

US Rates Watch

Vol views – let side collapse

Left side vol collapse

Volatility on the left side of the grid collapsed (see Table 1) in the aftermath of a week that saw major central bankers push back against policy paths priced by market participants: the RBA ended YCC but didn't signal imminent rate hikes, ECB pushed strongly against '22 rate hikes, Fed tapered but reiterated patience on the policy path, and the BoE delivered a surprise hold. Policy makers have acknowledged hiking into supply constrained inflation could be a mistake that monetary policy alone can't fix.

Our expectation is for the frontend of the US curve to anchor near-term, and for the curve dynamic to shift with higher frequency on belly and backend driven moves (bull-flattening and bear-steepening - see [Bailed On](#)).

Indeed, over the last couple of months the curve has been locked in a dynamic where a hawkish repricing of Fed expectations (higher frontend yields and higher left side vol - see [Left side on fire](#)) leads to a downward repricing of the terminal rate view (7y1y OIS currently around 1.58%) and lower backend yields, as the market prices a significant likelihood of a policy mistake. With the decoupling of communication between taper and the policy path, and a more significant focus on forward guidance now that the taper process is under way, we expect a more tempered tone in communication like we saw over the last week to allow for a shift away from this dynamic towards and some normalization of terminal rate expectations.

To be clear, the structural bias on the curve is flatter from here, as we argued in our recent note on [Where is the US curve going](#). However, from a tactical standpoint we believe it makes sense to fade flattening moves beyond 110bp for 2s10s, and 10yT levels with a 1.4% handle (see [Short 10y rates](#)). In forwards, paying 7y1y OIS leverages scenarios for the repricing of the terminal, targeting 1.8%.

Other positions recommended recently (see [USTs and the 2022 allocation backdrop](#)) that are consistent with this view are: (1) 1y2y receivers atm-15bp fully financed by selling 1y2y payers atm+25bp (currently +2bp); and, in the same spirit but in vega space (fading the pickup of vol in the left side and the extreme curve flatness in forwards) we recommended 4y fwd 2s30s steepeners with an entry level of -10bp (currently -2bp). We continue to like these positions.

On a more strategic note, several of our recommendations over the last year have had a subtheme to them, that of selling upside scenarios in yields. Indeed, we have discussed constraints to more significant bearish moves in rates in several of our recent notes (e.g. [Does a rising tide sink some boats?](#) and [USTs and the 2022 allocation backdrop](#) more recently). We think that this is a theme that is likely to continue to be relevant in the year-ahead. In the current context, we favor buying 6m10y payers (atm/atm+30bp) fully financed by selling 6m10y atm-20bp receivers. The risk on the position is a risk off rally beyond the strike on the short receiver leg, with potentially unlimited downside.

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Rates Research
United States

Bruno Braizinha, CFA
Rates Strategist
BofAS
bruno.braizinha@bofa.com

Anna (Caiyi) Zhang
Rates Strategist
BofAS
cai.yi.zhang@bofa.com

US Rates Research
BofAS
+1 646 855 8846

ULC – upper left corner
URC – upper right corner
LRC – lower right corner
LRL – lower left corner

For a list of recent recommendations please see our [Global Rates Weekly](#)

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Levels and Recent Moves

Exhibit 5: ATM Normal Volatility Grid

74.4bp for 1y10y volatility

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	42.7	62.7	65.6	72.2	74.5	74.5	76.7
3M	45.7	63.6	66.0	71.7	73.9	73.9	76.1
6M	52.9	64.7	67.0	72.4	73.9	73.9	74.6
1Y	65.5	70.1	71.8	74.4	74.4	74.4	72.6
2Y	78.3	77.9	76.9	76.0	75.2	74.5	70.0
3Y	80.5	79.0	77.9	76.7	75.2	73.7	68.2
4Y	79.2	78.0	77.1	75.8	74.1	72.3	66.2
5Y	77.9	77.1	76.3	74.9	73.1	71.0	64.2
10Y	69.6	68.9	68.2	66.9	65.3	63.4	56.4
30Y	52.9	52.4	51.8	50.8	49.6	48.2	42.9

Source: BofA Global Research

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Exhibit 6: ATM Volatility Grid - 3m Z-Scores

Left side still rich despite some anchoring of Fed expectations

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

Source: BofA Global Research

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Table 1: ATM Normal Volatility Grid - CoW

Left side underperformance vs right

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	-13.2	-18.6	-16.4	-12.3	-6.4	-6.4	-6.6
3M	-18.6	-21.7	-18.4	-9.1	-3.8	-3.8	-3.9
6M	-15.8	-21.0	-17.4	-8.9	-4.3	-4.3	-4.7
1Y	-15.3	-16.5	-12.8	-7.1	-5.3	-3.6	-3.5
2Y	-11.9	-8.9	-7.1	-5.4	-4.2	-3.0	-2.9
3Y	-7.1	-6.2	-5.0	-3.7	-3.0	-2.4	-1.9
4Y	-5.6	-4.7	-4.1	-3.4	-3.0	-2.5	-1.9
5Y	-4.0	-3.2	-3.2	-3.1	-2.9	-2.6	-2.0
10Y	-1.9	-1.9	-1.9	-1.9	-2.0	-2.1	-1.5
30Y	-1.7	-1.7	-1.7	-1.7	-1.7	-1.8	-1.4

Source: BofA Global Research

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Table 2: ATM Straddle Premiums

