

US Rates Viewpoint

US Vol – Fed, elections & volatility

50bp vs 25bp and the vol dynamic

We think the market is likely to take a signaling effect from the magnitude of the Fed's likely first easing move in four years, which suggests the potential for a material subsequent shift in expectations for the policy trajectory: (1) 50bp would increase the likelihood of 150bp for end-24, likely leaves the policy trough anchored and supports a further bull steepening of the curve; (2) 25bp would increase the likelihood of 75-100bp for end-'24, may drive some bear flattening for the curve and potentially support a move lower for the terminal.

Our baseline has been to see vol drift lower as the Fed starts to ease policy (1y10y moving from a 100-115bp range into an 85-100bp range) with the underperformance of the left side vs the right side (into flat levels as the easing gains momentum). However, we are more likely to frontload this dynamic in a 50bp vs a 25bp move in Sep.

US elections and volatility

The market may be overpricing the election risk and potentially also mispricing to some extent the balance of risk in the skew dynamic, which in our view favors richer receiver vs payer skew. A higher level of conviction around gridlock scenarios as we approach the election event risk, along with a balance of risks for the US economy that is likely to continue to be tilted to the downside, are likely to support some fading of election risk and a more directional richening of receiver vs payer skew near term.

Pricing of hard-landing likelihoods

The near-term policy trajectory priced currently for the Fed suggests the market may be assigning a c.50-55% likelihood to hard-landing scenarios. This seems excessive, and we do not think a sequence of 50bp moves needs to necessarily be seen as a recession-type easing given how much above neutral the Fed is running policy rates currently.

A slightly more sophisticated calculation, based on a discretization of the range of outcomes for the economy and the rates dynamic, suggests lower hard-landing likelihoods in the 30-35% context. The top end of this range is likely still a fade given current fundamentals. Fading these higher hard-landing likelihoods to a large extent reduces to fading aggressive policy easing expectations near-term.

Positioning baseline biases hedges towards a fade

The market has traded outright duration with an overweight bias and the curve with a bull-steepening bias. In this context, we see the rationale for hedges likely skewed towards scenarios where the market fades some of the Fed pricing near-term (and the relatively high harder-landing likelihoods implied by this pricing). We recommended: 3m2y payers spreads financed by selling 3m10y payers as a proxy for a bear flattener; 6m1y costless payer ladders; and US 1y2y payers financed by selling EU 1y2y payers.

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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

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

All levels as of 13 Sep '24.

50 vs 25 and the vol dynamic

The Fed will likely start to ease policy at its Sep meeting. The debate is whether it would be a 25bp or a 50bp move. Our economists expect a 25bp move, back-to-back cuts into the Mar meeting, and quarterly cuts from there (200bp worth of cuts by end-'25).

We do not think a 50bp move needs to be seen as a recession-type easing move given how much above neutral the Fed is running policy rates currently. However, the market is likely to take a signaling effect from the magnitude of the first move, which suggests the potential for a material subsequent shift in expectations for the policy trajectory:

- A 50bp move in Sep would increase the likelihood of 150bp for end-24, is likely to support a further bull steepening of the curve and dampens volatility in intermediate expiries as the market extrapolates into a Fed that reaches the neutral sooner and provides forward guidance around the policy trough for longer.
- A 25bp cut would signal a more measured Fed and increases the likelihood of 75-100bp scenarios for end-'24, it is likely to drive some bear flattening for the curve and potentially support a move lower for the terminal (given the bias for the market to price a larger initial move, it is likely that it would see a 25bp move as a policy mistake which implies reaching lower at the trough of the cycle). Vol is likely lower vs recent levels under this scenario also, but higher than in the former given the higher level of uncertainty around the policy trajectory this scenario implies.

Our baseline has been to see vol drift lower as the Fed starts to ease policy (1y10y moving from a 100-115bp range into an 85-100bp range) with the underperformance of the left side vs the right side (into flat levels as the easing gains momentum). However, we are more likely to frontload this dynamic on a 50bp vs a 25bp move in Sep.

Positioning baseline biases hedges towards a fade

The market has traded outright duration with an overweight bias (see Exhibit 40), and the curve with a bull-steepening bias (see Exhibit 15 & Exhibit 41). In this context, we see the rationale for hedges likely skewed towards scenarios where the market fades some of the Fed pricing near-term (and the relatively high harder landing likelihoods implied by this pricing – more on this below). We recently recommended:

1. 3m2y payers spreads fully financed by selling 3m10y payers as a proxy for a bear flattener which giveup to forwards currently (see Exhibit 36). The risk on the position is a bear steepening dynamic with potentially unlimited downside (see report: Another one bites the cuts from 13 Sep '24).
2. 6m1y costless payer ladders (see report: CPI of the storm from 9 Aug '24). The risk on the position is a selloff beyond the downside breakeven on the position (atm+75bp) with potentially unlimited downside.
3. US 1y2y OTM payers financed by selling EU 1y2y payers (risk on the position is the underperformance of EU vs US rates in bearish scenarios, with potentially unlimited downside – see report: [Long 1y2y OTM payers in USD vs EUR](#) from 3 Sep '24).

US elections and volatility

In our report [Election pricing in rates & FX vol – update](#) from 16 Sep '24 we refreshed the view for the pricing of the election event risk in the rates and FX vol markets.

In the rates space, we see signs that the market may be overpricing the election risk and potentially also mispricing to some extent the balance of risk in the skew dynamic, which in our view favors richer receiver vs payer skew. A higher level of conviction around gridlock scenarios as we approach the election event risk, along with a balance of risks for the US economy that is likely to continue to be tilted to the downside, are likely to support some fading of election risk and a more directional richening of receiver vs payer skew near term.



Pricing of hard-landing likelihoods

In a rough calculation for the likelihood of hard landing scenarios priced currently by the market, we may assign a hard-landing trajectory for the Fed to c.150bp worth of cuts by end-24, and c.75bp to a soft-landing trajectory. In this context, the end-24 pricing for the Fed (c.115-120bp currently) implies a c.55% likelihood of hard landing. This seems excessive, but as we noted above, we do not think a 50bp move (or sequence of 50bp moves) needs to be necessarily be seen as a recession-type easing given how much above neutral the Fed is running policy rates currently

In recent publications (e.g., see [Range of outcomes and likelihoods](#) from 11 Jun '24 or [10y rates and the Monty Hall problem](#) from 6 Aug '24) we attempted to calculate this market implied hard-landing likelihood in a slightly more sophisticated way. We discretized the range of outcomes into two slowdown scenarios (hard or soft landing) and two expansion scenarios (no landing or reacceleration). The slowdown scenarios were defined in the following terms (see Exhibit 1):

- **Hard-landing scenario:** (1) negative growth & inflation back to target; (2) aggressive policy easing (>25bp per quarter); (3) a mean reversion of 10y yields to their steady state (which we see currently c.3%) or below; (4) a policy trough c.100-150bp below the neutral; (5) a bull steepening dynamic for the curve with potential for UST 2s10s to steepen to 75-100bp; (6) higher volatility with the gamma sector leading.
- **Soft-landing scenario:** (1) sub potential growth (c.2%) but avoiding a recession & inflation back to target over the next 12m; (2) gradual policy easing (c.25bp per quarter); (3) 10y yields c.4%; (4) a policy trough c.3-3.5% (around neutral rate expectations); (5) a gradual steepening of the curve into flat to marginally steep levels; (6) lower vol.

