y	15774	15588	1320		200	354	3456	100	63	37369
2y	6460	3696	2367	770	84	520	491		153	14541
3Y	1450	785	756	720	250	170	352	113	98	4694
4Y	750		400	130	410	270	407	40		2407
5Y					482	840	1060	50	75	2507
7Y						100	572	303		975
10Y		3					240	733	246	1222
20Y									75	75
30Y										
	51706	29095	6863	2045	6002	2424	18856	1421	1899	148627

Source: BofA Global Research; SDR; Bloomberg

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Formosa issuance

Exhibit 62: 2023 Formosa issuance (\$m)

2.6bn total issuance for the year '23

	2	5	7	10	15	20	25	30
1	29	17	-	-	-	-	-	-
2	-	-	-	370	-	-	-	-
3	-	40	-	60	-	-	-	-
4	-	205	-	565	-	-	-	-
5	-	-	-	135	-	30	15	-
7	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	25
15	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	1,000

Source: BofA Global Research, Bloomberg

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Exhibit 63: 2024 Formosa issuance YTD (\$m)

Still limited issuance in '24 YTD of 1.6bn

	2	5	7	10	15	20	25	30
1	11	10	-	30	-	-	-	-
2	-	-	-	20	-	-	-	-
3	-	-	65	680	-	-	-	-
4	-	145	-	569	-	-	-	-
5	-	-	-	80	-	-	-	-
7	-	-	-	40	-	-	-	-
10	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-

Source: BofA Global Research, Bloomberg

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Exhibit 64: Formosa issuance (\$m) since 2014

Peak issuance concentrated on the 5y30y tenor

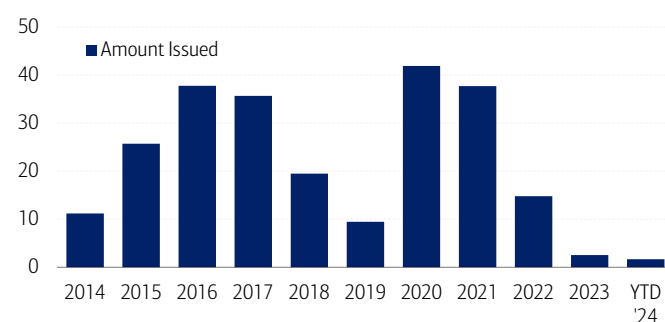
	2	5	7	10	15	20	25	30
1	40	231	75	1063	462	840	-	18054
2	-	40	-	1184	-	1485	-	22177
3	-	40	65	850	20	240	225	15536
4	-	365	-	1313	50	25	275	2441
5	-	-	-	235	445	1527	368	111658
7	-	-	30	40	-	-	-	5624
10	-	-	-	2000	-	-	-	4489
15	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	6500

Source: BofA Global Research, Bloomberg

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Exhibit 65: Total issuance per year since 2014 (\$bn)

Formosa issuance YTD c.\$1.6bn



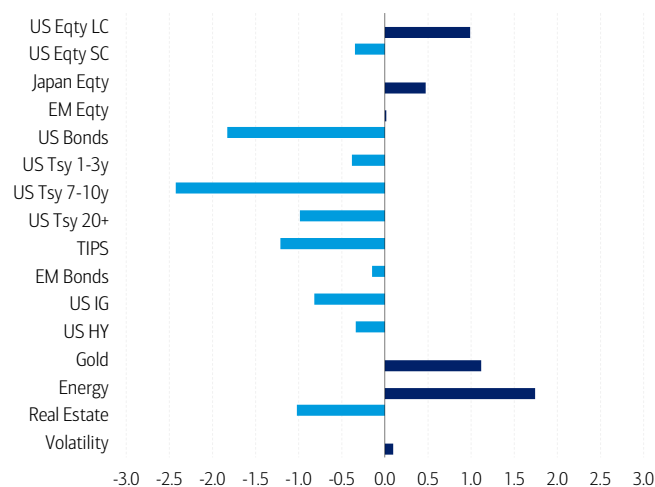
Source: BofA Global Research, Bloomberg

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Allocation bias from ETF flows