5.4% straddle premiums for 1y10y

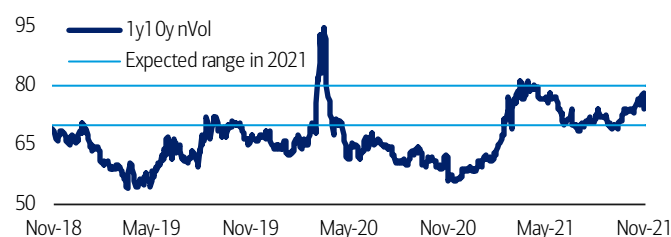
	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	0.1%	0.3%	0.4%	0.8%	1.1%	1.5%	4.0%
3M	0.2%	0.5%	0.8%	1.4%	1.9%	2.7%	7.1%
6M	0.3%	0.7%	1.1%	1.9%	2.7%	3.8%	9.7%
1Y	0.5%	1.1%	1.7%	2.8%	3.9%	5.4%	13.5%
2Y	0.9%	1.7%	2.5%	4.0%	5.5%	7.6%	18.1%
3Y	1.1%	2.1%	3.1%	4.9%	6.6%	9.1%	21.4%
4Y	1.2%	2.4%	3.4%	5.5%	7.5%	10.1%	23.7%
5Y	1.3%	2.6%	3.8%	6.0%	8.1%	10.9%	25.4%
10Y	1.5%	3.0%	4.4%	7.0%	9.4%	12.7%	29.5%
30Y	1.5%	2.9%	4.3%	6.9%	9.4%	12.8%	30.7%

Source: BofA Global Research

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Exhibit 3: 1y10y normal vol

70-80bp expected range in 2021



Source: BofA Global Research, Bloomberg

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Exhibit 4: 3m10y vs. 3m2y Normal Volatility

Right side vol fading recent underperformance vs left side

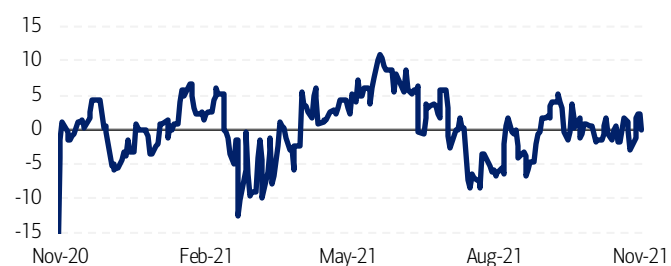


Source: BofA Global Research, Bloomberg

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Exhibit 5: 1y10y vs. 1m10y Normal Volatility

Term structure of volatility still relatively flat

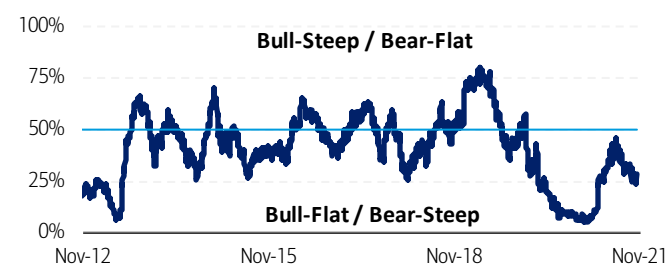


Source: BofA Global Research, Bloomberg

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Exhibit 6: 5s30s curve directionality 31% dictated by belly

Backend regaining significance vs belly since early July



Source: BofA Global Research

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Volatility Grid Relative Value

PCA Z-SCORES

Table 3: 3m Z-Scores w/ PCA framework

Belly continues to look fair/cheap

	1y	2y	3y	5y	7y	10y	30y
3m	1.2	-0.8	-2.0	-0.3	2.0	-0.4	2.9
6m	4.8	-1.8	-4.2	-1.3	0.9	-2.0	0.5
1y	1.5	-1.3	-1.8	-0.1	-0.2	-0.1	-0.6
2y	1.1	0.9	0.3	-0.8	-0.1	0.8	-0.1
5y	0.1	0.6	0.6	0.4	0.7	-0.1	0.6
10y	0.1	-0.2	-0.4	-0.9	-1.3	-1.9	-1.3

Source: BofA Global Research

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Table 5: 6m Z-Scores w/ PCA framework

Belly continues to look fair/cheap (particularly 2-5y tails)

	1y	2y	3y	5y	7y	10y	30y
3m	2.0	1.7	0.1	-0.3	1.8	-0.7	0.8
6m	4.2	-1.5	-3.9	-0.9	0.7	-0.9	0.3
1y	0.1	-2.2	-2.2	-1.2	-1.1	-0.5	0.5
2y	-1.0	-1.0	-1.3	-1.1	-0.2	0.4	0.8
5y	-0.2	0.2	0.3	0.5	0.1	0.1	1.1
10y	1.1	0.9	0.5	0.3	0.0	-0.7	0.2

Source: BofA Global Research

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Table 7: 1y Z-Scores w/ PCA framework

Belly continues to look fair/cheap (particularly 2-5y tails)

	1y	2y	3y	5y	7y	10y	30y
3m	2.0	1.8	0.4	-0.6	-0.4	-0.1	-1.8
6m	2.5	0.2	-3.2	-0.8	-0.4	-0.1	1.0
1y	1.1	-2.3	-2.2	-0.8	-0.3	0.9	1.2
2y	-1.1	-0.8	-0.8	0.3	0.4	1.5	1.3
5y	1.1	1.6	0.7	1.2	1.2	1.1	1.3
10y	1.1	1.0	1.0	0.9	0.8	0.7	0.9

Source: BofA Global Research

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Table 9: 3m Z-Scores w/ modified PCA framework...