Exhibit 1: Discretization of the range of outcomes into 4 potential scenarios

Implications under each of the scenarios for Fed policy, rate ranges, curve dynamic and volatility, along with the current market implied likelihoods

	Macro Data		Fed	Rate ranges		Curve dynamic	Volatility	Market Implied likelihood
	Growth	Inflation		10yT	3y1y OIS			
Hard landing	<0%	2% or below	Cuts > 1 per quarter	c.3%	c.1.5-2%	Bull steepening with 2s10s up to 75-100bp	Higher gamma, potentially lower intermediates	c.30-35%
Soft landing	>0% & < 2%	2% target	Cuts once per quarter steady pace	c.4%	c.3-3.5%	Inverted for longer. Gradual steepening to 0bp medium term	Lowest	c.40-45%

Source: BofA Global Research; Note: Current likelihoods estimated from the 10y BE dynamic and CDF for 10y SOFR rates by end '24

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Likelihood of slowdown scenarios vs expansion

In this framework, we can estimate the market implied likelihoods for expansion and slowdown scenarios by looking at the dynamic of 10y breakevens (BEs). Inflation breakevens can move in one of 4 ways:

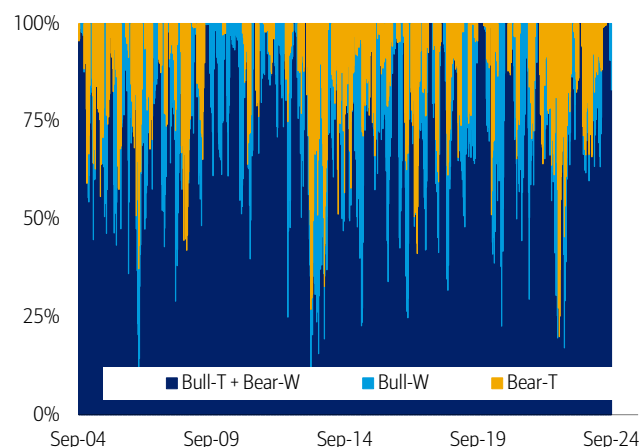
1. **Bear Widening** (higher yields & wider breakevens) – this dynamic reflects positive correlation (and causality) between growth and inflation in an expansion dynamic (higher growth leads to higher yields & higher inflation then wider breakevens)
2. **Bull Tightening** (lower yields & tighter breakevens) – this dynamic reflects positive correlation (and causality) between growth and inflation, but in a slowdown dynamic (lower growth leads to lower yields & lower inflation then tighter breakevens)
3. **Bull Widening** (lower yields & wider breakevens) – here growth and inflation fundamentals are negatively correlated in a stagflation dynamic (lower growth leads to lower yields & higher inflation then wider breakevens)
4. **Bear Tightening** (higher yields & tighter breakevens) – growth and inflation fundamentals are again negatively correlated, but in a goldilocks type dynamic (higher growth leads to higher yields & lower inflation then tighter breakevens)



Historically, (1) + (2) account for 75-80% of the dynamic of 10y breakevens over the recent economic cycles, and indeed we expect these to dominate as they represent an orthodox relationship between growth and inflation fundamentals.

Exhibit 2: Bear Widening and Bull Tightening moves (Bull-T + Bear=W) tend to dominate the dynamic of 10y breakevens over the cycle

On average Bull-T + Bear-W represent 75-80% of the 10y BE dynamic



Source: BofA Global Research

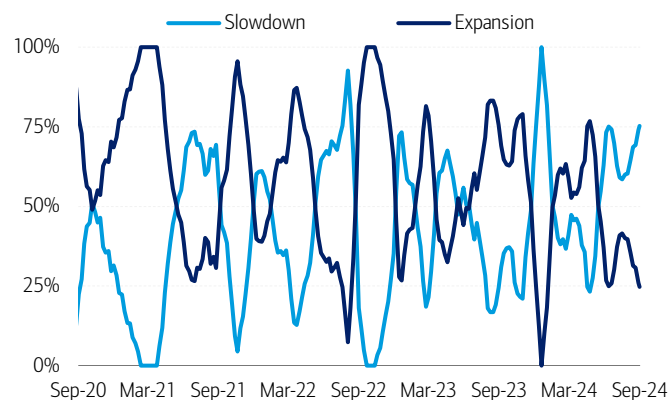
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Logically, we should be able to map the frequencies of the different moves in the recent dynamic of 10y breakevens (see Exhibit 3) to the likelihood that the market is assigning to the different scenarios (expansion, slowdown, stagflation & goldilocks). Bull tightening moves have clearly dominated the recent dynamic, reflecting higher likelihoods of slowdown scenarios. Indeed, at 1-2m horizons we see c.60-65% likelihood of slowdown scenarios expressed in the dynamic of 10y BEs vs c.20-25% likelihood for expansion scenarios & only c.10-15% likelihood of stagflation scenarios.

Because unorthodox moves (stagflation + goldilocks) tend to represent less than 20-25% of the dynamic of breakevens, we can also normalize the frequency of bear widening and bull tightening moves into the likelihoods of expansion and slowdown scenarios, and look at the evolution of these likelihoods over time (see Exhibit 4). Currently we see 70-75% normalized likelihood of slowdown scenarios vs 20-25% for expansion.

Exhibit 4: Likelihoods of expansion and slowdown scenarios extracted from the 10y BE dynamic

Currently we see 70-75% likelihood of slowdown vs 20-25% for expansion



Source: BofA Global Research

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Exhibit 3: Frequencies of different modes for the dynamic BE in the recent dynamic of 10y BEs

Bull tightening moves have dominated the dynamic of 10y BEs over the last 2-3 months, reflecting higher likelihoods of slowdown scenarios. At 1-2m horizons (less noisy) we see c.60-65% likelihood of slowdown scenarios expressed in the dynamic of 10y BEs vs c.20-25% for expansion scenarios & c.10-15% likelihood of stagflation scenarios.

