

## Liquid Insight

## AUD rates vol – Distortions on the grid

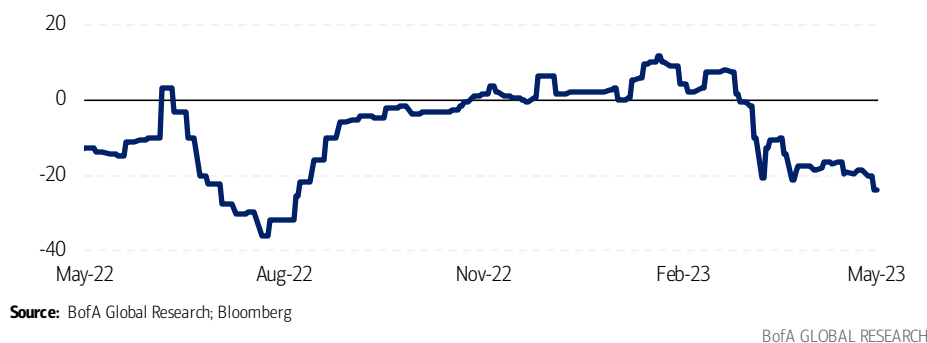
## Key takeaways

- AUD volatility grid similar to the US grid: rich left side vs right side and rich gamma versus intermediates.
- Against the backdrop of a steepening curve, gamma and the left side of the grid should continue to underperform.
- We favour 1y5y receiver spread ATM / ATM-40bp, with an indicative cost of 18bp.

## By Bruno Braizinha &amp; Oliver Levingston

## Exhibit 1: 3m10y vs. 3m2y Normal Volatility

Left side continues to trade rich to the right side



## AUD grid distortions...

The AUD volatility grid is showing the same type of distortions we see on the US grid: rich left side vs the right side and rich gamma versus intermediates. Monetary policy uncertainty driven by ambiguous RBA communication is playing a role in sustaining these distortions.

## ...biased towards fading

The momentum over the last week, however, has been to fade some of the recent richness of gamma vs intermediates, suggesting a more balanced outlook for RBA policy. Skew continues to be biased towards higher rates, although some of this richness has also faded recently.

## Curve dynamic

The richness of the left side vs the right side of the grid continues to drive give-ups to forwards in bull-flatteners & bear-steepeners. Our index for the curve dynamic, however, continues to show the frontend driving 82% of the dynamic for the 2s10s curve with a slight bias towards bull steepening recently. *(continued next page)*

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c. – circa (approximately)

ATM – At the money

URC – Upper right corner

LRC – Lower right corner

ULC – Upper left corner

LLC – Lower left corner

OIS - Overnight indexed swaps

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## Liquid Insight

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The recent dynamic for the US yield curve around the Fed on-hold shift suggests some bias towards further bull steepening as consensus builds towards an RBA shift into on-hold near-term. Against a backdrop of a steepening curve and the RBA at or near the end of its hiking cycle, gamma and the left side of the grid should continue to underperform.

## Positioning wise...

We favour 1y5y receiver spread ATM / ATM-40bp, with an indicative cost of 18bp. The risk to the position is aggressive hawkishness from the RBA in the near term. The downside is limited to upfront premium. In a riskier costless alternative, the receiver spread can be financed by selling 1y5y payers ATM+95bp (indicative), but this expression is exposed to potentially unlimited downside in material selloffs from here.

## RBA terminal pricing and vol

The market has priced the RBA's terminal rate about 22bps higher this month to 3.9% in August. The shape of the current curve reflects three factors:

1. **RBA surprise:** The RBA's surprise decision to raise the cash rate by 25bps on 2 May was unexpected and led to a sudden repricing of the entire OIS curve. The market now prices a small probability of further hikes in the near term, rather than a small probability of cuts.
2. **CPI release schedule:** Given that the RBA used a quarterly CPI release as justification for its last rate hike, the market is pricing a higher probability that the RBA will raise rates after the Q2 CPI print in late July.
3. **Cross-market spreads:** The shape of the OIS curve mirrors the US market, which is pricing cuts in 2H23.

Market pricing for the terminal rate is roughly in line with our economists' central scenario out to August, given the risks to the forecast skew to the upside. Clear evidence of global disinflation, a defensive bias after US bank stress and idiosyncratic near-term risks from a political standoff in the United States temper the upside risks to policy rates. Yet it is difficult to conceive a plausible scenario in which the RBA is cutting rates in Q3.

The AUD volatility grid (see Exhibit 2) is therefore showing the same type of distortions we see on the US grid: rich left side vs the right side (albeit less so than the US grid, with the 1y10y vs 1y1y vol spread c.-23bp inverted in the AUD grid vs c.-58bp for USD); and gamma rich versus intermediates (1y10y vs 1m10y vol spread c.-11bp inverted in the AUD grid vs. c.-7bp for the US).