Grid left side still rich despite recent repricing

	1y	2y	3y	5y	7y	10y	30y
1m	0.9	1.9	2.2	-1.4	1.1	1.6	-0.6
3m	3.0	3.8	1.9	0.9	1.2	0.7	-1.1
6m	3.4	2.4	1.7	0.4	0.7	0.1	0.9
1y	2.3	1.9	2.2	1.4	0.7	0.8	0.3
2y	1.7	1.0	0.7	0.7	0.5	0.7	0.2
3y	1.1	-0.2	0.9	1.6	-0.3	1.2	3.1
4y	0.8	0.5	0.8	1.2	-1.1	1.0	2.1
5y	0.2	2.2	0.1	0.4	1.2	0.7	0.8
10y	0.7	-0.1	0.8	0.7	0.1	0.1	-0.6
15y	-0.6	0.1	-0.6	1.9	0.8	-0.4	0.6
30y	-1.2	0.0	-0.8	0.8	2.7	-0.6	-1.7

Source: BofA Global Research

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Table 4: 3m Z-Scores w/ PCA framework w/o rates directionality

Cheapness more significant when directionality taken into account

	1y	2y	3y	5y	7y	10y	30y
3m	-0.4	-0.7	-1.0	-0.5	0.1	-0.2	0.2
6m	0.2	-1.1	-1.6	-0.7	-0.1	-0.5	-0.2
1y	-0.5	-1.4	-1.5	-0.7	-0.6	-0.5	-0.5
2y	-0.9	-0.9	-1.0	-1.1	-0.8	-0.2	-0.4
5y	-1.1	-0.8	-0.8	-0.8	-0.8	-1.0	-0.1
10y	-0.6	-0.8	-0.9	-1.3	-1.6	-1.9	-1.1

Source: BofA Global Research

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

Left side still rich when directionality taken into account at 6m horizon

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

Source: BofA Global Research

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Table 8: 1y Z-Scores w/ PCA framework w/o rates directionality

Left side still rich when directionality taken into account at 1y horizon

	1y	2y	3y	5y	7y	10y	30y
3m	2.1	1.9	0.9	-0.1	-0.2	-0.2	0.5
6m	2.6	1.2	-0.4	-0.2	-0.2	-0.2	0.6
1y	1.9	-0.2	-0.6	-0.2	-0.1	0.2	0.7
2y	-0.1	-0.2	-0.3	0.0	0.0	0.4	0.7
5y	0.4	0.6	0.2	0.4	0.4	0.4	0.7
10y	0.5	0.4	0.4	0.4	0.4	0.3	0.5

Source: BofA Global Research

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Table 10: ...and w/o directionality with rates

...and even as directionality removed

	1y	2y	3y	5y	7y	10y	30y
1m	1.0	1.9	2.5	-0.9	1.2	0.8	-0.7
3m	3.0	3.9	2.0	0.9	1.1	0.5	-1.0
6m	3.1	2.6	1.8	0.4	0.7	0.2	0.8
1y	2.6	2.0	2.1	1.3	0.9	0.9	0.5
2y	1.6	1.0	1.0	0.8	0.4	0.8	-0.3
3y	1.1	-0.2	1.0	1.2	-0.6	1.0	3.2
4y	0.7	0.2	0.9	1.2	-1.1	1.2	1.4
5y	0.0	1.9	0.2	0.5	0.9	0.7	0.8
10y	0.9	0.8	1.2	0.5	0.2	0.3	-0.5
15y	0.2	0.4	-0.6	1.8	0.2	-0.2	0.8
30y	-1.0	-0.3	-0.8	1.0	2.4	1.1	-1.6

Source: BofA Global Research

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Skew Relative Value

Table 11: Skew 25% delta

Receiver skew RV relatively fair in gamma space

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	-3.4	-4.5	-3.8	-2.6	-1.9	-0.7	1.0
3M	-5.9	-6.7	-5.7	-3.9	-2.6	-0.6	1.7
6M	-7.5	-7.3	-6.2	-4.3	-3.1	-1.2	1.9
1Y	-9.9	-8.8	-7.6	-5.2	-3.9	-1.9	1.3
2Y	-9.6	-8.1	-6.7	-4.6	-3.4	-1.9	1.0
5Y	-5.7	-4.8	-4.1	-2.8	-2.0	-1.0	1.3
10Y	-2.0	-1.7	-1.5	-1.0	-0.5	0.0	1.3
30Y	1.0	1.2	1.4	1.6	1.9	2.2	3.6

Source: BofA Global Research

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Table 12: Skew 75% delta

Payer skew RV still rich on the ULC

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	4.2	5.8	5.2	4.2	3.6	2.5	0.5
3M	7.9	9.3	8.4	6.9	6.0	4.3	1.5
6M	10.1	9.9	9.0	7.3	6.6	5.1	2.2
1Y	11.9	11.4	10.4	8.4	7.3	5.8	2.7
2Y	12.6	11.3	10.1	7.9	7.0	5.7	2.9
5Y	9.5	8.9	8.3	7.2	6.5	5.5	2.9
10Y	6.5	6.2	6.0	5.5	5.1	4.6	2.6
30Y	7.2	6.9	6.7	6.2	5.8	5.2	3.1

Source: BofA Global Research

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Table 13: Breakeven Widths for Costless Receiver Ladders