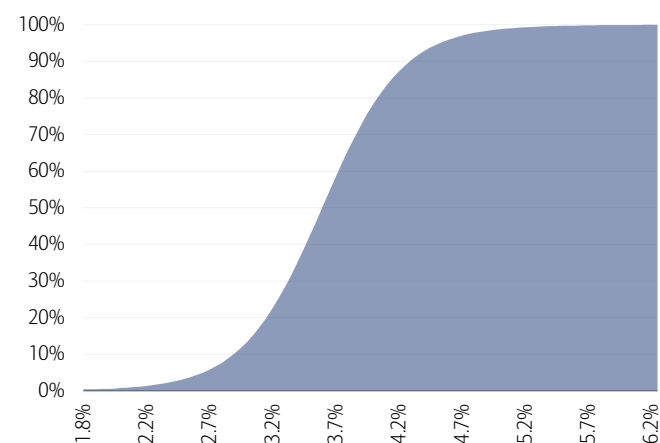
	Bear Widening	Bull Tightening	Bull Widening	Bear Tightening
Current	26.0%	45.0%	29%	0%
1m	22.5%	61.6%	16%	0%
2m	26.6%	64.3%	9%	0%
3m	31.5%	62.3%	6%	0%

Source: BofA Global Research

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Exhibit 5: CDF for 10yT

Extracted from 10y SOFR options with expiries end-'24



Source: BofA Global Research

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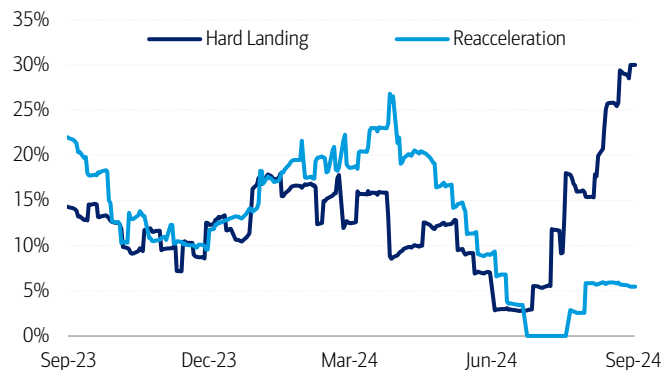
Likelihood of tail scenarios

Above we extracted the likelihood that the market may be assigning to slowdown scenarios (hard landing + soft landing) by looking at the dynamic of 10y breakevens (currently 70-75% likelihood). To separate the likelihoods of hard landing from soft landing scenarios in the context of broader slowdown scenarios, we must calculate the likelihood that the market is assigning to the tail scenarios (hard landing is the focus currently, but just a few months back investors were more focused on reacceleration tail scenarios). We gauge these tail likelihoods in two different ways:

1. **CDF for 10y rates at a 3-6m horizon** – here we look at the 10yT CDFs obtained from the skew of 10y SOFR options with expiries c.3-6m (assuming constant spreads – see Exhibit 5 & Exhibit 59). We take the midpoint of the expectations for 10y yields between hard landing (c.3%) and soft landing (c.4%) scenarios as the threshold that separates higher likelihoods of hard landing vs soft landing (i.e., c.3.25-3.5%), and extract the likelihood of hard landing scenarios as the likelihood of 10yT yields < 3.25-3.5% priced in the skew of SOFR options (in the 10yT CDF). Currently we see a c.30-35% likelihood of hard landing.
2. **Bull steepening (and bear flattening) frequencies in the 2s10s dynamic** – the tail scenarios (hard landing & reacceleration) have very specific idiosyncratic dynamics for the 2s10s curve (bull steepening & bear flattening moves, respectively). In Exhibit 6 we show the frequencies of material (> than the average daily move on the 2s10s curve) bull steepening and bear flattening moves over the last 2-3m. These frequencies seem to suggest c.30% likelihood of hard landing currently, vs c.5% likelihood of reacceleration. Significantly, Exhibit 7 shows the sum of the hard landing + reacceleration frequencies and highlights the increase in the likelihood of tail scenarios since early-/mid-July (mostly through higher hard landing likelihoods), and inherently a less supporting environment for carry.

Exhibit 6: Frequency of material bull steepening and bear flattening moves in the recent dynamic of the 2s10s curve

Higher bull steepening frequencies reflect higher likelihoods of hard landing expressed in the 2s10s curve dynamic



Source: BofA Global Research

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Exhibit 7: Higher frequencies of tail-like moves in the 2s10s curve dynamic since early-/mid-July

Higher tail scenarios frequencies likely a challenge for carry strategies as tail scenarios generally imply a higher vol context



Source: BofA Global Research

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The two approaches suggest c.30-35% likelihood of hard landing scenarios expressed currently in the 2s10s curve and 10y skew dynamic, lower than the 50%+ suggested by our rudimentary back of the envelope approach. We use this range in Exhibit 1. Given that slowdown scenarios seem to be priced with c.70-75% likelihood, this implies a likelihood of soft-landing scenarios of c.40-45%.

Levels and Recent Moves

Exhibit 8: ATM Normal Volatility Grid

99bp for 1y10y volatility

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	121	126	122	113	105	97	86
3M	132	130	125	117	111	105	94
6M	127	123	119	111	106	101	91
1Y	123	118	114	108	103	99	89
2Y	113	109	107	102	99	96	87
3Y	107	104	102	99	96	94	85
4Y	104	101	99	96	94	92	84
5Y	101	98	97	94	92	90	83
10Y	91	89	88	85	83	81	75
30Y	70	69	67	65	63	59	57

Source: BofA Global Research

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

Grid still rich on the UL, fair/cheap virtually elsewhere on Z-Scores

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	0.9	0.6	0.5	0.1	-0.1	-0.3	-0.6
3M	1.2	0.8	0.7	0.4	0.3	0.2	0.1
6M	1.0	0.5	0.3	-0.6	-0.9	-1.2	-1.3
1Y	0.1	-1.1	-1.4	-1.8	-1.8	-1.8	-2.0
2Y	-1.4	-1.7	-1.7	-1.8	-1.8	-1.8	-2.0
3Y	-1.5	-1.7	-1.7	-1.8	-1.9	-1.9	-2.1
4Y	-1.4	-1.7	-1.7	-1.8	-1.8	-1.9	-2.1
5Y	-1.6	-1.7	-1.7	-1.7	-1.8	-1.9	-2.0
10Y	-1.8	-1.9	-1.9	-2.0	-2.0	-2.1	-2.0
30Y	-2.0	-2.0	-2.0	-2.0	-1.9	-1.8	-1.6

Source: BofA Global Research

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Exhibit 10: ATM Vol Grid – changes since the presidential debate

Gamma leading the underperformance on the grid last week

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	-14.2	-17.3	-16.2	-14.4	-12.2	-10.1	-8.9
3M	-1.9	-6.7	-6.9	-7.1	-6.8	-6.4	-6.3
6M	-5.1	-4.7	-4.8	-5.0	-4.6	-4.3	-4.6
1Y	-4.2	-3.2	-3.2	-3.3	-3.1	-2.8	-3.8
2Y	-0.9	-1.7	-1.8	-2.1	-2.2	-2.3	-2.9
3Y	-1.2	-2.2	-2.2	-2.6	-2.6	-2.6	-2.9
4Y	-0.9	-2.1	-2.2	-2.4	-2.4	-2.4	-2.5
5Y	-1.7	-2.4	-2.3	-2.1	-2.1	-2.1	-2.0
10Y	-1.4	-1.6	-1.6	-1.5	-1.5	-1.4	-1.3
30Y	-1.1	-1.1	-1.1	-1.1	-1.0	-1.0	-0.9

Source: BofA Global Research

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Exhibit 11: ATM Straddle Premiums (indicative only)