Monetary policy uncertainty driven by ambiguous RBA communication (and a surprise rate hike at the May meeting) is playing a role in sustaining these distortions, similar to the US grid dynamic (the US grid distortions are further amplified by the debt ceiling debate and fears of continuation of the recent bank stress – see [Still about uncertainty](#)).

The momentum over the last week has been to fade some of the recent richness of gamma vs intermediates (see Exhibit 4), suggesting a more balanced view for RBA policy going forward. Skew continues to be biased towards higher rates, however, with ratios of breakeven widths for payer vs receiver ladders > 100% virtually across the grid (see Exhibit 22), although some of this richness has also faded recently (Exhibit 22).

The richness of the left side vs the right side of the grid continues to drive give-ups to forwards in bull-flatteners & bear-steepeners (see Exhibit 26 and Exhibit 28). Our index for the curve dynamic, however, continues to show the frontend driving 82% of the dynamic for the 2s10s curve with a slight bias towards bull steepening recently (over the last couple of weeks we have seen: 43% bull-steepening bias, 39% bear-flattening, 2% bull-flattening and 16% bear-steepening).

We favour buying 1y5y receiver spread ATM / ATM-40bps, with an indicative cost of 18bp. The risk to the position is aggressive hawkishness from the RBA in the near term, with downside limited to the upfront premium. In a riskier costless alternative, the receiver spread can be financed by selling 1y5y payers ATM+95bp (indicative), but this expression is exposed to potentially unlimited downside in material selloffs from here.

## Levels and Recent Moves

### Exhibit 2: ATM Normal Volatility Grid

113.6bp for 1y10y volatility

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	154.9	153.7	151.8	143.7	134.7	124.7	97.1
3M	146.3	144.7	143.9	139.2	131.1	120.9	94.0
6M	141.6	139.4	138.2	132.8	126.6	118.4	91.0
1Y	136.4	132.6	129.7	124.1	119.7	113.6	87.2
2Y	126.0	121.3	117.8	111.4	107.2	102.3	79.8
3Y	116.9	112.1	108.6	102.0	98.2	93.9	73.9
4Y	108.9	104.3	101.0	94.3	91.1	87.1	68.9
5Y	102.4	98.3	94.5	88.4	85.1	81.2	65.0
10Y	75.5	74.5	72.5	68.8	67.4	65.6	51.2
30Y	53.9	53.5	53.7	55.5	55.8	55.5	44.2

Source: BofA Global Research

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### Exhibit 3: ATM Volatility Grid - 3m Z-Scores

ULC slightly rich, URC cheap on 3m Z-Scores

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	0.5	0.4	0.2	-0.3	-0.8	-1.1	-1.3
3M	0.4	0.3	0.2	0.0	-0.5	-1.1	-1.4
6M	0.4	0.3	0.3	0.1	-0.1	-0.5	-1.2
1Y	0.3	0.2	0.1	0.2	0.3	0.4	-0.7
2Y	0.1	0.0	0.0	0.2	0.4	0.8	-0.5
3Y	-0.1	-0.1	-0.1	-0.1	0.2	0.7	-0.5
4Y	-0.2	-0.1	-0.2	-0.4	0.0	0.3	-0.6
5Y	-0.1	0.0	-0.3	-0.6	-0.5	-0.3	-0.7
10Y	-0.3	-0.4	-0.5	-0.9	-0.9	-1.0	-1.2
30Y	0.2	0.4	0.7	0.7	0.4	-0.1	-0.6

Source: R BofA Global Research

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### Exhibit 4: ATM Normal Volatility Grid - CoW

Underperformance of gamma (short expiries) over the last week

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	-8.7	-9.3	-9.4	-12.0	-13.5	-14.8	-11.9
3M	-2.6	-3.2	-2.9	-3.4	-5.9	-8.4	-5.8
6M	-1.2	-1.9	-1.8	-1.8	-2.6	-3.6	-3.8
1Y	0.0	-0.6	-0.9	-0.6	-0.1	0.7	-1.5
2Y	0.3	-0.2	-0.3	-0.1	1.0	1.7	-0.8
3Y	0.0	0.3	0.3	0.4	1.4	2.1	-0.3
4Y	0.5	0.8	1.1	0.4	1.3	2.0	0.1
5Y	0.5	0.9	0.4	0.8	1.0	1.1	0.2
10Y	0.6	0.5	0.3	0.2	0.4	0.5	0.6
30Y	-0.3	-0.2	0.0	0.5	0.8	1.1	1.1