71bp breakeven width for 1y10y receiver ladders

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	11	16	17	19	20	21	22
3M	19	27	29	33	35	37	40
6M	30	38	41	46	49	51	55
1Y	52	58	61	67	68	71	76
2Y	92	94	95	98	99	101	102
5Y	156	156	157	158	157	156	150
10Y	211	211	210	208	205	202	188

Source: BofA Global Research

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Table 14: Breakeven Widths for Costless Payer Ladders

87bp breakeven width for 1y10y payer ladders

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	14	21	21	23	23	22	22
3M	34	43	43	44	44	42	40
6M	57	63	63	62	63	60	56
1Y	99	100	98	94	91	87	79
2Y	158	151	144	133	129	122	107
5Y	225	219	214	204	196	186	157
10Y	266	261	257	249	241	231	195

Source: BofA Global Research

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Table 15: 3m Z-Score Receiver Skew (w/o direction w/ fwds & ATM)

Receiver skew still rich for intermediates in left side/belly

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	-0.5	-1.2	-1.6	-1.1	-1.2	-1.1	-1.3
3M	-0.8	-0.7	-0.5	-0.7	-0.5	-0.1	0.3
6M	-0.3	-0.5	-0.3	0.5	0.0	0.3	0.6
1Y	0.0	-0.4	0.7	1.4	1.7	0.2	0.3
2Y	2.8	3.6	3.6	3.0	2.4	-1.2	-0.9
5Y	1.9	1.8	1.7	1.7	1.6	-0.6	1.0
10Y	-3.0	-3.0	-3.1	-3.3	-3.3	-3.4	-2.7

Source: BofA Global Research

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Table 16: 3m Z-Score Payer Skew (w/o direction w/ fwds & ATM)

Payer skew cheap for intermediates in left side/belly

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	-0.4	-0.4	-0.6	-0.8	-0.7	-0.4	-1.0
3M	-0.2	0.1	0.1	-0.2	0.1	0.5	-0.6
6M	-0.9	-0.6	-0.4	-0.8	-1.4	-0.6	-1.2
1Y	-0.3	-0.2	-1.1	-1.4	-1.7	-1.7	-0.4
2Y	-2.1	-2.7	-2.7	-1.8	-1.8	0.5	-0.2
5Y	-1.8	-2.7	-2.5	-2.0	-2.1	-0.5	-0.9
10Y	-3.1	-3.3	-3.4	-3.5	-3.6	-3.5	-2.6

Source: BofA Global Research

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Table 17: Ratio of Payer/Receiver BE widths for Costless Ladders

Ratios of payer / receiver breakeven widths broadly above 100%

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	135%	132%	128%	118%	114%	108%	98%
3M	180%	161%	150%	131%	125%	113%	100%
6M	191%	166%	154%	135%	129%	118%	101%
1Y	188%	173%	161%	140%	134%	123%	104%
2Y	172%	161%	152%	136%	130%	121%	105%
5Y	145%	140%	136%	129%	125%	119%	105%
10Y	126%	124%	123%	120%	118%	115%	104%

Source: BofA Global Research

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Table 18: 3m Z-Score Ratio of Payer/Receiver Skew

Z-Scores for the ratios show payer cheap vs receivers on the left side

	1Y	2Y	3Y	5Y	7Y	10Y	30Y
1M	-1.1	-1.0	-0.9	-0.7	-0.3	1.3	0.0
3M	-0.8	-0.8	-0.8	-0.7	-0.3	-0.2	-0.4
6M	-1.4	-1.3	-1.3	-1.4	-1.1	-1.0	-1.2
1Y	-1.4	-1.5	-1.5	-1.7	-1.5	0.0	-1.1
2Y	-2.1	-2.0	-1.9	-1.6	-1.0	1.5	0.8
5Y	-1.5	-1.9	-1.8	-1.5	-1.4	1.2	0.1
10Y	0.9	0.9	0.9	1.1	1.0	1.1	2.2

Source: BofA Global Research

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Conditional Curve Trades

Table 19: Bull Flatteners (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	-3.0	-4.2	-5.4	-0.9	-1.9	-0.9
6M	-4.0	-5.0	-5.8	-0.9	-1.3	-0.5
1Y	-3.2	-3.4	-2.1	0.1	1.5	1.5
1.5Y	-0.3	0.5	3.4	0.7	3.6	3.0
2Y	2.1	3.6	8.5	1.7	6.3	4.8

Source: BofA Global Research

BofA GLOBAL RESEARCH

Table 21: 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	3.0	4.2	5.4	0.9	1.9	0.9
6M	4.0	5.0	5.8	0.9	1.3	0.5
1Y	3.2	3.4	2.1	-0.1	-1.5	-1.5
1.5Y	0.3	-0.5	-3.4	-0.7	-3.6	-3.0
2Y	-2.1	-3.6	-8.5	-1.7	-6.3	-4.8

Source: BofA Global Research

BofA GLOBAL RESEARCH

Table 23: Bear Flatteners (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	3.6	4.6	5.2	0.9	1.9	0.9
6M	5.0	5.8	5.8	0.9	1.3	0.5
1Y	4.0	3.8	2.1	-0.1	-1.5	-1.5
1.5Y	0.3	-0.5	-3.6	-0.9	-3.8	-3.0
2Y	-2.4	-4.0	-8.7	-1.9	-6.5	-5.0

Source: BofA Global Research

BofA GLOBAL RESEARCH

Table 25: Bear Steepener (pickup to forwards for ATM)

