



Nikan Firoozye <firoozye@gmail.com>

FW: reports

Nick.Firoozye@nomura.com <Nick.Firoozye@nomura.com>
To: firoozye@gmail.com

5 February 2016 at 16:45

From: Zheng, Xiaowei (FI Research/UK)
Sent: 05 February 2016 11:52
To: Firoozye, Nick (FI Research/UK)
Subject: reports

Hi Nick

Please find attached two updated reports.

- **CMS Spread Snapshot**
- **Forward Vol Snapshot:** Combined different expiries into the same table

The color in the headers should now be fixed as well.

Please take a look and let me know your thoughts.

Thanks
Xiaowei

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----- Forwarded message -----

From: <gmquantstrategiesemea@nomura.com>

To: <Xiaowei.Zheng@nomura.com>

Cc:

Bcc:

Date: Fri, 5 Feb 2016 11:48:32 +0000

Subject: TARDIS CMS Spread Snapshot (05-Feb-16)

TARDIS CMS Spread Snapshot

05-Feb-16

This report aims to provide an overview of CMS spread option trades. For further questions, please contact QuantStrategies@nomura.com.

USD

CMS Spread Option

CMS Spread (bps)																								
		Current Level								1-month Change								1-year Percentile						
		2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s
Spot	41.5	93.8	141.1	28.0	80.3	52.3	99.6	47.3	-12.9	-5.9	-1.2	-3.3	3.7	7.0	11.7	4.7	0%	1%	3%	0%	9%	44%	53%	81%
3m	42.8	94.0	140.1	28.4	79.6	51.2	97.3	46.0	-7.1	1.5	7.0	-0.4	8.2	8.6	14.2	5.5	0%	5%	13%	2%	21%	49%	67%	87%
6m	43.7	93.6	138.2	28.5	78.4	49.9	94.5	44.6	-1.6	8.2	14.3	2.0	11.8	9.8	15.9	6.1	1%	15%	36%	10%	40%	60%	75%	88%
1y	43.8	90.5	131.7	27.9	74.6	46.7	87.9	41.2	6.0	16.9	23.3	5.1	15.9	10.8	17.2	6.4	19%	45%	59%	32%	57%	76%	87%	91%
2y	40.0	79.4	114.6	25.6	65.0	39.4	74.6	35.2	10.9	20.3	26.0	7.3	16.6	9.3	15.0	5.7	57%	74%	87%	68%	83%	95%	98%	98%
5y	25.7	47.5	71.2	16.0	37.8	21.8	45.5	23.7	5.7	6.4	7.7	3.4	4.1	0.7	2.0	1.3	100%	100%	100%	100%	100%	97%	100%	99%
PV of CMS Spread Option (cts)																								
		Current Level								1-month Change								1-year Percentile						
		2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s

	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s
3m	7.3	11.2	13.7	4.9	8.7	5.7	9.8	4.4	0.0	0.8	1.0	0.0	0.3	0.4	0.7	0.7	29%	45%	44%	28%	26%	61%	25%	54%
6m	10.2	15.5	18.9	6.5	12.7	8.1	13.5	6.7	0.2	0.9	1.2	0.1	0.3	0.5	0.9	1.0	18%	33%	35%	15%	15%	45%	26%	54%
1y	14.5	20.9	26.3	8.9	18.6	12.2	19.1	10.4	-0.0	0.7	1.1	-0.2	0.1	0.6	1.0	0.9	6%	12%	16%	5%	10%	29%	31%	42%
2y	19.2	28.8	34.2	10.9	26.2	14.6	25.7	14.5	0.7	1.3	1.0	-0.4	0.1	0.9	1.5	0.7	16%	23%	13%	6%	10%	21%	32%	27%
5y	24.8	37.3	45.8	14.1	39.7	18.9	36.5	23.9	0.6	1.3	-0.1	0.1	0.6	1.0	1.9	1.3	30%	22%	8%	26%	23%	21%	71%	89%

6-month Carry of ATM CMS Spread Option (cts)

