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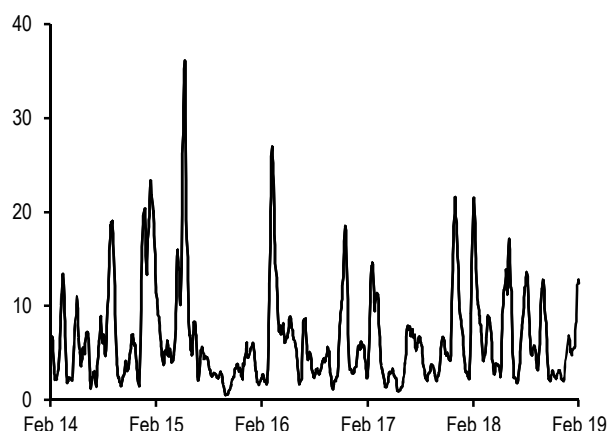
Euro Swaps Relative value

RV on the ultra-long end of the swap curve

In an environment where the ECB is expected to stay on hold, in terms of policy rates, for the next few months following the dovish turns by central banks (Fed, RBA, and BoE), we believe that relative value opportunity trading will take center-stage, in addition, to carry based strategies. Our “*RV opportunity index*” has increased sharply over the last few days indicating that there are dislocations on the curve (**Exhibit 1**).¹ We carefully look at those RV opportunities that do not necessarily appear driven by a regime shift.

Exhibit 1: Our “RV opportunity index” has spiked recently. We explore RV opportunities this week, especially at the ultra-long end of the curve

10D MA of sum of squared 6M rolling Z-score of various curve- and level-neutral swap butterflies*; past 5Y; unitless



* The RV index is the sum of squared 6M rolling Z-score of various curve- and level-neutral swap butterflies. Swap butterflies included are 2s/5s/10s, 2s/10s/30s, 5s/7s/10s, 3s/7s/15s and 10s/20s/30s.

Some of the ultra-long end flies, especially those centered on the 20Y-25Y point, have cheapened sharply over the past few days. For instance, the 5Yx5Y/15Yx5Y/30Yx5Y 50:50 swap fly is close to its cheapest levels over the past few years (**Exhibit 2**). Anecdotal evidence suggests that this mispricing of the 20-25Y sector appears to be flow driven; issuance based receiving is mostly active in the 10Y sector whereas pension fund receiving (another dominant theme over the past few days) have been focused at the ultra-long end (for example 30Y+). This has cheapened 20Y rates and forwards around there such as 15Yx5Y forward rate significantly versus surrounding 5Y forwards. **Our analysis shows that 20Y rates have cheapened relative to nearby points over the past few weeks.** A longer term historical analysis shows that these ultra-long end flies tend to richen during hiking cycles. **Exhibit 3** shows the evolution of 5Yx5Y/15Yx5Y/30Yx5Y 50:50 swap fly over the past twenty years. As seen, the fly has richened during hiking episodes and periods when the money market curve started to price aggressive ECB action (early 2018, taper tantrum).

¹ To recap, this index tracks the overall deviation of various curve- and level-neutral swap butterflies. The index is simply the rolling sum (10D MA) of squared 6M rolling Z-score across various curve- and level-neutral swap flies.

Exhibit 2: The 5Yx5Y/15Yx5Y/30Yx5Y 50:50 swap fly has cheapened over the last few days and is close to its cheapest levels of the past few years