Buy longer maturity payer, sell shorter maturity payer

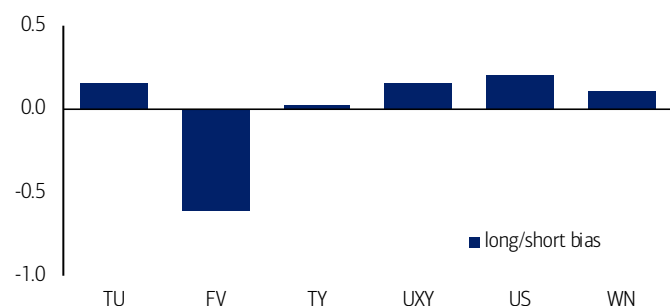
ATM	2/5s	2/10s	2/30s	5/10s	5/30s	10/30s
3M	-3.6	-4.6	-5.2	-0.9	-1.9	-0.9
6M	-5.0	-5.8	-5.8	-0.9	-1.3	-0.5
1Y	-4.0	-3.8	-2.1	0.1	1.5	1.5
1.5Y	-0.3	0.5	3.6	0.9	3.8	3.0
2Y	2.4	4.0	8.7	1.9	6.5	5.0

Source: BofA Global Research

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Chart 1: Analysis of proxies for futures positioning

Short bias still more significant at the frontend of the curve



Source: BofA Global Research

BofA GLOBAL RESEARCH

Table 20: Bull Flatteners (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	-8.3	-13.8	-18.5	-3.8	-7.3	-3.0
6M	-8.7	-12.8	-16.9	-3.0	-6.0	-2.6
1Y	-6.3	-8.5	-8.9	-1.7	-1.5	0.1
1.5Y	-2.1	-2.6	-0.7	-0.5	1.7	2.2
2Y	0.9	1.7	6.3	0.9	5.4	4.6

Source: BofA Global Research

BofA GLOBAL RESEARCH

Table 22: 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	8.3	13.8	18.5	3.8	7.3	3.0
6M	8.7	12.8	16.9	3.0	6.0	2.6
1Y	6.3	8.5	8.9	1.7	1.5	-0.1
1.5Y	2.1	2.6	0.7	0.5	-1.7	-2.2
2Y	-0.9	-1.7	-6.3	-0.9	-5.4	-4.6

Source: BofA Global Research

BofA GLOBAL RESEARCH

Table 24: Bear Flatteners (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	2.8	2.1	-0.5	-0.9	-0.5
6M	4.8	4.2	2.6	-0.3	-1.5	-1.3
1Y	2.8	1.1	-2.6	-1.7	-5.2	-3.6
1.5Y	-1.9	-4.2	-9.1	-2.4	-7.7	-5.6
2Y	-4.8	-7.7	-14.4	-3.4	-10.4	-7.5

Source: BofA Global Research

BofA GLOBAL RESEARCH

Table 26: Bear Steepener (pickup to forwards for +25bp OTM)

Buy longer maturity payer, sell shorter maturity payer

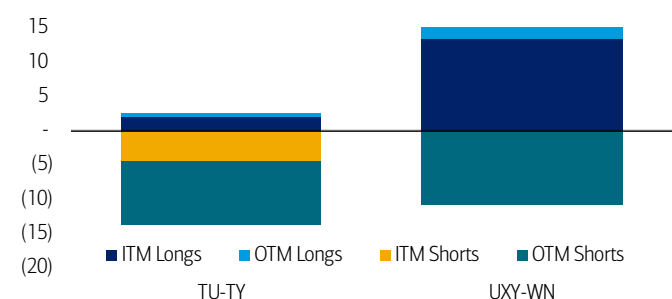
+25bp	2/5s	2/10s	2/30s	5/10s	5/30s	10/30s
3M	-3.4	-2.8	-2.1	0.5	0.9	0.5
6M	-4.8	-4.2	-2.6	0.3	1.5	1.3
1Y	-2.8	-1.1	2.6	1.7	5.2	3.6
1.5Y	1.9	4.2	9.1	2.4	7.7	5.6
2Y	4.8	7.7	14.4	3.4	10.4	7.5

Source: BofA Global Research

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Chart 2: Proxies for futures positioning across the curve

Backend ITM Longs expose curve to bear steepening



Source: BofA Global Research

BofA GLOBAL RESEARCH

Forward Volatility

Table 27: 6m Forward Volatility

70.4bp for 6m fwd 1y10y

	1y	2y	5y	10y	30y
1m	51.2	59.7	68.8	70.9	70.2
3m	53.4	60.6	68.4	70.6	69.5
6m	60.1	64.7	68.8	70.5	68.7
1y	65.4	70.0	69.2	70.4	67.9
2y	75.2	72.6	70.8	70.4	66.1
5y	72.7	72.5	71.8	68.4	61.6
10y	67.5	66.9	65.1	61.7	54.6

Source: BofA Global Research

BofA GLOBAL RESEARCH

Table 28: 6m Fwd vol as % ATM

95% of ATM for 6m fwd 1y10y

	1y	2y	5y	10y	30y
1m	120%	95%	95%	95%	92%
3m	117%	95%	95%	96%	91%
6m	114%	100%	95%	96%	92%
1y	100%	100%	93%	95%	94%
2y	96%	93%	93%	95%	94%
5y	93%	94%	96%	96%	96%
10y	97%	97%	97%	97%	97%