	Current Level								1-month Change								1-year Percentile							
Caps	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s
1y	-4.3	-3.8	-4.1	-2.1	-3.9	-2.2	-2.1	-1.8	-3.9	-4.7	-5.1	-1.5	-2.3	-0.7	-0.9	-0.1	0%	0%	0%	0%	0%	0%	0%	5%
2y	-0.7	-0.6	1.1	-0.1	0.4	2.0	0.8	-0.3	-1.4	-0.5	0.7	-0.1	0.5	0.6	0.8	0.3	0%	1%	11%	12%	12%	93%	24%	41%
5y	1.4	2.5	2.3	0.4	1.5	0.8	0.8	-0.4	0.6	1.3	1.7	0.2	0.9	0.6	0.8	0.2	59%	91%	92%	43%	83%	100%	98%	90%
Floors	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s
1y	-4.2	-6.9	-10.5	-2.7	-7.6	-5.4	-8.7	-5.2	3.7	3.9	3.9	1.7	1.9	0.3	0.4	0.2	100%	100%	100%	100%	100%	100%	100%	92%
2y	-2.9	-6.5	-7.9	-1.3	-4.5	-1.7	-5.9	-3.3	-0.5	-0.8	-0.2	0.3	-0.2	-0.6	-1.0	-0.3	84%	84%	95%	98%	91%	79%	55%	59%
5y	-1.1	-2.3	-4.0	-0.8	-2.1	-1.5	-3.0	-1.9	-0.7	-1.1	-1.4	-0.4	-0.9	-0.6	-1.0	-0.5	7%	14%	4%	11%	0%	79%	0%	0%

Zero-Cost CMS 1x2 Cap/Floor Ratios**Strike Spreads (bps)**

	Current Level								1-month Change								1-year Percentile							
Caps	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s
3m	9.4	15.1	18.5	5.9	10.7	7.0	13.3	5.7	-0.3	0.9	0.8	-0.2	0.3	0.5	1.0	0.9	23%	50%	67%	24%	25%	63%	37%	54%
6m	13.4	21.3	25.7	7.7	15.8	10.2	18.3	8.7	-0.3	1.0	0.6	-0.5	0.4	0.8	1.4	1.3	4%	39%	60%	6%	15%	52%	35%	54%
1y	19.1	29.0	36.0	10.5	23.2	15.2	24.8	13.5	-0.6	0.6	0.0	-0.7	0.0	0.8	1.3	1.1	3%	16%	40%	4%	10%	36%	66%	42%
2y	25.6	39.9	45.5	11.9	31.5	17.9	32.6	18.9	0.7	1.5	0.0	-1.4	-0.0	0.9	1.5	0.8	26%	42%	32%	0%	9%	21%	68%	30%
5y	33.6	47.1	59.9	15.9	47.3	23.1	43.8	31.6	0.7	1.6	-0.5	-0.2	0.4	0.9	1.2	0.9	81%	56%	50%	23%	13%	20%	77%	69%
Floors	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s
3m	9.0	14.0	16.5	6.4	12.0	7.8	12.3	5.7	0.2	1.1	1.4	0.3	0.5	0.5	0.8	0.9	29%	40%	29%	27%	25%	61%	25%	54%
6m	12.6	19.2	22.8	8.9	17.5	11.2	17.1	8.9	0.4	1.2	1.8	0.6	0.4	0.7	1.1	1.3	25%	34%	29%	22%	14%	40%	26%	54%
1y	17.7	25.9	31.6	12.3	25.8	16.8	25.6	14.0	-0.2	0.9	1.7	0.0	-0.0	0.8	1.3	1.2	4%	23%	17%	9%	9%	28%	27%	41%
2y	23.7	37.8	43.4	16.5	38.8	20.6	35.4	19.4	0.1	1.3	0.7	0.5	-0.5	1.1	2.0	0.9	9%	28%	11%	19%	5%	21%	33%	27%
5y	32.5	58.4	67.0	23.8	65.8	29.2	58.0	33.8	-1.7	-0.9	-3.0	0.2	-1.9	0.5	1.5	1.0	0%	2%	0%	17%	1%	15%	44%	40%

6-month Carry of Zero-Cost 1x2 CMS Cap/Floor Ratios (cts)

	Current Level								1-month Change								1-year Percentile							
Caps	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s
1y	2.9	3.8	5.3	1.7	4.1	2.8	3.5	2.6	-0.4	-0.7	-0.8	0.1	-0.4	-0.1	-0.2	-0.1	2%	0%	7%	89%	18%	2%	63%	22%
2y	1.4	3.1	1.9	-0.1	1.5	-0.3	1.8	1.2	0.8	0.5	-0.2	-0.3	-0.1	-0.1	-0.0	-0.0	100%	99%	69%	45%	71%	4%	89%	32%
5y	-0.1	-0.2	0.5	0.1	-0.0	0.2	0.6	0.8	-0.0	-0.1	-0.2	0.1	-0.1	-0.1	-0.2	-0.0	79%	20%	44%	84%	46%	4%	19%	52%