6.5% straddle premiums for 1y10y

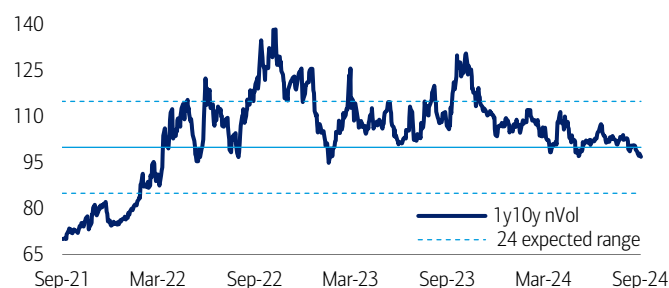
	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	0.3%	0.6%	0.8%	1.2%	1.5%	1.9%	3.8%
3M	0.5%	1.0%	1.4%	2.1%	2.7%	3.5%	7.2%
6M	0.7%	1.3%	1.9%	2.8%	3.6%	4.7%	9.6%
1Y	0.9%	1.7%	2.5%	3.8%	5.0%	6.5%	13.3%
2Y	1.2%	2.2%	3.2%	5.0%	6.5%	8.6%	17.8%
3Y	1.3%	2.5%	3.6%	5.7%	7.5%	10.0%	20.8%
4Y	1.4%	2.7%	4.0%	6.2%	8.2%	10.9%	23.1%
5Y	1.5%	2.9%	4.2%	6.6%	8.7%	11.6%	24.8%
10Y	1.6%	3.1%	4.5%	7.1%	9.4%	12.4%	27.5%
30Y	1.2%	2.3%	3.4%	5.3%	7.1%	9.2%	24.0%

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 trading still trading rich vs right side (from closer to flat in early Jul)



Source: BofA Global Research; Bloomberg

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Exhibit 14: 1y10y vs. 1m10y normal volatility

Vol term structure steepened out marginally over the last week

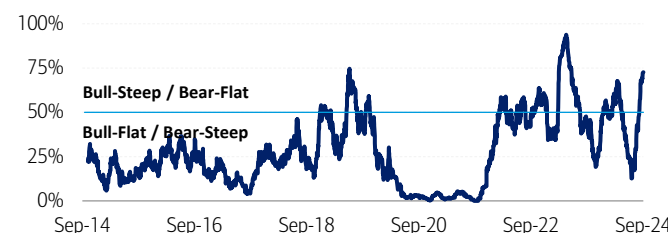


Source: BofA Global Research; Bloomberg

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Exhibit 15: 2s10s only c.73% front-end driven over last 2m...

... with bull-steepening dynamic dominating 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

Intermediate expiries slightly rich, gamma slightly cheap

	1y	2y	3y	5y	7y	10y	30y
3m	1.8	-1.1	-1.3	-0.8	-0.5	-0.1	0.1
6m	-0.4	-0.9	-0.9	-0.5	0.1	0.7	0.5
1y	-0.6	0.0	0.3	0.9	2.0	2.2	0.3
2y	2.4	0.8	0.8	1.5	1.3	1.1	-1.5
5y	0.8	-0.2	-0.1	0.1	0.0	-0.2	-2.1
10y	0.0	-0.2	-0.3	-0.4	-0.5	-0.5	-1.1

Source: BofA Global Research

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

Intermediate expiries slightly rich, gamma slightly cheap

	1y	2y	3y	5y	7y	10y	30y
3m	2.2	-1.5	-1.8	-0.5	-0.6	-0.2	-0.7
6m	0.0	-0.5	-0.3	-0.4	-0.5	-0.4	-0.7
1y	-0.1	1.2	1.8	1.2	1.5	1.1	-0.9
2y	1.9	2.0	1.2	1.1	0.9	0.8	-0.6
5y	0.6	-0.2	-0.2	0.1	0.2	0.1	-0.2
10y	0.0	-0.1	-0.1	-0.4	-0.1	-0.1	-0.1

Source: BofA Global Research

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

Grid fair/cheap for shorter expiries, richer on the right and longer expiries

	1y	2y	3y	5y	7y	10y	30y
3m	2.4	-1.3	-0.7	-0.7	0.1	0.3	1.9
6m	-1.0	-2.3	-1.5	-1.0	-0.7	-0.1	1.7
1y	-0.9	-0.7	-0.8	-0.6	-0.6	-0.8	0.5
2y	0.0	1.5	-0.5	-0.3	-0.7	-0.5	0.4
5y	-0.3	-0.5	-0.3	0.6	0.7	0.7	1.1
10y	1.1	1.1	1.1	1.2	1.2	1.2	1.3

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	0.6	-0.6	-1.2	0.3	-0.1	-0.8	-1.0
3m	1.7	0.5	0.0	-1.1	-0.4	-1.1	1.2
6m	0.3	-1.3	-0.6	-0.3	-0.9	-1.3	-1.2
1y	-1.0	-1.3	0.7	-1.8	-1.5	-0.8	-1.2
2y	-1.8	-1.5	-1.5	-1.8	-0.6	-3.2	-1.3
3y	-1.3	0.5	-0.5	-1.4	-0.2	1.0	-2.2
4y	-1.2	-2.3	-2.6	-1.0	1.0	-1.3	-1.5
5y	-1.1	-1.8	-1.1	-1.6	-1.4	-2.1	-1.3
10y	2.2	-2.3	-1.8	1.1	-0.4	-0.9	-1.9
15y	-0.5	-1.7	1.4	-2.9	-2.4	0.8	-1.2
30y	0.1	0.5	0.5	2.0	-0.9	-0.5	-1.0

Source: BofA Global Research

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

Grid broadly cheap when directionality with rates considered

	1y	2y	3y	5y	7y	10y	30y
3m	-1.2	-1.8	-1.8	-1.7	-1.6	-1.5	-1.6
6m	-1.8	-1.9	-1.8	-1.7	-1.5	-1.4	-1.6
1y	-1.7	-1.4	-1.3	-1.1	-1.0	-0.8	-1.6
2y	0.4	-0.3	-0.4	-0.6	-0.6	-0.7	-1.7
5y	0.1	-0.6	-0.6	-0.5	-0.7	-0.9	-1.8
10y	-0.7	-0.9	-1.0	-1.1	-1.1	-1.2	-2.0

Source: BofA Global Research

BofA GLOBAL RESEARCH

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

Grid broadly cheap when directionality with rates considered

	1y	2y	3y	5y	7y	10y	30y
3m	-0.1	-0.6	-0.7	-0.9	-0.9	-0.9	-1.4
6m	-0.5	-0.6	-0.9	-1.1	-1.1	-1.1	-1.6
1y	-0.2	-0.2	-0.4	-0.9	-0.9	-0.8	-1.7
2y	-0.2	-0.6	-0.8	-0.9	-0.9	-0.9	-1.6
5y	-0.7	-1.1	-1.0	-0.9	-1.0	-1.0	-1.5
10y	-0.7	-0.8	-0.9	-1.5	-1.4	-1.4	-1.3