Source: BofA Global Research

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### Exhibit 5: ATM Straddle Premiums (indicative only)

7.2% straddle premiums for 1y10y

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	0.3%	0.7%	1.0%	1.5%	1.9%	2.4%	4.0%
3M	0.6%	1.1%	1.7%	2.6%	3.2%	4.0%	6.8%
6M	0.8%	1.5%	2.2%	3.4%	4.4%	5.5%	9.2%
1Y	1.0%	2.0%	2.9%	4.4%	5.7%	7.2%	12.2%
2Y	1.3%	2.5%	3.6%	5.3%	6.9%	8.9%	15.4%
3Y	1.4%	2.7%	3.9%	5.8%	7.5%	9.6%	16.9%
4Y	1.5%	2.8%	4.1%	6.0%	7.7%	9.9%	17.7%
5Y	1.5%	2.9%	4.1%	6.0%	7.8%	10.0%	18.2%
10Y	1.3%	2.5%	3.6%	5.4%	7.2%	9.5%	17.6%
30Y	0.9%	1.7%	2.6%	4.3%	6.0%	8.3%	17.0%

Source: BofA Global Research

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### Exhibit 6: 1y10y volatility

Current level 113.6bp

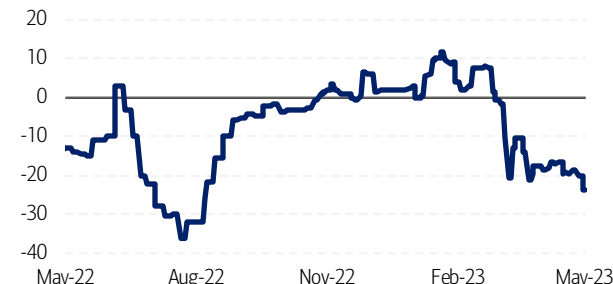


Source: BofA Global Research; Bloomberg

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### Exhibit 7: 3m10y vs. 3m2y Normal Volatility

Left side continues to trade rich to the right side

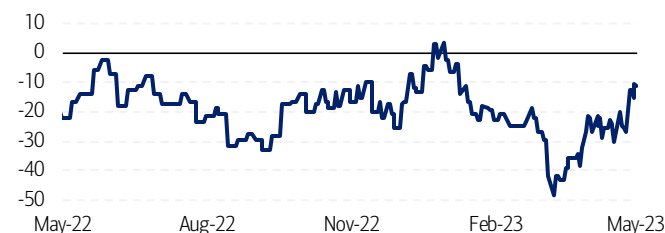


Source: BofA Global Research; Bloomberg

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**Exhibit 8: 1y10y vs. 1m10y Normal Volatility**

Vol term structure continues to be slightly inverted



Source: BofA Global Research; Bloomberg

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**Exhibit 9: 2s10s curve directionality**

Frontend driving 82% of the 2s10s curve directionality



Source: BofA Global Research; Bloomberg

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**Volatility Grid Relative Value****PCA Z-SCORES****Exhibit 10: 3m Z-Scores w/ PCA framework**

Some cheapness in gamma and richness in intermediate expiries

	1y	2y	3y	5y	7y	10y	30y
3m	-1.5	-2.0	-1.2	0.5	-2.1	-2.9	-2.3
6m	0.2	0.3	1.7	-2.4	0.9	-0.9	-2.0
1y	1.1	1.3	1.6	1.9	2.6	2.7	-0.7
2y	1.0	1.5	1.5	1.5	2.2	2.8	-0.3
5y	0.6	1.5	0.5	0.7	1.1	1.2	-0.5
10y	-0.1	0.1	0.1	0.3	0.6	0.3	-0.3

Source: BofA Global Research

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**Exhibit 11: 3m Z-Scores w/ PCA framework w/o rates directionality**

Cheapness across the grid except for intermediates in 7 &amp; 10 tails when directionality with rates is considered

	1y	2y	3y	5y	7y	10y	30y
3m	-0.4	-0.5	-0.4	-0.4	-0.9	-1.4	-1.4
6m	-0.2	-0.3	-0.1	0.0	-0.3	-0.7	-1.1
1y	-0.1	-0.2	-0.1	0.1	0.3	0.3	-0.7
2y	-0.1	-0.1	-0.1	0.1	0.4	0.9	-0.6
5y	-0.3	0.0	-0.4	-0.4	-0.2	-0.1	-0.8
10y	-0.5	-0.4	-0.5	-0.5	-0.4	-0.5	-0.7

Source: BofA Global Research

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**Exhibit 12: 6m Z-Scores w/ PCA framework**