Floors	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s
1y	2.8	3.4	4.6	1.6	3.3	2.1	3.4	1.8	0.4	0.6	1.0	-0.1	0.4	0.2	0.3	0.1	88%	96%	100%	42%	100%	100%	93%	83%
2y	1.4	2.7	3.1	1.0	2.0	0.1	1.9	1.2	0.5	0.3	-0.1	0.2	-0.2	0.0	0.1	0.0	83%	82%	57%	86%	12%	20%	73%	26%
5y	0.2	0.4	1.6	0.3	0.7	0.5	1.4	1.1	0.0	-0.1	-0.0	-0.0	-0.1	0.0	0.1	0.2	78%	0%	49%	34%	33%	14%	97%	100%

EUR**CMS Spread Option**

	CMS Spread (bps)																							
	Current Level								1-month Change								1-year Percentile							
	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s
Spot	23.7	82.2	139.1	19.5	78.0	58.5	115.4	56.9	-10.6	-16.0	-20.8	-6.4	-11.8	-5.4	-10.2	-4.8	25%	29%	34%	25%	31%	35%	47%	63%
3m	28.7	88.3	144.0	21.9	81.5	59.6	115.3	55.7	-9.4	-14.0	-17.7	-5.4	-10.1	-4.6	-8.2	-3.6	26%	32%	36%	27%	34%	36%	50%	66%
6m	32.5	92.7	147.0	23.7	83.9	60.2	114.5	54.3	-8.7	-12.7	-15.6	-4.8	-8.8	-4.1	-6.9	-2.9	27%	33%	39%	29%	34%	39%	54%	70%
1y	37.8	98.0	148.3	26.3	86.5	60.3	110.5	50.2	-7.0	-10.4	-12.2	-3.7	-7.0	-3.4	-5.2	-1.8	31%	34%	45%	31%	37%	44%	61%	73%
2y	42.8	99.1	140.2	28.7	85.0	56.4	97.4	41.1	-3.3	-6.0	-5.5	-1.4	-4.2	-2.8	-2.2	0.6	33%	39%	55%	34%	45%	56%	71%	79%
5y	37.4	70.7	85.5	23.1	56.3	33.3	48.1	14.8	-0.8	-5.3	-0.8	-0.7	-5.2	-4.5	0.0	4.5	73%	70%	81%	74%	70%	65%	77%	72%

	PV of CMS Spread Option (cts)																							
	Current Level								1-month Change								1-year Percentile							
	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s
3m	6.2	10.7	14.3	4.0	9.8	5.7	10.4	6.1	0.4	0.9	1.6	-0.1	0.7	0.1	0.9	0.9	83%	54%	51%	46%	52%	23%	25%	31%
6m	8.4	15.4	20.1	5.8	14.2	8.3	14.9	8.9	0.5	1.0	1.8	-0.1	0.8	-0.1	1.0	1.0	92%	54%	59%	51%	51%	8%	33%	35%
1y	11.4	21.6	27.5	8.0	20.3	12.3	20.5	12.3	0.5	1.0	1.6	0.5	0.9	0.1	0.6	0.8	80%	57%	61%	74%	57%	34%	23%	40%
2y	15.4	28.2	35.2	10.4	27.8	16.0	28.3	16.5	-0.2	0.8	1.6	0.2	0.7	-0.3	0.8	0.6	45%	75%	59%	69%	62%	37%	31%	40%
5y	21.8	36.7	44.1	15.9	40.7	19.1	40.3	25.0	0.7	1.0	1.6	0.4	1.0	0.5	1.4	0.6	70%	92%	46%	75%	61%	35%	88%	38%