Source: BofA Global Research

BofA GLOBAL RESEARCH

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

Grid broadly cheap when directionality with rates considered

	1y	2y	3y	5y	7y	10y	30y
3m	0.4	-0.9	-0.7	-0.8	-0.6	-0.6	0.0
6m	-0.9	-1.3	-0.9	-0.8	-0.7	-0.6	-0.1
1y	-0.9	-0.8	-0.8	-0.7	-0.7	-0.7	-0.2
2y	-0.5	0.0	-0.7	-0.6	-0.6	-0.7	-0.1
5y	-0.5	-0.6	-0.5	-0.2	-0.1	0.2	0.9
10y	0.9	0.9	0.9	1.0	1.1	1.2	1.3

Source: BofA Global Research

BofA GLOBAL RESEARCH

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

Grid broadly fair/cheap

	1y	2y	3y	5y	7y	10y	30y
1m	-0.3	-0.4	-0.7	0.3	0.0	-0.9	-0.8
3m	1.8	0.5	0.0	-0.6	-0.6	-0.8	1.1
6m	0.0	-1.2	-0.9	-0.5	-0.9	-1.2	-0.9
1y	-1.1	-1.4	0.6	-1.8	-1.6	-0.9	-1.1
2y	-1.6	-1.4	-1.5	-1.7	-0.8	-2.9	-1.3
3y	-1.3	0.4	-0.6	-1.0	-1.0	1.0	-1.3
4y	-2.2	-2.4	-2.0	-1.2	1.2	-1.3	-2.0
5y	-1.0	-2.3	-1.2	-1.4	-1.1	-1.6	-1.4
10y	1.9	-2.6	-2.5	0.8	-0.2	-0.7	-1.7
15y	-0.5	-1.5	1.3	-2.8	-1.3	0.8	-1.4
30y	-0.2	0.3	0.5	2.0	-1.1	-0.6	-1.5

Source: BofA Global Research

BofA GLOBAL RESEARCH

Skew Relative Value

Exhibit 24: Skew 25% delta

Receivers rich on the upper left side

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	10.0	8.0	7.0	4.4	3.0	1.5	0.6
3M	15.2	10.9	9.6	5.9	4.3	2.2	0.8
6M	15.4	10.3	8.8	5.1	3.7	1.8	0.3
1Y	8.4	6.5	5.4	2.5	1.5	-0.1	-1.1
2Y	-0.7	-0.7	-0.6	-1.5	-1.8	-2.3	-2.6
5Y	-5.7	-5.4	-4.5	-4.4	-4.3	-4.3	-4.0
10Y	-7.0	-6.4	-5.8	-6.4	-6.6	-7.1	-6.9
30Y	-10.5	-9.9	-8.8	-9.0	-9.0	-9.2	-12.2

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 25: Skew 75% delta

Payers cheap on the left, richer vs receivers for intermediates & LRC

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	-10.8	-8.2	-6.9	-3.5	-2.0	-0.1	0.7
3M	-12.6	-8.4	-6.6	-2.3	-0.5	1.6	2.7
6M	-9.7	-5.6	-3.6	0.5	1.9	3.8	4.7
1Y	-3.4	-1.0	0.4	3.3	4.2	5.7	6.1
2Y	6.1	6.0	6.0	6.6	6.9	7.4	7.4
5Y	11.9	11.8	11.3	11.1	10.9	10.8	9.8
10Y	14.8	14.5	14.4	14.6	14.4	14.3	12.6
30Y	18.5	18.2	17.9	17.8	17.8	16.0	14.3

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 26: Breakeven Widths for Costless Receiver Ladders

98bp breakeven width for 1y10y receiver ladders

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	43	42	41	36	33	30	26
3M	84	78	74	65	60	55	48
6M	115	102	97	85	81	74	65
1Y	142	132	126	113	106	98	88
2Y	160	154	151	142	137	130	117
5Y	206	202	200	195	191	187	172
10Y	253	250	246	235	229	220	203

Source: BofA Global Research

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Exhibit 27: Breakeven Widths for Costless Payer Ladders

111bp breakeven width for 1y10y payer ladders

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	31	34	33	32	30	29	26
3M	57	59	58	57	56	55	50
6M	79	81	80	79	78	77	71
1Y	118	117	116	115	112	111	102
2Y	178	172	169	165	162	158	147
5Y	289	283	277	270	265	260	239
10Y	413	406	400	395	389	381	344

Source: BofA Global Research

BofA GLOBAL RESEARCH

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

Receivers broadly fair/cheap and lagging on the directionality

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	-0.1	-0.5	-0.3	-0.4	-0.1	-0.1	0.2
3M	-1.7	-1.7	-0.5	-0.1	-0.5	-0.9	-0.3
6M	-0.6	-0.5	-0.1	0.2	-0.8	0.1	-0.5
1Y	0.7	0.6	0.9	-0.4	0.2	0.1	0.3
2Y	0.4	0.2	0.2	-0.2	1.2	-0.1	-0.7
5Y	-0.8	-0.3	-0.3	-0.2	-0.1	-0.2	-0.7
10Y	0.1	-0.2	-0.1	0.0	0.1	-0.1	-0.8

Source: BofA Global Research

BofA GLOBAL RESEARCH

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

... but payer skew also looking broadly fair/cheap across the grid

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	-0.5	-0.5	-0.6	-0.4	-0.1	-0.1	0.7
3M	0.8	0.4	-0.4	-0.9	-0.6	-0.5	-0.1
6M	-0.9	-0.9	-1.2	-1.0	-1.0	-1.0	-0.6
1Y	-0.3	-0.3	0.6	0.5	0.3	-0.1	0.1
2Y	-1.3	-0.8	-0.8	-0.8	0.5	-0.4	-0.6
5Y	-0.1	-0.7	-0.4	0.1	-0.1	0.0	0.7
10Y	-0.1	0.1	0.0	-0.1	-0.1	0.0	0.7

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	72%	79%	81%	88%	92%	97%	100%
3M	68%	76%	79%	88%	93%	100%	104%
6M	69%	79%	82%	93%	96%	104%	109%
1Y	83%	88%	92%	102%	105%	113%	116%
2Y	111%	112%	112%	116%	118%	121%	125%
5Y	140%	141%	138%	138%	138%	139%	139%
10Y	163%	162%	162%	168%	170%	173%	170%

Source: BofA Global Research

BofA GLOBAL RESEARCH

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

But... 3m Z-Scores show rich payer skew over receiver on the upper left

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	0.6	0.7	-0.6	-0.2	0.1	0.8	1.4
3M	2.5	1.9	-0.1	-0.4	-0.4	0.3	0.3
6M	1.7	2.0	0.8	0.7	-0.9	-0.8	-0.8
1Y	1.9	1.8	1.5	0.8	-0.1	-0.1	-0.2
2Y	0.9	1.0	1.0	0.6	0.5	0.7	1.5
5Y	1.9	1.7	1.7	1.6	1.4	1.4	1.3
10Y	1.6	1.5	1.5	1.5	1.4	1.3	1.3