Exhibit 66: Allocation bias from ETF flows – week ending 12 Apr 24

Material shift short in bonds, marginally long equity vol

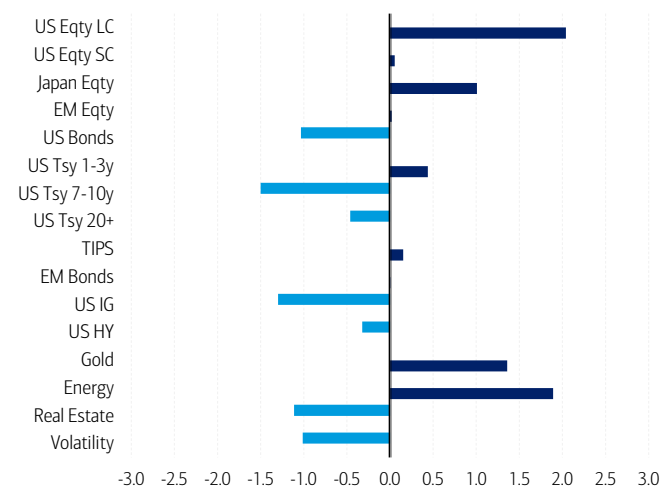


Source: BofA Global Research

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Exhibit 67: Allocation bias from ETF flows – week ending 5 Apr 24

Moderate risk-on sentiment (long equity, short bonds, short vol bias)



Source: BofA Global Research

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Notes

Exhibit 15: We classify the moves on the 2s10s or 5s30s curve every day in either one of these: bear flattening & bull steepening (where the 2y or 5y leg leads) or bear steepening & bull flattening (where the 10y or 30y leg leads). We sum each one of those columns over the last two or three months and divide by the absolute value of the curve moves to get a % index for each of the four different curve dynamics. We sum up the bear flattening + bull steepening indices into a new index – when this index = 0 the entire dynamic of the 2s10s or 5s30s curve is driven by the longer leg (10y or 30y leg respectively – corresponds to periods of forward guidance for example).

Exhibit 16/18/20: We calculate the principal components of the vol grid (the Eigen vectors of the covariance matrix) and take only the first 2/3 that represent around 90% of the variance in the data. We transpose the PCA transformation to recover vols from only these 2/3 components and obtain models for the vols. We calculate the residual of these models to the original series, and the Z-Score of these residuals.

Exhibit 17/19/21: Instead of taking the first 2/3 principal components of the vol grid and apply the transpose of the PCA transformation to them, we first regress each of these vol PCs on the principal components of rates and apply the transpose of the vol PCA transformation to these models for the vol PCs. This way we remove the directionality between vol and rates from the vol dynamic, and obtain a purer Z-Score RV signal on vol.

Exhibit 26/27: In a payer/receiver ladder one buys the ATM strike and then sells ATM \pm x and ATM \pm 2x. In the terminal payoff diagram, the position starts losing money when the forwards move past ATM \pm 3x, which we call the downside breakeven on the payer/receiver ladder.

We calculate the x (gap between strikes) daily such that the premium one has to pay for the payer/receiver ladder is zero (any vol structure that has unlimited downside can always be structured to be costless). These breakeven widths are therefore costless downside breakeven widths. When payer/receiver skew richens, this width increases – one needs to sell higher strikes ATM \pm -(x+delta) and ATM \pm -2(x+delta) to pay for the ATM strike bought. By looking at how these costless downside breakeven widths change over time one can measure how payer/receiver skew has richen/cheapen over time.

Exhibit 28/29: Skew is directional with forwards and with the level of vol. We regress the costless downside breakeven widths (for receivers and payers) on the forwards and ATM vol and look at the residuals of that regression to get a purer skew RV signal.

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