	6-month Carry of ATM CMS Spread Option (cts)																							
	Current Level								1-month Change								1-year Percentile							
Caps	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s
1y	-5.2	-8.5	-8.1	-3.3	-7.4	-4.1	-3.4	-1.0	-0.7	-1.0	-1.5	-1.0	-0.9	-0.5	-0.6	-0.4	45%	4%	12%	3%	1%	1%	41%	43%
2y	-2.7	-1.5	-0.4	-1.7	-2.4	0.4	0.5	0.8	-0.2	-0.7	-2.0	-0.1	-0.5	0.1	-1.1	-0.9	21%	22%	32%	13%	24%	53%	29%	58%
5y	1.0	2.5	5.5	0.6	2.0	2.2	3.1	1.0	-0.2	0.4	0.3	0.0	0.3	0.2	-0.3	-0.3	28%	43%	72%	39%	62%	78%	28%	29%
Floors	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s
1y	0.2	-3.1	-6.8	-0.8	-4.8	-4.0	-7.5	-5.1	1.0	1.3	1.8	0.1	0.9	0.2	1.1	0.6	84%	77%	85%	67%	82%	27%	78%	55%
2y	-0.9	-2.3	-5.9	-0.8	-4.1	-2.1	-6.7	-3.8	1.5	1.2	1.3	0.8	0.7	0.3	0.6	0.5	92%	84%	73%	73%	68%	59%	66%	80%
5y	-1.8	-4.5	-5.2	-1.5	-4.3	-2.0	-4.9	-2.7	-0.7	-0.5	-0.2	-0.2	-0.4	-0.2	-0.3	0.1	26%	16%	51%	53%	30%	22%	4%	20%

Zero-Cost CMS 1x2 Cap/Floor Ratios

Strike Spreads (bps)									
Current Level				1-month Change			1-year Percentile		

Caps	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s
3m	8.6	14.8	17.5	5.5	13.6	8.0	12.7	7.0	0.5	1.4	1.8	-0.1	1.3	0.2	0.9	0.8	83%	56%	50%	47%	54%	24%	17%	26%
6m	12.0	21.8	24.8	8.1	20.1	11.8	18.4	10.3	0.8	1.8	2.2	-0.0	1.5	0.0	1.0	1.0	88%	54%	51%	53%	50%	10%	24%	33%
1y	16.1	30.0	34.7	11.3	28.2	17.0	25.7	14.9	1.1	1.8	2.2	1.0	1.5	0.2	0.8	0.9	66%	52%	50%	65%	40%	19%	23%	40%
2y	21.8	38.5	45.1	14.7	37.7	21.6	36.6	20.6	-0.0	1.0	2.2	0.4	0.9	-0.6	1.1	0.9	46%	60%	47%	65%	29%	11%	25%	40%
5y	27.4	45.2	51.5	22.3	49.7	23.5	46.0	27.6	0.5	0.5	1.1	0.4	0.5	0.2	1.0	0.4	51%	85%	41%	70%	35%	27%	59%	24%
Floors	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s
3m	7.2	12.3	18.6	4.8	11.3	6.5	13.9	9.0	0.5	0.8	2.2	-0.1	0.7	-0.1	1.4	1.4	86%	51%	57%	51%	51%	26%	35%	33%
6m	9.7	17.7	26.0	6.7	16.2	9.4	19.7	13.0	0.6	0.9	2.5	-0.1	0.8	-0.3	1.5	1.6	93%	52%	74%	53%	55%	17%	41%	38%
1y	13.3	25.3	34.9	9.3	24.0	14.5	26.5	17.2	0.5	1.1	2.0	0.5	1.0	0.1	0.9	1.1	93%	64%	77%	83%	65%	46%	42%	41%
2y	18.0	33.3	43.2	12.2	33.0	18.9	35.5	22.8	-0.3	1.0	1.6	0.2	0.9	-0.3	0.7	0.7	43%	79%	63%	75%	71%	51%	39%	36%
5y	31.0	51.4	65.4	20.5	58.0	26.8	61.6	39.4	0.7	1.1	1.6	0.4	1.0	0.6	1.5	0.5	49%	75%	50%	69%	53%	50%	65%	34%
	6-month Carry of Zero-Cost 1x2 CMS Cap/Floor Ratios (cts)																							
	Current Level								1-month Change								1-year Percentile							
Caps	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s
1y	1.5	3.3	5.4	1.2	3.4	2.3	4.1	2.7	-0.0	-0.2	-0.0	0.2	-0.2	-0.1	-0.1	-0.1	44%	41%	44%	66%	30%	71%	25%	49%
2y	1.2	1.1	2.2	0.8	2.0	0.3	2.2	1.2	-0.5	-0.2	0.4	-0.3	-0.2	-0.2	0.2	0.2	37%	43%	54%	51%	55%	26%	72%	39%
5y	-0.2	-0.3	-1.8	0.3	-0.2	-0.7	-0.8	0.0	0.3	-0.1	-0.2	0.1	-0.1	-0.1	0.1	0.0	72%	69%	17%	73%	42%	24%	97%	89%
Floors	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s	2s5s	2s10s	2s30s	3s5s	3s10s	5s10s	5s30s	10s30s
1y	2.0	4.5	4.6	1.5	4.6	2.9	3.2	1.6	-0.2	0.2	-0.1	0.4	0.3	0.3	-0.1	0.0	46%	91%	51%	89%	95%	99%	11%	36%
2y	1.3	1.4	2.3	0.9	2.5	0.8	2.2	1.1	-0.4	-0.3	-0.1	-0.2	-0.2	-0.2	-0.1	-0.0	18%	25%	30%	48%	42%	31%	23%	22%
5y	0.9	1.9	1.5	0.4	2.0	0.6	1.8	1.0	0.2	-0.0	-0.1	-0.0	-0.0	0.0	0.2	0.0	72%	73%	21%	33%	35%	33%	99%	76%