Richness for intermediates in the belly on 6m Z-Scores

	1y	2y	3y	5y	7y	10y	30y
3m	1.1	-0.3	-1.0	-0.9	-2.3	-3.0	2.7
6m	1.7	0.8	1.5	0.4	-0.8	-1.9	-2.6
1y	0.7	0.6	0.7	1.5	2.4	2.1	-1.9
2y	0.2	0.2	0.5	1.5	2.1	2.3	-0.3
5y	0.3	0.9	-0.2	-0.4	0.0	0.3	-0.3
10y	0.0	-0.1	-0.7	-1.4	-1.3	-1.2	-1.2

Source: BofA Global Research

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**Exhibit 13: 6m Z-Scores w/ PCA framework w/o rates directionality**

Cheapness virtually across the grid when directionality with rates is considered

	1y	2y	3y	5y	7y	10y	30y
3m	0.3	0.1	-0.1	-0.3	-0.9	-1.5	-1.6
6m	0.2	0.0	-0.1	-0.2	-0.5	-0.8	-1.2
1y	-0.1	-0.2	-0.3	-0.3	-0.2	-0.2	-0.8
2y	-0.3	-0.4	-0.4	-0.3	-0.2	-0.1	-0.6
5y	-0.5	-0.4	-0.6	-0.6	-0.6	-0.5	-0.6
10y	-0.6	-0.6	-0.7	-0.9	-1.0	-1.2	-1.0

Source: BofA Global Research

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**Exhibit 14: 1y Z-Scores w/ PCA framework**

Richness for intermediates in the belly on 1y Z-Scores

	1y	2y	3y	5y	7y	10y	30y
3m	1.1	0.4	1.1	1.2	0.5	-0.4	-3.2
6m	-1.2	-0.6	1.2	1.9	1.3	0.7	-2.9
1y	0.6	-1.3	-0.8	0.8	3.9	2.7	-1.5
2y	-1.2	-1.1	-0.8	0.5	1.3	1.8	-1.1
5y	0.9	0.4	-0.4	-0.9	-0.8	-0.9	-1.5
10y	-0.4	-0.7	-1.2	-1.9	-2.0	-2.0	-2.3

Source: BofA Global Research

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**Exhibit 15: 1y Z-Scores w/ PCA framework w/o rates directionality**

ULC rich but grid fair/cheap elsewhere when directionality with rates is considered, particularly the right side

	1y	2y	3y	5y	7y	10y	30y
3m	0.7	0.6	0.6	0.5	0.0	-0.5	-1.7
6m	0.3	0.3	0.3	0.3	0.1	-0.1	-1.4
1y	0.7	-0.1	0.0	0.0	0.2	0.2	-1.0
2y	-0.3	-0.4	-0.4	-0.3	-0.2	0.0	-0.9
5y	-0.2	-0.4	-0.6	-0.9	-0.9	-0.9	-1.2
10y	-0.6	-0.7	-0.9	-1.3	-1.6	-1.7	-1.9

Source: BofA Global Research

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## Skew Relative Value

### Exhibit 16: Skew 25% delta

Relatively cheap receiver except on the ULC

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
<b>1M</b>	-4.2	-4.2	-4.0	-3.1	-2.4	-2.0	-1.1
<b>3M</b>	-6.0	-5.2	-5.2	-4.0	-3.3	-2.6	-1.2
<b>6M</b>	-6.5	-5.6	-5.6	-4.4	-3.5	-2.6	-1.3
<b>1Y</b>	-6.0	-6.0	-5.9	-4.3	-3.3	-2.9	-1.3
<b>2Y</b>	-4.3	-5.5	-5.5	-4.0	-3.4	-2.7	-1.4
<b>3Y</b>	-3.1	-4.2	-4.0	-3.2	-2.7	-1.9	-1.1
<b>4Y</b>	-2.4	-3.7	-3.7	-3.1	-2.5	-1.7	-0.9
<b>5Y</b>	-2.1	-3.4	-3.5	-2.9	-2.3	-1.5	-0.7
<b>10Y</b>	0.6	0.0	-0.3	-0.3	-0.5	-0.5	-0.1
<b>15Y</b>	1.4	0.9	0.7	0.3	0.2	0.0	0.2
<b>30Y</b>	4.8	4.5	3.6	0.5	0.2	-0.1	1.9

Source: BofA Global Research

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### Exhibit 17: Skew 75% delta