Source: BofA Global Research

BofA GLOBAL RESEARCH

Table 29: 3m Z-Score of 6m Fwd vol % ATM

-0.1 Z-Score for 6m fwd 1y10y

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

Source: BofA Global Research

BofA GLOBAL RESEARCH

Table 30: 1y Forward Volatility

67.9bp for 1y fwd 1y10y

	1y	2y	5y	10y	30y
1m	61.5	66.3	65.5	67.6	66.9
3m	61.6	67.4	64.7	67.0	66.2
6m	69.6	71.7	66.2	67.5	65.8
1y	76.1	73.2	67.3	67.9	64.6
2y	73.5	69.7	68.8	67.8	63.6
5y	71.8	71.5	70.5	66.9	59.8
10y	66.4	65.9	64.1	60.6	53.2

Source: BofA Global Research

BofA GLOBAL RESEARCH

Table 31: 1y Fwd vol as % ATM

91% of ATM for 1y fwd 1y10y

	1y	2y	5y	10y	30y
1m	144%	106%	91%	91%	87%
3m	135%	106%	90%	91%	87%
6m	132%	111%	91%	91%	88%
1y	116%	105%	90%	91%	89%
2y	94%	90%	91%	91%	91%
5y	92%	93%	94%	94%	93%
10y	96%	96%	96%	96%	94%

Source: BofA Global Research

BofA GLOBAL RESEARCH

Table 32: 3m Z-Score of 1y Fwd vol % ATM

0.5 Z-Score for 1y fwd 1y10y

	1y	2y	5y	10y	30y
1m	-1.5	-1.7	-1.0	-0.1	-0.7
3m	-1.0	-1.4	-1.1	-0.1	-1.0
6m	-1.5	-1.0	-1.0	-0.1	-0.8
1y	-1.1	-0.7	-1.2	-0.5	-0.9
2y	-1.1	-1.3	-0.6	-0.7	-0.5
5y	-0.2	-0.3	0.0	-1.3	-1.2
10y	-1.0	-1.0	-1.2	-1.5	-1.2

Source: BofA Global Research

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Table 33: 2y Forward Volatility

64.9bp for 2y fwd 1y10y

	1y	2y	5y	10y	30y
1m	80.5	74.9	66.8	65.3	62.2
3m	77.3	70.6	65.2	64.1	61.7
6m	77.3	70.7	66.6	64.6	61.8
1y	72.7	68.9	67.2	64.9	61.5
2y	71.2	69.7	68.7	65.8	60.6
5y	71.2	70.9	69.2	65.1	57.1
10y	64.8	64.2	62.5	58.8	51.1

Source: BofA Global Research

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Table 34: 2y Fwd vol as % ATM

87% of ATM for 2y fwd 1y10y

	1y	2y	5y	10y	30y
1m	189%	119%	92%	88%	81%
3m	169%	111%	91%	87%	81%
6m	146%	109%	92%	87%	83%
1y	111%	98%	90%	87%	85%
2y	91%	89%	90%	88%	87%
5y	91%	92%	92%	92%	89%
10y	93%	93%	93%	93%	91%

Source: BofA Global Research

BofA GLOBAL RESEARCH

Table 35: 3m Z-Score of 2y Fwd vol % ATM

-0.5 Z-Score for 2y fwd 1y10y

	1y	2y	5y	10y	30y
1m	-1.9	-1.8	-1.3	-0.3	-0.7
3m	-1.8	-1.7	-1.0	-0.2	-0.7
6m	-1.9	-1.7	-0.7	-0.2	-0.4
1y	-1.7	-1.4	-0.6	-0.5	-0.2
2y	-1.5	-1.1	-0.2	-0.6	-0.3
5y	-0.6	-0.6	-0.5	-1.6	-1.0
10y	-0.8	-0.9	-1.0	-1.5	-1.0

Source: BofA Global Research

BofA GLOBAL RESEARCH

Table 36: 3y Forward Volatility

66.1bp for 3y fwd 1y10y

	1y	2y	5y	10y	30y
1m	70.4	69.6	67.3	64.2	60.0
3m	74.5	71.7	69.0	65.4	60.2
6m	74.3	72.1	69.3	65.7	60.0
1y	75.9	72.9	70.2	66.1	59.6
2y	72.0	72.0	71.2	66.2	58.3
5y	71.5	71.1	68.6	63.8	54.8
10y	63.3	62.6	61.2	57.3	49.3

Source: BofA Global Research

BofA GLOBAL RESEARCH

Table 37: 3y Fwd vol as % ATM

89% of ATM for 3y fwd 1y10y

	1y	2y	5y	10y	30y
1m	165%	111%	93%	86%	78%
3m	163%	113%	96%	89%	79%
6m	140%	112%	96%	89%	80%
1y	116%	104%	94%	89%	82%
2y	92%	92%	94%	89%	83%
5y	92%	92%	92%	90%	85%
10y	91%	91%	91%	90%	87%

Source: BofA Global Research

BofA GLOBAL RESEARCH

Table 38: 3m Z-Score of 3y Fwd vol % ATM

-0.4 Z-Score for 3y fwd 1y10y

	1y	2y	5y	10y	30y
1m	-1.8	-1.8	-1.3	-0.5	-0.7
3m	-1.8	-1.8	-1.2	-0.4	-0.9
6m	-1.8	-1.7	-1.0	-0.2	-0.7
1y	-1.7	-1.5	-0.8	-0.4	-0.7
2y	-1.6	-1.4	-0.4	-0.9	-0.9
5y	-0.3	-0.3	-0.3	-1.6	-1.3
10y	-1.2	-1.4	-1.6	-2.1	-1.6