The colour scheme of the tables follows the conventions below:

- 1) **Levels:** Red = value less than median; White = value equal to median; Green = value greater than median;
- 2) **Changes:** Red = value less than 0; White = value equal to 0; Green = value greater than 0;
- 3) **Percentiles:** Red = value less than 50%; White = value equal to 50%; Green = value greater than 50%.

Notes

- (1) All the carry shown above are convexity-adjusted;
- (2) Strike spread = X which is solved for zero-cost $\text{Cap}(\text{ATM}) - 2 * \text{Cap}(\text{ATM} + X)$ and $\text{Floor}(\text{ATM}) - 2 * \text{Floor}(\text{ATM} - X)$.

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Subject: TARDIS Forward Vol Snapshot (05-Feb-16)

TARDIS Forward Vol Snapshot

05-Feb-16

This report aims to provide an overview of forward vol trades. For further questions, please contact QuantStrategies@nomura.com.

USD Trades

	Forward Vol (bpv)																				
	Current Level							1-month Change							1-year Percentile						
6m Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
3m	53.3	60.9						2.9	-0.8						0.5	12%					
6m	54.8	62.4		76.5	79.5		76.4	4.2	2.0		2.9	3.1		3.3	0.2	6%		9%	12%		28%
1y	70.8	74.4	77.2	80.4	81.7		77.9	4.1	1.6	1.3	2.6	2.9		3.7	0.1	11%	12%	13%	20%		56%
2y	79.7	80.0	81.5	83.7	84.2		76.6	0.2	-1.1	-0.4	2.0	2.3		2.7	0.0	2%	5%	14%	32%		63%
3y	86.5	85.5		86.4	85.5		75.3	-0.8	-1.2		1.5	1.8		2.0	0.0	1%		14%	45%		66%
1y Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
1y	74.2	75.0	75.2	79.9	80.2		75.8	2.1	-1.2	-0.7	3.0	2.3		2.7	0.1	3%	3%	15%	32%		68%
2y	84.7	81.7	81.5	82.1	83.3		74.1	-0.3	-1.5	-1.0	1.2	1.7		1.9	0.0	4%	4%	11%	39%		76%
3y	86.9	84.1		85.8	85.0		72.7	-1.5	-1.9		1.5	1.7		1.6	0.0	0%		19%	57%		71%
5y		88.7		87.8	82.0	73.0	70.1		-0.9		2.2	2.0	1.4	1.4		9%		81%	74%	69%	77%
10y				78.2	73.7	64.1					2.0	2.2	2.2					83%	90%	90%	
2y Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
1y	89.5	88.0	77.3	78.5	74.5		70.5	3.8	-0.4	-2.5	-0.7	0.5		1.3	0.4	8%	3%	4%	41%		78%
2y	87.4	81.2	79.1	81.8	81.8		68.6	-1.9	-3.9	-3.8	0.5	1.8		1.3	0.0	0%	0%	10%	54%		71%
3y	83.8	80.1		84.1	83.7		67.5	-4.1	-5.1		1.5	1.8		1.2	0.0	0%		51%	68%		69%
5y		87.2		84.4	76.7	68.6	65.4		-0.4		2.9	2.3	1.5	1.5		60%		89%	79%	78%	91%
10y				74.6	70.3	59.8					2.3	2.4	2.4					83%	96%	94%	
5y Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
1y	77.8	79.8	47.6	60.1	39.2		53.4	6.2	-3.3	-9.8	0.2	2.6		2.0	0.5	14%	15%	62%	89%		100%
2y	75.1	57.9	50.2	60.5	73.1		51.0	-0.5	-8.9	-10.6	0.7	3.6		2.1	0.4	38%	34%	86%	88%		99%
3y	55.3	43.3		59.3	70.4		51.7	-6.8	-13.3		1.3	3.2		3.0	0.1	10%		92%	65%		100%
5y		67.4		73.2	58.7	58.0	53.1		-1.0		3.6	4.0	4.2	4.2		42%		100%	96%	100%	100%
10y				63.6	60.7	47.5					3.6	4.0	3.6					100%	100%	98%	