Payer skew above receiver virtually across the grid

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
<b>1M</b>	6.4	6.6	6.4	5.1	4.2	3.4	2.2
<b>3M</b>	11.2	10.4	10.1	8.3	7.1	6.0	3.7
<b>6M</b>	13.7	12.7	12.1	10.3	8.7	7.2	4.4
<b>1Y</b>	15.1	13.4	12.6	10.8	9.2	7.6	4.5
<b>2Y</b>	16.3	14.2	13.1	10.7	8.9	7.3	4.7
<b>3Y</b>	15.7	13.2	12.0	10.2	8.4	6.8	4.6
<b>4Y</b>	16.4	12.9	11.7	9.9	8.3	6.5	4.3
<b>5Y</b>	15.5	12.5	11.2	9.6	8.0	6.1	4.0
<b>10Y</b>	10.5	9.2	8.4	6.6	5.7	4.4	2.7
<b>15Y</b>	9.3	8.3	8.0	6.4	5.7	4.4	3.0
<b>30Y</b>	15.2	13.8	12.8	9.3	8.4	7.4	6.0

Source: BofA Global Research

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### Exhibit 18: Breakeven Widths for Costless Receiver Ladders

110bp breakeven width for 1y10y receiver ladders

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
<b>1M</b>	43	43	43	41	38	36	28
<b>3M</b>	70	71	71	69	65	60	48
<b>6M</b>	96	95	93	92	88	83	64
<b>1Y</b>	127	124	120	118	115	110	86
<b>2Y</b>	169	160	157	149	145	140	111
<b>5Y</b>	221	209	199	188	184	177	144
<b>10Y</b>	245	238	232	218	213	208	164

Source: BofA Global Research

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### Exhibit 19: Breakeven Widths for Costless Payer Ladders

131bp breakeven width for 1y10y payer ladders

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
<b>1M</b>	49	49	49	45	42	39	30
<b>3M</b>	89	87	86	81	76	69	52
<b>6M</b>	125	122	120	112	106	97	73
<b>1Y</b>	174	165	165	151	141	131	98
<b>2Y</b>	238	220	212	194	180	170	128
<b>5Y</b>	325	292	280	249	233	212	165
<b>10Y</b>	331	308	296	267	255	240	181

Source: BofA Global Research

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### Exhibit 20: 3m Z-Score Receiver Skew (w/o fwds & ATM direction)

Receiver skew rich broadly across the grid

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
<b>1M</b>	1.2	1.6	1.3	1.3	1.1	0.8	1.1
<b>3M</b>	1.1	1.2	1.3	0.9	1.0	0.9	0.8
<b>6M</b>	0.9	0.8	0.7	0.8	0.6	0.8	1.1
<b>1Y</b>	0.0	-0.1	-0.1	0.0	-0.2	-0.6	0.8
<b>2Y</b>	-0.4	-0.4	-0.4	-0.2	-0.1	0.0	0.2
<b>5Y</b>	0.3	0.5	0.3	0.8	-0.5	-0.1	0.6
<b>10Y</b>	-0.1	-0.5	-0.1	-0.8	-0.9	-0.9	-0.7

Source: BofA Global Research

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### Exhibit 21: 3m Z-Score Payer Skew (w/o direction w/ fwds & ATM)

Payer skew cheap broadly across the grid

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
<b>1M</b>	0.8	1.2	1.2	0.9	1.1	1.1	1.0
<b>3M</b>	0.3	0.8	1.2	1.2	1.3	1.3	1.3
<b>6M</b>	-0.2	0.4	0.8	0.7	1.2	1.6	1.6
<b>1Y</b>	0.1	0.3	0.5	0.4	0.2	0.1	0.3
<b>2Y</b>	0.3	0.3	0.3	0.2	-0.3	0.8	0.3
<b>5Y</b>	0.4	-0.2	0.2	0.2	0.4	-0.5	1.6
<b>10Y</b>	-0.4	-0.3	-0.1	0.7	0.9	0.5	0.5

Source: BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 22: Ratio of Payer/Receiver BE widths for Costless Ladders

Ratios of breakeven widths > 100% across the grid

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
<b>1M</b>	113%	113%	113%	109%	110%	108%	105%
<b>3M</b>	126%	123%	122%	118%	117%	115%	109%
<b>6M</b>	131%	129%	129%	123%	121%	117%	114%
<b>1Y</b>	137%	134%	137%	128%	123%	119%	113%
<b>2Y</b>	141%	137%	135%	130%	125%	122%	116%
<b>5Y</b>	147%	140%	141%	132%	127%	120%	115%
<b>10Y</b>	135%	130%	127%	123%	120%	115%	111%

Source: BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 23: 3m Z-Score Ratio of Payer/Receiver Skew

Z-Scores show cheap receiver vs payer skew virtually across the grid

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
<b>1M</b>	-0.5	-0.6	-0.5	-1.1	-0.6	-0.4	-1.2
<b>3M</b>	-0.5	-0.6	-0.5	-0.7	-0.5	-0.7	-1.2
<b>6M</b>	-0.6	-0.6	-0.3	-0.6	-0.5	-0.6	-0.5
<b>1Y</b>	-0.5	-0.5	-0.4	-0.5	-0.4	-0.3	-0.9
<b>2Y</b>	-0.5	-0.6	-0.6	-0.5	-0.6	0.4	0.3
<b>5Y</b>	-0.6	-0.4	-0.5	-0.5	-0.6	0.0	-0.5
<b>10Y</b>	-0.5	-0.2	0.0	0.5	0.5	0.4	0.2