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	5.2	9.3	12.6	4.6	8.1	4.0
6M	6.5	11.4	15.5	5.6	10.3	5.2
1Y	7.7	13.8	19.8	6.5	13.2	7.1
1.5Y	7.9	14.2	21.4	6.9	14.6	8.1
2Y	7.3	13.4	21.6	6.5	15.1	9.1

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 34: Bull Steeper (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	-5.2	-9.3	-12.6	-4.6	-8.1	-4.0
6M	-6.5	-11.4	-15.5	-5.6	-10.3	-5.2
1Y	-7.7	-13.8	-19.8	-6.5	-13.2	-7.1
1.5Y	-7.9	-14.2	-21.4	-6.9	-14.6	-8.1
2Y	-7.3	-13.4	-21.6	-6.5	-15.1	-9.1

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	-4.8	-9.3	-12.8	-4.6	-8.3	-4.0
6M	-6.2	-11.6	-16.3	-5.6	-10.6	-5.4
1Y	-7.9	-14.7	-21.6	-7.1	-14.4	-7.7
1.5Y	-8.3	-15.5	-23.7	-7.5	-16.3	-9.3
2Y	-7.9	-15.1	-24.3	-7.3	-17.3	-10.3

Source: BofA Global Research

BofA GLOBAL RESEARCH

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

Buy longer maturity payer, sell shorter maturity payer

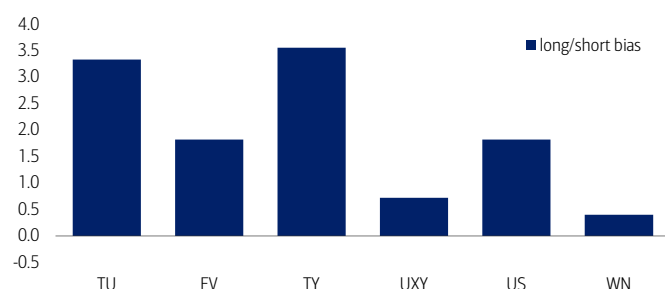
ATM	2/5s	2/10s	2/30s	5/10s	5/30s	10/30s
3M	4.8	9.3	12.8	4.6	8.3	4.0
6M	6.2	11.6	16.3	5.6	10.6	5.4
1Y	7.9	14.7	21.6	7.1	14.4	7.7
1.5Y	8.3	15.5	23.7	7.5	16.3	9.3
2Y	7.9	15.1	24.3	7.3	17.3	10.3

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 40: Analysis of proxies for futures positioning

Long bias across the curve, higher at the frontend and belly



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	8.7	15.3	20.0	7.7	13.4	6.3
6M	9.9	17.1	22.9	8.3	14.9	7.5
1Y	10.6	18.5	26.1	8.9	17.3	9.1
1.5Y	10.1	18.1	26.7	8.7	18.3	10.1
2Y	8.7	16.1	25.7	7.9	18.3	10.8

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 35: Bull Steeper (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	-8.7	-15.3	-20.0	-7.7	-13.4	-6.3
6M	-9.9	-17.1	-22.9	-8.3	-14.9	-7.5
1Y	-10.6	-18.5	-26.1	-8.9	-17.3	-9.1
1.5Y	-10.1	-18.1	-26.7	-8.7	-18.3	-10.1
2Y	-8.7	-16.1	-25.7	-7.9	-18.3	-10.8

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	-5.0	-10.1	-14.9	-5.2	-10.3	-5.4
6M	-6.2	-12.4	-18.5	-6.2	-12.8	-6.9
1Y	-8.1	-15.7	-24.1	-7.7	-16.5	-9.3
1.5Y	-8.9	-17.1	-26.7	-8.3	-18.7	-10.8
2Y	-8.9	-16.9	-27.6	-8.3	-19.8	-12.0

Source: BofA Global Research

BofA GLOBAL RESEARCH

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

Buy longer maturity payer, sell shorter maturity payer

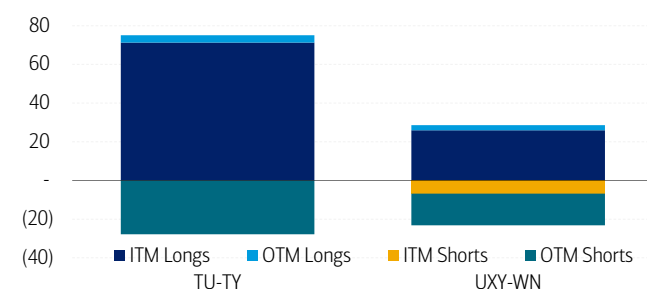
+25bp	2/5s	2/10s	2/30s	5/10s	5/30s	10/30s
3M	5.0	10.1	14.9	5.2	10.3	5.4
6M	6.2	12.4	18.5	6.2	12.8	6.9
1Y	8.1	15.7	24.1	7.7	16.5	9.3
1.5Y	8.9	17.1	26.7	8.3	18.7	10.8
2Y	8.9	16.9	27.6	8.3	19.8	12.0

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 41: Proxies for futures positioning across the curve

Frontend ITM longs may drive bear flattening on fading of Fed pricing



Source: BofA Global Research

BofA GLOBAL RESEARCH



Forward Volatility

Exhibit 42: 6m Forward Volatility

96.0bp for 6m fwd 1y10y

	1y	2y	5y	10y	30y
1m	121.3	115.4	105.7	96.9	87.3
3m	120.8	114.6	105.1	96.5	87.0
6m	120.3	114.8	105.5	96.9	87.4
1y	117.6	112.2	103.6	96.0	87.0
2y	108.8	104.5	99.1	93.4	85.4
5y	98.3	96.1	92.0	87.9	82.1
10y	87.9	86.1	81.5	78.0	74.5

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 43: 6m Fwd vol as % ATM

97% of ATM for 6m fwd 1y10y

	1y	2y	5y	10y	30y
1m	100%	92%	94%	100%	102%
3m	92%	88%	90%	92%	92%
6m	95%	93%	95%	96%	96%
1y	96%	95%	96%	97%	98%
2y	96%	96%	97%	97%	98%
5y	97%	98%	98%	97%	99%
10y	97%	97%	96%	97%	100%

Source: BofA Global Research

BofA GLOBAL RESEARCH

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

-0.8 Z-Score for 6m fwd 1y10y

	1y	2y	5y	10y	30y
1m	-1.0	-0.8	-0.6	-0.5	-0.4
3m	-1.3	-1.1	-0.9	-0.9	-1.0
6m	-1.2	-0.9	-0.6	-0.6	-0.8
1y	-0.9	-1.1	-0.9	-0.8	-0.8
2y	-1.1	-1.2	-1.2	-1.2	-1.0
5y	-1.5	-1.3	-1.3	-1.1	-0.4
10y	-1.4	-1.5	-1.3	-1.2	-1.0