	FVA 1y Carry (bpv)																				
	Current Level							1-month Change							1-year Percentile						
6m Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
3m	-9.7	-0.9						1.4	3.7						0.5	86%					
6m	-5.1	1.0		2.7	1.7		3.5	-1.5	-1.3		0.3	2.1		2.9	0.6	78%		65%	60%		55%
1y	-7.5	-2.5	0.4	2.5	2.0		2.7	-1.8	-0.2	0.7	1.0	1.9		1.7	0.7	81%	80%	77%	59%		50%
2y	-0.7	0.9	1.6	1.9	1.2		2.8	1.0	1.4	1.6	1.5	1.4		1.4	0.6	48%	60%	60%	52%		45%
3y	1.2	2.0		0.9	0.6		2.7	1.5	1.6		0.9	0.9		1.1	0.6	62%		45%	37%		50%
1y Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
1y	-11.0	-3.1	2.3	2.9	3.6		4.8	0.2	2.6	2.7	0.6	2.5		2.7	0.8	94%	94%	79%	46%		36%
2y	-5.7	-0.8	1.6	3.4	2.1		5.4	1.4	1.8	2.2	2.4	2.0		2.2	0.7	30%	54%	63%	36%		32%
3y	0.7	3.4		1.5	1.1		5.2	2.2	2.3		1.0	1.1		1.5	0.7	62%		25%	25%		41%
5y		1.6		2.2	4.2	4.1	4.6		0.6		0.5	0.6	0.9	0.9		9%		15%	32%	34%	26%
10y				3.6	3.7	4.4					0.3	0.3	0.4					71%	28%	33%	
2y Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
1y	-15.3	-13.1	-2.1	1.4	5.6		5.2	-1.7	-0.7	1.9	3.7	1.8		1.4	0.0	4%	13%	61%	39%		41%
2y	-2.8	0.5	2.3	0.3	1.5		5.4	1.6	2.4	2.7	0.7	-0.1		0.5	0.3	32%	36%	18%	23%		57%
3y	3.1	4.0		1.6	1.3		5.2	2.6	3.2		-0.0	-0.1		0.5	0.4	54%		3%	42%		59%
5y		1.4		3.5	5.2	4.4	4.7		-0.4		-0.7	-0.4	-0.1	-0.1		0%		14%	15%	20%	7%
10y				3.6	3.4	4.3					-0.3	-0.2	-0.2					36%	12%	13%	
5y Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
1y	6.3	6.3	19.7	17.1	20.8		6.1	-5.9	-0.6	4.3	2.3	0.1		-0.7	0.0	4%	49%	82%	29%		7%
2y	8.2	13.5	17.3	13.1	5.1		6.2	-1.2	3.0	5.2	1.6	-0.0		-0.5	0.2	33%	74%	69%	32%		6%
3y	17.2	22.4		12.0	5.6		4.9	4.7	7.5		1.5	-0.1		-1.2	1.0	100%		79%	55%		0%
5y		7.8		3.7	6.4	3.4	3.9		0.7		-0.1	-0.5	-1.0	-1.0		88%		0%	9%	0%	0%
10y				3.9	3.1	4.0					-0.4	-0.5	-0.4					5%	3%	10%	
	MCCS 1y Carry / PV																				
	Current Level							1-month Change							1-year Percentile						
6m Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
3m	2.20	2.66						-0.47	0.02						0.05	36%					
6m	2.10	2.08		1.79	1.70		1.73	-0.22	-0.12		0.15	0.20		0.19	0.29	47%		60%	66%		65%
1y	0.93	1.11	1.19	1.23	1.15		1.14	-0.19	-0.02	0.06	0.08	0.11		0.09	0.15	58%	70%	80%	61%		59%
2y	0.76	0.77	0.84	0.79	0.77		0.80	0.07	0.11	0.12	0.09	0.08		0.08	0.59	39%	76%	58%	73%		49%
3y	0.61	0.60		0.60	0.57		0.67	0.09	0.10		0.07	0.06		0.07	0.58	30%		59%	58%		60%
1y Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
1y	1.48	1.75	2.04	2.02	1.88		1.83	-0.11	0.19	0.27	0.13	0.16		0.17	0.31	78%	86%	90%	48%		37%
2y	1.05	1.08	1.32	1.29	1.23		1.28	0.14	0.16	0.22	0.17	0.12		0.14	0.75	17%	84%	71%	83%		25%
3y	0.93	0.92		0.95	0.89		1.10	0.16	0.17		0.09	0.08		0.11	0.84	18%		64%	55%		55%