Source: BofA Global Research

BofA GLOBAL RESEARCH

## Conditional Curve Trades

### Exhibit 24: 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	2.1	8.7	17.5	6.7	15.7	9.7
6M	3.4	10.8	23.3	7.5	20.4	14.0
1Y	6.2	13.8	30.6	7.7	25.5	18.7
1.5Y	7.9	16.5	35.4	8.9	28.6	21.0
2Y	10.1	19.0	39.2	9.5	30.8	22.6

Source: BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 25: 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	2.4	11.0	22.6	8.7	20.8	13.4
6M	4.0	12.6	28.2	8.9	25.1	17.5
1Y	6.7	15.3	35.3	8.7	29.6	22.2
1.5Y	8.7	18.1	39.9	9.7	32.7	24.5
2Y	10.8	20.6	43.7	10.3	34.7	25.9

Source: BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 26: 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	-2.1	-8.7	-17.5	-6.7	-15.7	-9.7
6M	-3.4	-10.8	-23.3	-7.5	-20.4	-14.0
1Y	-6.2	-13.8	-30.6	-7.7	-25.5	-18.7
1.5Y	-7.9	-16.5	-35.4	-8.9	-28.6	-21.0
2Y	-10.1	-19.0	-39.2	-9.5	-30.8	-22.6

Source: BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 27: 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	-2.4	-11.0	-22.6	-8.7	-20.8	-13.4
6M	-4.0	-12.6	-28.2	-8.9	-25.1	-17.5
1Y	-6.7	-15.3	-35.3	-8.7	-29.6	-22.2
1.5Y	-8.7	-18.1	-39.9	-9.7	-32.7	-24.5
2Y	-10.8	-20.6	-43.7	-10.3	-34.7	-25.9

Source: BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 28: 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	-2.2	-9.5	-18.3	-7.3	-16.5	-10.3
6M	-4.0	-11.8	-24.5	-8.3	-21.6	-14.7
1Y	-7.1	-15.1	-32.5	-8.7	-27.1	-20.0
1.5Y	-9.3	-18.5	-37.8	-9.9	-30.8	-22.6
2Y	-11.6	-21.2	-41.9	-10.6	-33.1	-24.3

Source: BofA Global Research

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### Exhibit 29: 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	-3.6	-13.4	-25.9	-10.3	-23.3	-14.9
6M	-5.6	-15.9	-32.3	-11.0	-28.4	-19.6
1Y	-9.1	-19.0	-40.1	-11.0	-33.5	-24.9
1.5Y	-11.4	-22.6	-45.6	-12.2	-37.2	-27.4
2Y	-14.2	-25.7	-49.7	-13.0	-39.4	-29.0

Source: BofA Global Research

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### Exhibit 30: 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	2.2	9.5	18.3	7.3	16.5	10.3
6M	4.0	11.8	24.5	8.3	21.6	14.7
1Y	7.1	15.1	32.5	8.7	27.1	20.0
1.5Y	9.3	18.5	37.8	9.9	30.8	22.6
2Y	11.6	21.2	41.9	10.6	33.1	24.3

Source: BofA Global Research

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### Exhibit 31: 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	3.6	13.4	25.9	10.3	23.3	14.9
6M	5.6	15.9	32.3	11.0	28.4	19.6
1Y	9.1	19.0	40.1	11.0	33.5	24.9
1.5Y	11.4	22.6	45.6	12.2	37.2	27.4
2Y	14.2	25.7	49.7	13.0	39.4	29.0

Source: BofA Global Research

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## Forward Volatility

### Exhibit 32: 6m Forward Volatility

100.7bp for 6m fwd 1y10y

	1y	2y	5y	10y	30y
1m	127.6	122.3	114.2	108.1	82.4
3m	134.5	128.7	119.1	112.0	85.3
6m	130.2	123.3	114.1	107.6	82.6
1y	124.9	117.2	108.1	100.7	78.3
2y	112.1	110.2	98.4	91.4	71.8
5y	94.9	91.5	80.9	75.9	60.1
10y	72.6	71.4	65.4	63.0	48.9

Source: BofA Global Research

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### Exhibit 33: 6m Fwd vol as % ATM