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 45: 1y Forward Volatility

94.5bp for 1y fwd 1y10y

	1y	2y	5y	10y	30y
1m	119.6	113.7	104.4	96.5	87.7
3m	119.0	112.8	103.8	96.3	87.6
6m	115.8	110.1	102.7	95.7	87.2
1y	111.7	106.3	100.2	94.5	86.3
2y	104.8	101.1	96.9	92.1	84.9
5y	97.3	95.3	91.1	87.0	81.8
10y	86.9	85.2	80.6	77.0	74.2

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 46: 1y Fwd vol as % ATM

96% of ATM for 1y fwd 1y10y

	1y	2y	5y	10y	30y
1m	99%	90%	93%	99%	102%
3m	90%	87%	89%	92%	93%
6m	91%	89%	92%	95%	96%
1y	91%	90%	93%	96%	97%
2y	93%	92%	95%	96%	97%
5y	97%	97%	97%	96%	98%
10y	96%	95%	95%	95%	99%

Source: BofA Global Research

BofA GLOBAL RESEARCH

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

-1.1 Z-Score for 1y fwd 1y10y

	1y	2y	5y	10y	30y
1m	-1.0	-0.8	-0.6	-0.4	-0.4
3m	-1.2	-1.1	-0.9	-0.9	-0.9
6m	-1.2	-1.2	-0.9	-0.8	-0.8
1y	-0.8	-1.1	-1.1	-1.1	-0.8
2y	-1.2	-1.5	-1.5	-1.6	-0.9
5y	-1.5	-1.1	-0.9	-0.7	0.5
10y	-1.8	-1.7	-1.1	-0.9	-0.3

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 48: 2y Forward Volatility

92.2bp for 2y fwd 1y10y

	1y	2y	5y	10y	30y
1m	103.2	102.0	97.9	93.7	85.9
3m	103.3	101.2	97.2	93.1	85.6
6m	105.3	101.0	97.0	92.7	85.3
1y	107.9	101.2	96.6	92.2	85.0
2y	102.7	98.9	95.2	90.9	84.3
5y	96.6	94.2	89.2	85.1	80.6
10y	85.3	83.7	78.9	75.2	73.4

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 49: 2y Fwd vol as % ATM

93% of ATM for 2y fwd 1y10y

	1y	2y	5y	10y	30y
1m	85%	81%	87%	96%	100%
3m	79%	78%	83%	89%	91%
6m	83%	82%	87%	92%	94%
1y	88%	86%	90%	93%	95%
2y	91%	90%	93%	95%	97%
5y	96%	96%	95%	94%	97%
10y	94%	94%	93%	93%	98%

Source: BofA Global Research

BofA GLOBAL RESEARCH

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

-1.3 Z-Score for 2y fwd 1y10y

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

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 51: 3y Forward Volatility

92.5bp for 3y fwd 1y10y

	1y	2y	5y	10y	30y
1m	101.1	99.5	96.5	92.6	85.7
3m	102.7	100.5	96.8	92.7	85.7
6m	105.2	101.7	97.0	92.7	85.7
1y	110.6	103.9	97.2	92.5	85.6
2y	103.9	99.2	94.8	90.7	84.7
5y	95.4	93.0	87.2	83.2	79.3
10y	84.2	82.7	77.7	73.6	73.0

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 52: 3y Fwd vol as % ATM

94% of ATM for 3y fwd 1y10y

	1y	2y	5y	10y	30y
1m	84%	79%	86%	95%	100%
3m	78%	77%	83%	88%	91%
6m	83%	83%	87%	92%	94%
1y	90%	88%	90%	94%	96%
2y	92%	91%	93%	94%	97%
5y	95%	95%	92%	92%	95%
10y	92%	93%	92%	91%	98%

Source: BofA Global Research

BofA GLOBAL RESEARCH

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

-0.2 Z-Score for 3y fwd 1y10y

	1y	2y	5y	10y	30y
1m	-0.4	-0.5	-0.5	-0.3	-0.1
3m	-1.0	-1.0	-0.8	-0.8	-0.7
6m	-0.8	-0.9	-0.7	-0.5	-0.2
1y	0.1	-0.8	-0.7	-0.2	0.8
2y	-1.2	-1.3	-0.4	0.5	1.7
5y	1.4	1.6	1.0	1.2	1.6
10y	0.5	0.9	1.4	1.5	1.3

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% across the grid

	1y	2y	3y	5y	7y	10y	30y
1m	139%	147%	152%	157%	157%	153%	144%
3m	134%	146%	154%	162%	165%	165%	158%
6m	126%	138%	147%	155%	159%	159%	153%
1y	136%	147%	154%	158%	160%	158%	150%
2y	158%	162%	162%	163%	162%	159%	148%

Source: BofA Global Research

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

Ratios of Implied to 63d delivered > 100% across the grid

	1y	2y	3y	5y	7y	10y	30y
1m	113%	115%	117%	118%	115%	110%	103%
3m	108%	113%	116%	120%	119%	118%	113%
6m	100%	107%	111%	114%	114%	113%	109%
1y	103%	108%	112%	114%	113%	112%	107%
2y	113%	115%	115%	114%	113%	111%	105%

Source: BofA Global Research

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

Ratios of implied/21d delivered rich virtually across, particularly on the right side on 3m Z-Scores

	1y	2y	3y	5y	7y	10y	30y
1m	0.9	1.7	2.5	2.7	2.8	2.8	2.6
3m	1.3	2.0	2.8	3.0	3.1	3.0	2.8
6m	1.2	1.8	2.5	2.8	2.9	2.9	2.8
1y	2.0	2.7	3.0	3.1	3.0	3.0	2.8
2y	3.4	3.3	3.2	3.1	3.0	3.0	2.8

Source: BofA Global Research

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

Ratios of implied/63d rich in the belly vs wings on 3m Z-Scores

	1y	2y	3y	5y	7y	10y	30y
1m	-0.8	0.0	0.6	0.8	1.0	1.2	0.2
3m	-0.1	0.4	0.9	1.3	1.6	1.8	1.6
6m	-0.3	0.2	0.8	1.4	1.6	1.8	0.5
1y	0.4	1.0	1.5	1.8	1.8	1.6	0.1
2y	1.6	1.7	1.8	1.8	1.7	1.3	-0.1

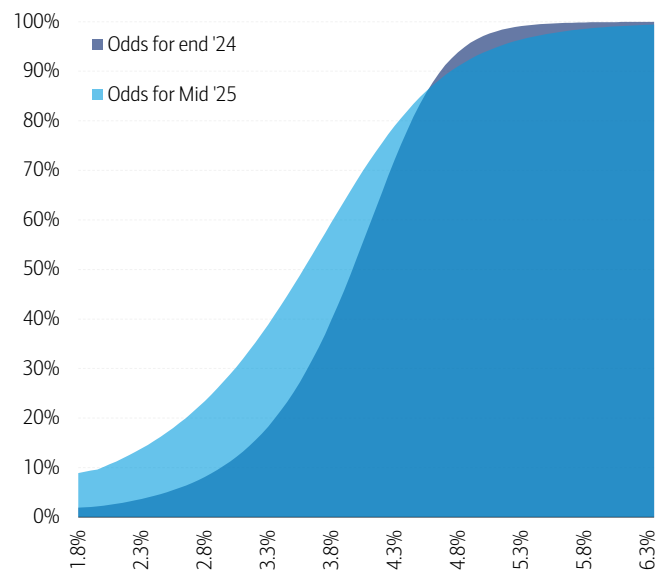
Source: BofA Global Research

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Rates probability distributions