5y	0.68			0.68	0.67	0.81	0.85	0.09			0.02	0.05	0.07	0.07	34%			17%	16%	70%	47%
10y				0.52	0.56	0.68				0.02	0.03	0.03				50%			21%	35%	
2y Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
1y	0.08	0.03	0.30	0.49	0.60		0.54	-0.03	-0.03	0.04	0.13	0.06		0.07	0.05	3%	9%	96%	77%		74%
2y	0.26	0.23	0.43	0.31	0.44		0.46	0.07	0.09	0.11	0.05	0.01		0.04	0.32	18%	76%	46%	93%		79%
3y	0.36	0.16		0.36	0.34		0.41	0.11	0.09		0.02	0.01		0.03	0.38	18%		86%	98%		80%
5y	0.27			0.32	0.21	0.37	0.39	0.01			-0.05	0.00	0.01	0.01	60%			80%	12%	94%	83%
10y				0.23	0.26	0.29					-0.00	0.00	-0.00					67%	92%	17%	
5y Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
1y	30.00	0.27	2.11	2.00	1.79		0.28	11.14	0.06	1.28	0.51	-0.02		0.01	1.00	14%	46%	100%	30%		6%
2y	0.49	3.55	4.06	0.74	0.53		0.31	0.06	2.39	2.80	0.15	0.00		-0.00	0.62	100%	98%	81%	89%		5%
3y	0.13	0.84		1.06	0.40		0.21	0.10	0.50		0.14	0.01		-0.03	0.18	27%		99%	95%		0%
5y	0.43			0.20	-0.12	0.24	0.24	0.08			-0.05	0.01	-0.04	-0.04	100%			59%	14%	53%	5%
10y				0.16	0.27	0.07					-0.02	-0.02	0.00					23%	86%	15%	

MCCS Term Carry / PV

6m Exp.	Current Level							1-month Change							1-year Percentile						
	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
3m	2.20	2.66						-0.47	0.02						0.05	36%					
6m	2.10	2.08		1.79	1.70		1.73	-0.22	-0.12		0.15	0.20		0.19	0.29	47%		60%	66%		65%
1y	0.93	1.11	1.19	1.23	1.15		1.14	-0.19	-0.02	0.06	0.08	0.11		0.09	0.15	58%	70%	80%	61%		59%
2y	0.76	0.77	0.84	0.79	0.77		0.80	0.07	0.11	0.12	0.09	0.08		0.08	0.59	39%	76%	58%	73%		49%
3y	0.61	0.60		0.60	0.57		0.67	0.09	0.10		0.07	0.06		0.07	0.58	30%		59%	58%		60%
1y Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
1y	1.48	1.75	2.04	2.02	1.88		1.83	-0.11	0.19	0.27	0.13	0.16		0.17	0.31	78%	86%	90%	48%		37%
2y	1.05	1.08	1.32	1.29	1.23		1.28	0.14	0.16	0.22	0.17	0.12		0.14	0.75	17%	84%	71%	83%		25%
3y	0.93	0.92		0.95	0.89		1.10	0.16	0.17		0.09	0.08		0.11	0.84	18%		64%	55%		55%
5y	0.68			0.68	0.67	0.81	0.85		0.09		0.02	0.05	0.07	0.07		34%		17%	16%	70%	47%
10y				0.52	0.56	0.68					0.02	0.03	0.03					50%	21%	35%	
2y Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
1y	1.65	1.88	3.00	3.38	3.52		3.30	-0.19	0.14	0.47	0.53	0.42		0.42	0.06	11%	27%	98%	52%		49%
2y	1.59	1.79	2.34	2.03	2.08		2.34	0.30	0.41	0.55	0.31	0.18		0.27	0.57	20%	93%	74%	98%		49%
3y	1.66	1.45		1.63	1.46		1.90	0.39	0.39		0.15	0.12		0.19	0.71	18%		71%	91%		52%
5y	1.13			1.19	1.14	1.43	1.52		0.12		-0.02	0.05	0.10	0.11		39%		25%	16%	81%	45%
10y				0.87	0.96	1.14					0.02	0.03	0.03					69%	45%	15%	
5y Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
1y	30.00	5.74	29.75	18.12	26.05		8.68	0.00	1.67	17.91	4.60	0.96		0.75	1.00	35%	49%	100%	26%		12%
2y	5.78	29.19	30.00	8.08	5.16		6.79	1.53	20.02	19.13	1.40	0.12		0.37	0.66	99%	100%	46%	94%		11%
3y	5.34	11.79		8.61	3.95		5.05	1.69	6.06		0.94	0.10		0.01	0.23	31%		100%	95%		3%