89% of ATM for 6m fwd 1y10y

	1y	2y	5y	10y	30y
1m	82%	80%	79%	87%	85%
3m	92%	89%	86%	93%	91%
6m	92%	88%	86%	91%	91%
1y	92%	88%	87%	89%	90%
2y	89%	91%	88%	89%	90%
5y	93%	93%	92%	93%	92%
10y	96%	96%	95%	96%	96%

Source: BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 34: 3m Z-Score 6m Fwd vol % ATM

1.2 Z-Score for 6m fwd 1y10y

	1y	2y	5y	10y	30y
1m	-0.7	-0.7	0.2	2.2	1.6
3m	-0.5	-0.4	0.5	2.5	1.9
6m	-0.6	-0.8	-0.2	2.1	1.7
1y	-0.8	-1.1	-0.5	1.2	1.0
2y	-1.5	-1.1	-0.8	0.4	0.4
5y	-0.4	-0.3	-0.9	-0.5	0.2
10y	0.5	0.5	0.4	-0.1	0.1

Source: BofA Global Research

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### Exhibit 35: 1y Forward Volatility

90.2bp for 1y fwd 1y10y

	1y	2y	5y	10y	30y
1m	112.3	107.0	99.8	92.8	73.8
3m	115.1	107.9	99.7	92.3	73.2
6m	115.6	108.5	100.8	93.1	73.4
1y	111.0	108.1	97.6	90.2	71.4
2y	108.9	105.8	92.2	85.1	67.0
5y	89.2	86.7	75.9	71.8	56.1
10y	70.4	69.0	62.7	60.8	46.9

Source: BofA Global Research

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### Exhibit 36: 1y Fwd vol as % ATM

79% of ATM for 1y fwd 1y10y

	1y	2y	5y	10y	30y
1m	73%	70%	69%	74%	76%
3m	79%	75%	72%	76%	78%
6m	82%	78%	76%	79%	81%
1y	81%	82%	79%	79%	82%
2y	86%	87%	83%	83%	84%
5y	87%	88%	86%	88%	86%
10y	93%	93%	91%	93%	91%

Source: BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 37: 3m Z-Score 1y Fwd vol % ATM

-0.1 Z-Score for 1y fwd 1y10y

	1y	2y	5y	10y	30y
1m	-1.0	-1.0	-0.6	1.3	1.0
3m	-0.9	-1.0	-0.8	1.4	1.2
6m	-1.0	-1.1	-0.9	0.8	0.9
1y	-1.1	-1.0	-1.1	-0.1	0.3
2y	-1.0	-1.0	-1.7	-0.9	-0.1
5y	-1.9	-2.2	-2.5	-1.8	-0.6
10y	0.2	0.3	0.1	-0.5	-0.1

Source: BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 38: 2y Forward Volatility

81.9bp for 2y fwd 1y10y

	1y	2y	5y	10y	30y
1m	83.3	94.7	87.3	79.4	61.4
3m	52.2	88.3	84.6	77.6	60.2
6m	94.3	97.8	89.2	80.7	61.9
1y	106.8	100.8	90.4	81.9	63.6
2y	101.6	100.7	84.7	76.9	59.5
5y	83.2	80.7	70.1	65.8	50.9
10y	67.2	64.9	58.3	56.8	43.9

Source: BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 39: 2y Fwd vol as % ATM

72% of ATM for 2y fwd 1y10y

	1y	2y	5y	10y	30y
1m	54%	62%	61%	64%	63%
3m	36%	61%	61%	64%	64%
6m	67%	70%	67%	68%	68%
1y	78%	76%	73%	72%	73%
2y	81%	83%	76%	75%	75%
5y	81%	82%	79%	81%	78%
10y	89%	87%	85%	87%	86%

Source: BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 40: 3m Z-Score 2y Fwd vol % ATM

-1.3 Z-Score for 2y fwd 1y10y

	1y	2y	5y	10y	30y
1m	-1.5	-1.2	-1.3	0.4	0.3
3m	-2.1	-1.4	-1.5	-0.1	0.1
6m	-1.6	-1.1	-1.6	-0.5	0.1
1y	-0.5	-0.5	-1.7	-1.3	0.0
2y	-0.6	-0.7	-2.0	-2.0	-0.6
5y	-2.1	-2.5	-2.7	-1.8	-0.7
10y	-0.2	-0.3	-0.9	-1.3	-0.3

Source: BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 41: 3y Forward Volatility

75.6bp for 3y fwd 1y10y

	1y	2y	5y	10y	30y
1m	75.4	86.4	84.5	76.3	57.2
3m	75.6	88.2	83.9	75.6	56.9
6m	91.9	95.8	86.6	77.1	57.1
1y	106.6	101.0	84.3	75.6	57.0
2y	101.0	98.2	78.0	69.8	54.0
5y	77.3	74.6	66.4	61.1	45.2
10y	63.4	61.9	56.0	54.0	41.6