Source: BofA Global Research

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Ratios implied/delivered

Table 39: Implied vs. Delivered (21d) Ratio

Ratios > 100% in belly vs left and right side

	1y	2y	3y	5y	7y	10y	30y
1m	146%	114%	105%	123%	126%	116%	111%
3m	118%	101%	100%	119%	121%	112%	109%
6m	95%	90%	95%	116%	117%	109%	106%
1y	83%	87%	97%	113%	110%	103%	99%
2y	92%	101%	105%	103%	98%	94%	92%

Source: BofA Global Research

BofA GLOBAL RESEARCH

Table 40: Implied vs. Delivered (63d) Ratio

Ratios > 100% concentrated on left side

	1y	2y	3y	5y	7y	10y	30y
1m	236%	179%	153%	148%	138%	125%	121%
3m	192%	158%	143%	140%	132%	121%	119%
6m	154%	139%	133%	133%	126%	117%	116%
1y	128%	125%	125%	124%	117%	111%	109%
2y	122%	119%	115%	109%	104%	102%	101%

Source: BofA Global Research

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Table 41: 3m Z-Scores for Implied vs. Delivered (21d) Ratio

Broad cheapness vs 1m history

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

Source: BofA Global Research

BofA GLOBAL RESEARCH

Table 42: 3m Z-Scores for Implied vs. Delivered (63d) Ratio

Broad richness vs 3m history

	1y	2y	3y	5y	7y	10y	30y
1m	0.5	0.7	0.8	1.0	1.2	0.9	0.8
3m	0.1	0.5	0.7	1.0	1.2	0.9	0.9
6m	-0.2	0.3	0.5	1.0	1.1	0.9	0.8
1y	0.1	0.4	0.6	1.0	1.0	0.9	0.7
2y	0.9	1.0	1.1	1.0	1.0	0.9	0.7

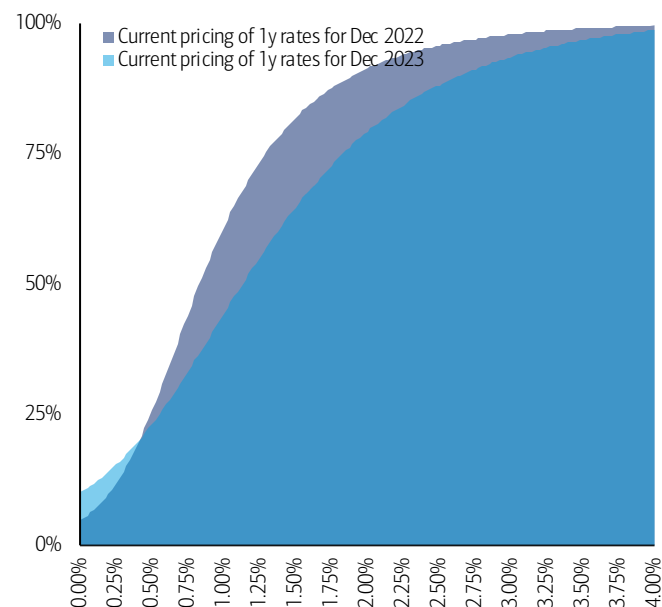
Source: BofA Global Research

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Rates probability distributions

Exhibit 7: CDF for 1y rates at end-2022 and end-2023

1y rate cumulative distribution functions

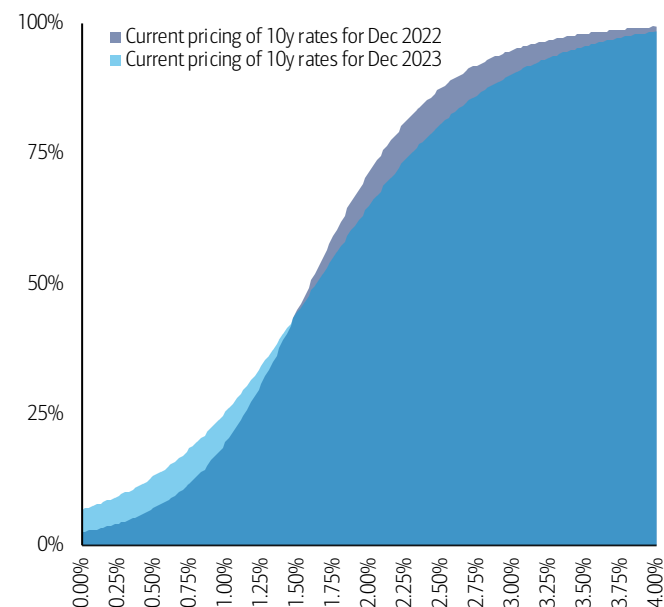


Source: BofA Global Research

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Exhibit 8: CDF for 10y rates at end-2022 and end-2023

10y rate cumulative distribution functions



Source: BofA Global Research

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Trade activity

Exhibit 13: 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	-	510	-	-	1,080	50	1,234	-	25	2,899
1m	1,100	2,604	1,028	200	2,391	50	6,049	351	1,346	15,119
3m	520	969	100	-	493	-	1,179	70	933	4,264
6m	1,229	2,820	1,200	200	457	13	934	890	2,184	9,928
1y	2,700	4,901	240	25	414	-	2,025	-	392	10,696
2y	500	1,400	-	-	1,473	-	414	-	121	3,908
3Y	2,950	3,220	18	-	1,100	-	-	840	1,322	9,450
4Y	-	-	-	-	-	-	18	13	-	31
5Y	1,500	300	-	-	780	-	1	-	-	2,581
7Y	-	-	-	-	-	-	144	70	-	214
10Y	-	10	-	-	-	-	320	17	276	623
20Y	-	-	-	-	-	-	170	-	-	170
30Y	-	-	-	-	-	-	-	-	-	-
	10,499	16,734	2,586	425	8,188	113	12,489	2,251	6,599	59,883