5y	3.98		2.71	2.50	3.28	3.73	0.58		-0.16 -0.05 -0.21 -0.29					98%		7%	2%	13%	2%		
10y			1.95	2.29	2.49			-0.08 -0.11 -0.10							22%	69%	4%				
MCCS Term Break-Even Range / Realised Vol																					
		Current Level						1-month Change								1-year Percentile					
6m Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
3m	0.12	0.18						-0.00	0.01						0.07	11%					
6m	0.19	0.22		0.26	0.28		0.30	0.00	-0.01		0.02	0.03		0.01	0.08	6%		64%	95%		92%
1y	0.18	0.22	0.25	0.29	0.30		0.31	-0.03	-0.01	0.00	0.02	0.03		0.00	0.00	14%	27%	88%	93%		92%
2y	0.24	0.26	0.29	0.29	0.31		0.33	0.01	0.02	0.03	0.03	0.03		0.01	0.27	40%	70%	93%	93%		92%
3y	0.29	0.29		0.29	0.30		0.35	0.03	0.04		0.03	0.02		0.00	0.61	72%		93%	93%		92%
1y Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
1y	0.34	0.41	0.50	0.55	0.56		0.59	-0.02	0.01	0.03	0.03	0.04		0.00	0.03	22%	34%	89%	92%		92%
2y	0.43	0.46	0.55	0.57	0.59		0.64	0.03	0.03	0.06	0.06	0.04		0.01	0.31	35%	68%	93%	92%		92%
3y	0.55	0.54		0.57	0.59		0.70	0.06	0.08		0.05	0.03		-0.00	0.67	64%		93%	92%		91%
5y		0.57		0.62	0.64	0.71	0.74		0.05		0.02	0.01	-0.02	-0.02		90%		92%	90%	91%	91%
10y				0.76	0.80	0.86					-0.07	-0.08	-0.09					90%	90%	90%	
2y Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
1y	0.52	0.61	0.85	1.00	1.10		1.14	-0.04	0.01	0.05	0.09	0.09		0.02	0.03	3%	29%	92%	93%		92%
2y	0.79	0.88	1.06	1.04	1.15		1.29	0.07	0.10	0.14	0.12	0.06		0.00	0.32	38%	68%	93%	93%		92%
3y	1.11	1.02		1.13	1.14		1.39	0.16	0.19		0.09	0.05		-0.02	0.64	53%		93%	92%		92%
5y		1.15		1.29	1.30	1.47	1.55		0.07		-0.00	-0.02	-0.06	-0.08		91%		91%	88%	91%	91%
10y				1.58	1.70	1.78					-0.18	-0.20	-0.22					90%	90%	90%	
5y Exp.	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y	1y	2y	3y	5y	10y	20y	30y
1y	2.82	1.64	2.41	2.75	3.54		2.69	-0.08	0.18	0.05	0.14	0.09		-0.06	0.87	13%	15%	90%	92%		91%
2y	1.97	2.76	3.09	2.92	2.77		3.30	-0.09	-0.09	0.02	0.20	0.05		-0.15	0.13	34%	48%	91%	92%		91%
3y	2.58	3.10		3.47	3.04		3.57	-0.03	0.00		-0.12	0.00		-0.28	0.32	46%		91%	92%		90%
5y		3.31		3.30	3.29	3.70	4.01		-0.07		-0.08	-0.19	-0.48	-0.57		90%		91%	72%	89%	89%
10y				4.26	4.80	4.65															

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