Source: BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 42: 3y Fwd vol as % ATM

67% of ATM for 3y fwd 1y10y

	1y	2y	5y	10y	30y
1m	49%	56%	59%	61%	59%
3m	52%	61%	60%	63%	61%
6m	65%	69%	65%	65%	63%
1y	78%	76%	68%	67%	65%
2y	80%	81%	70%	68%	68%
5y	76%	76%	75%	75%	70%
10y	84%	83%	81%	82%	81%

Source: BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 43: 3m Z-Score 3y Fwd vol % ATM

-1.9 Z-Score for 3y fwd 1y10y

	1y	2y	5y	10y	30y
1m	-1.6	-1.5	-1.3	0.1	0.6
3m	-2.2	-1.7	-1.6	-0.4	0.7
6m	-1.9	-1.3	-1.6	-1.2	0.3
1y	-1.3	-0.8	-1.7	-1.9	-0.5
2y	-0.7	-0.8	-2.0	-2.3	-0.8
5y	-2.4	-2.6	-2.6	-2.0	-0.9
10y	-0.6	-0.6	-0.9	-1.4	0.0

Source: BofA Global Research

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## Ratios implied/delivered

### Exhibit 44: Implied vs. Delivered (21d) Ratio

Ratios of Implied to 21d delivered >100% in belly

	1y	2y	3y	5y	7y	10y	30y
<b>1m</b>	115%	105%	109%	113%	115%	118%	108%
<b>3m</b>	99%	95%	101%	108%	112%	114%	104%
<b>6m</b>	89%	90%	97%	104%	109%	112%	101%
<b>1y</b>	83%	90%	96%	101%	107%	110%	98%
<b>2y</b>	89%	96%	97%	101%	104%	105%	92%

Source: BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 46: 3m Z-Scores for Implied vs. Delivered (21d) Ratio

Ratios of implied/21d delivered cheap across the grid

	1y	2y	3y	5y	7y	10y	30y
<b>1m</b>	-0.3	-0.7	-1.1	-1.3	-1.3	-1.2	-1.3
<b>3m</b>	-0.3	-0.9	-1.1	-1.1	-1.1	-1.0	-1.2
<b>6m</b>	-0.6	-1.1	-1.0	-1.0	-0.9	-0.7	-1.0
<b>1y</b>	-1.2	-1.1	-1.0	-0.9	-0.6	-0.4	-0.7
<b>2y</b>	-0.8	-0.8	-0.7	-0.5	-0.2	0.0	-0.4

Source: BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 45: Implied vs. Delivered (63d) Ratio

Ratios of Implied to 63d delivered still >100% virtually across gamma

	1y	2y	3y	5y	7y	10y	30y
<b>1m</b>	120%	118%	125%	132%	131%	128%	116%
<b>3m</b>	101%	106%	115%	126%	126%	122%	111%
<b>6m</b>	95%	103%	112%	120%	122%	119%	107%
<b>1y</b>	97%	105%	111%	115%	116%	114%	102%
<b>2y</b>	101%	108%	108%	107%	107%	105%	94%

Source: BofA Global Research

BofA GLOBAL RESEARCH

### Exhibit 47: 3m Z-Scores for Implied vs. Delivered (63d) Ratio

Ratios of implied/63d delivered rich for intermediates in the belly

	1y	2y	3y	5y	7y	10y	30y
<b>1m</b>	0.2	0.0	0.1	0.0	-0.1	-0.3	-0.7
<b>3m</b>	-0.5	-0.4	0.1	0.4	0.3	0.2	-0.6
<b>6m</b>	-0.7	-0.3	0.3	0.7	0.9	0.9	-0.1
<b>1y</b>	-0.8	0.1	0.4	1.0	1.4	1.5	0.7
<b>2y</b>	0.4	0.8	1.1	1.4	1.6	1.7	0.9

Source: BofA Global Research

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## Notable Rates and FX Research

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- **Global Rates, FX & EM Year Ahead 2023 – [Year Ahead 2023: Pivot ≠ Peak](#)**, 20 Nov 2022
- [What to expect when pausing](#), **Global FX Weekly**, 12 May 2023
- [The long and short of it](#), **Global Rates Weekly**, 12 May 2023
- [Corporates buying USD/Asia FX](#), **Liquid Cross Border Flows**, 9 May 2023

## Rates, FX & EM trades for 2023

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For a complete list of our open trade recommendations, as well as our trade recommendations closed over the past 12 months, see the reports below:

[Global FX Weekly: What to expect when pausing 12 May 2023](#)

[Global Rates Weekly: The long and short of it 12 May 2023](#)

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