Source: BofA Global Research

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Exhibit 15: Receiver volumes over the last week (\$m notional)

Demand for receivers over the last week

Receivers	1y	2y	3Y	4Y	5Y	7Y	10Y	20Y	30Y	
<1m	-	510	-	-	255	20	839	-	-	1,624
1m	1,100	7,233	4,080	100	2,883	-	4,375	1,085	2,188	23,044
3m	1,020	962	260	-	248	-	2,396	510	386	5,781
6m	1,229	2,210	1,440	200	24	-	1,241	-	2,000	8,344
1y	4,298	4,855	290	-	814	-	1,753	-	319	12,329
2y	1,500	1,400	-	-	403	-	410	-	-	3,713
3Y	-	660	18	-	1,018	-	-	273	1,292	3,261
4Y	-	36	-	-	-	-	18	50	-	104
5Y	-	300	-	-	604	-	1	-	-	905
7Y	-	-	-	-	-	-	-	-	-	-
10Y	-	-	-	-	-	-	270	93	406	769
20Y	-	-	-	-	-	-	170	-	-	170
30Y	-	-	-	-	-	-	-	-	-	-
	9,147	18,166	6,088	300	6,249	20	11,473	2,011	6,591	60,045

Source: BofA Global Research

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Exhibit 16: Straddle volumes over the last week (\$m notional)

Demand for straddles over the last week

Straddles	1y	2y	3Y	4Y	5Y	7Y	10Y	20Y	30Y	
<1m	-	-	-	-	50	-	300	-	-	350
1m	-	1,670	-	-	1,395	-	2,504	-	65	5,634
3m	-	2,070	-	-	1,280	-	970	-	115	4,435
6m	2,600	1,550	-	-	800	-	955	-	240	6,145
1y	6,630	4,470	100	-	1,395	-	1,417	-	225	14,237
2y	3,320	1,210	550	-	-	-	150	-	125	5,355
3Y	800	-	-	-	1,313	-	305	5	170	2,593
4Y	1,000	-	-	-	240	-	-	-	206	1,446
5Y	-	-	-	-	50	-	365	5	126	546
7Y	-	-	-	-	-	-	-	50	-	50
10Y	-	-	-	-	75	-	775	25	18	893
20Y	-	-	-	-	-	-	-	-	-	-
30Y	-	-	-	-	-	-	-	-	-	-
	14,350	10,970	650	-	6,598	-	7,741	85	1,290	41,684

Source: BofA Global Research

BofA GLOBAL RESEARCH



Formosa issuance

Exhibit 17: 2020 Formosa issuance (\$m)

Record issuance year in 2020: 37.5bn in 5y30y

		Underlying										
		1	2	3	4	5	7	10	15	20	25	30
Lockout	1	-	-	-	-	-	-	295	-	-	-	-
	2	-	-	-	-	-	-	50	-	-	-	40
	3	-	-	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	-	-	20
	5	-	-	-	-	-	-	-	-	-	-	37,533
	7	-	-	-	-	-	-	-	-	-	-	945
	10	-	-	-	-	-	-	-	-	-	-	500
	15	-	-	-	-	-	-	-	-	-	-	-
	20	-	-	-	-	-	-	-	-	-	-	-
	25	-	-	-	-	-	-	-	-	-	-	-
	30	-	-	-	-	-	-	-	-	-	-	2,500

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 18: 2021 Formosa issuance YTD (\$m)

\$34bn issued in 2021 to date: \$23.3bn in 1H21 & \$12.9bn in 2H21

		Underlying										
		1	2	3	4	5	7	10	15	20	25	30
Lockout	1	-	-	-	-	-	-	958	30	-	-	220
	2	-	-	-	-	-	-	284	45	-	-	-
	3	-	-	-	-	-	-	-	130	-	-	125
	4	-	-	-	-	-	-	-	90	-	-	-
	5	-	-	-	-	-	-	-	-	50	-	18,310
	7	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	920
	15	-	-	-	-	-	-	-	-	-	-	-
	20	-	-	-	-	-	-	-	-	-	-	-
	25	-	-	-	-	-	-	-	-	-	-	-
	30	-	-	-	-	-	-	-	-	-	-	15,000

Source: BofA Global Research

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Exhibit 19: Formosa issuance (\$m) since 2014

Peak issuance concentrated on the 5y30y tenor

		Underlying										
		1	2	3	4	5	7	10	15	20	25	30
Lockout	1	-	-	-	-	205	-	1,478	472	840	-	18,274
	2	-	-	-	-	-	-	438	45	1,485	-	22,177
	3	-	-	-	-	-	-	-	130	240	225	15,536
	4	-	-	-	-	-	-	-	90	25	275	2,441
	5	-	-	-	-	-	-	-	400	1,327	273	119,742
	7	-	-	-	-	-	-	-	-	-	-	5,624
	10	-	-	-	-	-	-	-	-	-	-	5,021
	15	-	-	-	-	-	-	-	-	-	-	-
	20	-	-	-	-	-	-	-	-	-	-	-
	25	-	-	-	-	-	-	-	-	-	-	-
	30	-	-	-	-	-	-	-	-	-	-	20,500

Source: BofA Global Research

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Exhibit 15: Total issuance per year since 2014 (\$bn)

2016/17 vintages vs 2020/21 vintages



Source: BofA Global Research

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