Exhibit 58: CDF for 1y SOFR rates at end-24 and mid-25

1y rate cumulative distribution functions

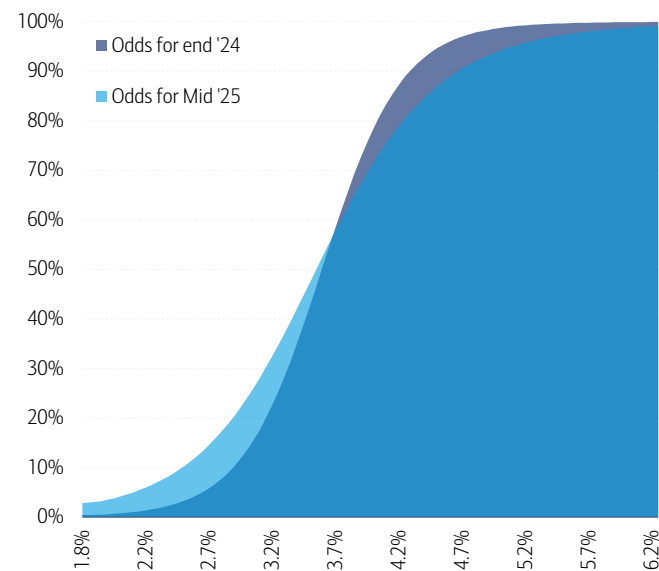


Source: BofA Global Research

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Exhibit 59: CDF for 10y SOFR rates at end-24 and mid-25

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			100	11	150					4939
1m										16685
3m	6		96				94		44	9913
6m									75	10806
1y	22445									22445
2y	12280	8055								20335
3Y		460	1994							2454
4Y	292	460	300	533						1585
5Y			25		1248					1273
7Y						994				994
10Y					175		2952			3127
20Y								240		240
30Y										
	35023	8975	2515	544	1573	994	3046	240	119	94795

Source: BofA Global Research; SDR; Bloomberg

BofA GLOBAL RESEARCH

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	63	434	38	11	1					2201
1m	160				10		340			21252
3m	85	10	183		72		413		225	15596
6m	88	7	82	5	10					14265
1y	29914	120	15	50	25					36424
2y	11730	8665			19					20414
3Y		100	2612							2712
4Y	1042	460	480	790						2772
5Y			240		1561			25		1826
7Y						1298				1298
10Y					175		2771			2946
20Y								195		195
30Y										
	43082	9796	3650	856	1873	1298	3524	220	225	121901

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 2.7bn

	2	5	7	10	15	20	25	30
1	11	33	-	30	-	-	-	-
2	-	-	-	120	-	-	-	-
3	-	-	65	790	-	-	-	-
4	-	145	-	629	-	-	-	-
5	-	-	-	80	-	-	-	-
7	-	-	-	40	-	-	-	-
10	-	-	-	750	-	-	-	-
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

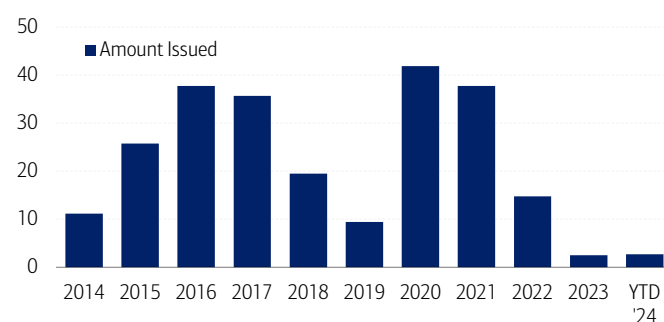
	2	5	7	10	15	20	25	30
1	40	255	75	1063	462	840	-	18054
2	-	40	-	1284	-	1485	-	22177
3	-	40	65	960	20	240	225	15536
4	-	365	-	1373	50	25	275	2441
5	-	-	-	235	445	1527	368	111658
7	-	-	30	40	-	-	-	5624
10	-	-	-	2750	-	-	-	4489
15	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	6500

Source: BofA Global Research, Bloomberg

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

Formosa issuance YTD c.\$2.7bn



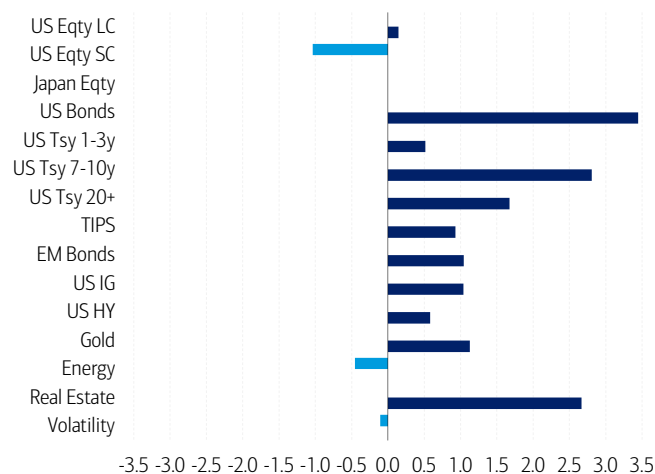
Source: BofA Global Research, Bloomberg

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Allocation bias from ETF flows

Exhibit 66: Allocation bias from ETF flows – week ending 3 Jul 24

Slight deterioration of risk-on sentiment over the last week

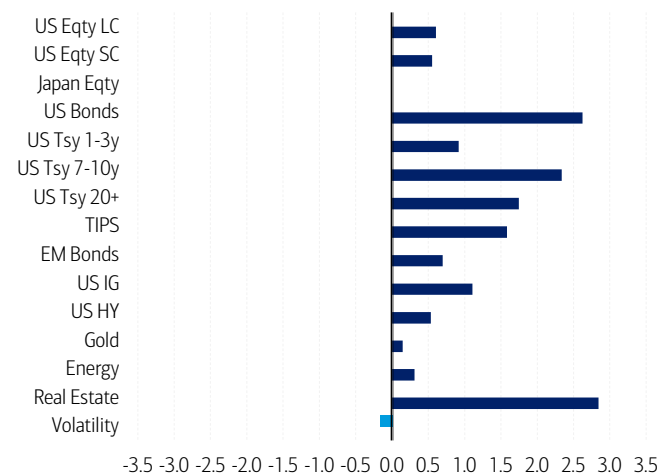


Source: BofA Global Research

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Exhibit 67: Allocation bias from ETF flows – week ending 28 Jun 24

Moderate risk-off sentiment (long bonds, small long equities)



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+/-x and ATM+/-2x. In the terminal payoff diagram, the position starts losing money when the forwards move past ATM+/-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+/(x+delta) and ATM+/-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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