5Yx5Y/15Yx5Y/30Yx5Y 50:50 swap fly; past 5Y; bp

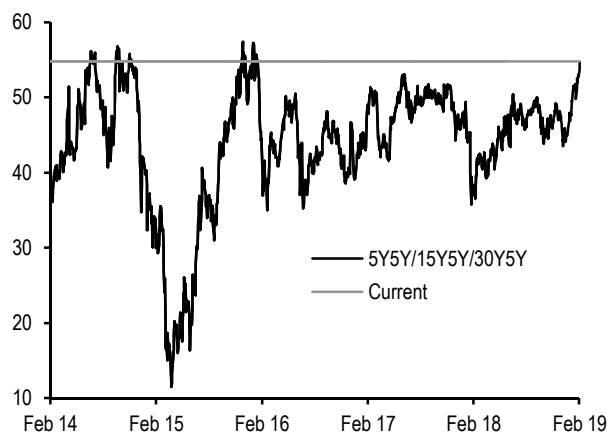
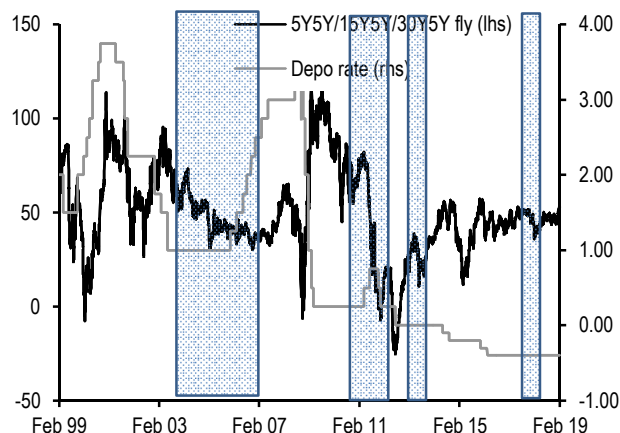


Exhibit 3: These ultra-long end flies have a tendency to richen going into ECB hikes or during aggressive repricing higher of policy expectations

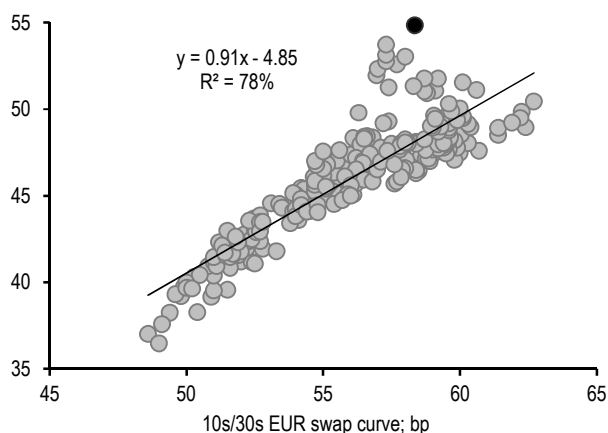
5Yx5Y/15Yx5Y/30Yx5Y 50:50 swap fly (lhs; bp) and ECB depo facility rate (rhs; %s); past 20Y;



Over the last few months, the fly has moved broadly in sync with the 10s/30s curve, cheapening with a steepening of the 10s/30s curve and vice versa. However, over the last few days, this relationship appears to have broken down (**Exhibit 4**). Historically, this fly has been positively correlated with 10s/30s with the body cheapening as 10s/30s steepens. This relationship has been generally positive with temporary deviations when volatility peaked in the ultra-long end forward (during sovereign debt crisis episode). We expect the beta to remain stable if volatility remains high in the intermediates versus ultra-long end forwards. Therefore an **outright receiving the body of this 5Yx5Y/15Yx5Y/30Yx5Y 50:50 swap fly is akin to having a 10s/30s flatteners but with better relative value.**

Exhibit 4: The 5Yx5Y/15Yx5Y/30Yx5Y 50:50 swap fly exhibits a strong correlation to the 10s/30s swap curve but currently appears too cheap

5Yx5Y/15Yx5Y/30Yx5Y 50:50 swap fly regressed against 10s/30s swap curve; past 1Y; bp



As relative value opportunities we prefer a **PCA weighted 5Yx5Y/15Yx5Y/30Yx5Y fly** instead of outright 50:50 swap fly. We pick our weights using a 1Y PCA of various forward points and structuring the trade such that it is neutral to the first (level) and second (curve) PCA factors.² **Exhibit 5** shows the evolution of the PCA-weighted fly over the past few months. Unlike the 50:50 fly, the weighted fly does not exhibit any relationship to standard market variables (**Exhibit 6**) and is currently 4bp away from its 1Y average. The current level of mispricing is close to the extremes seen over the past year and the weighted fly has typically mean-reverted from these levels. Overall, we recommend receiving the body of a **level- and curve-neutral 5Yx5Y/15Yx5Y/30Yx5Y fly (-13.3%/+100%/-77.8% risk weights) as an RV trade**. The overall 3M carry on this trade is around -1bp.

Exhibit 5: We prefer a PCA weighted 5Yx5Y/15Yx5Y/30Yx5Y fly as a RV trade...

Evolution of the PCA weighted level and curve 5Yx5Y/15Yx5Y/30Yx5Y fly*; since 1 Jan 2018; bp



* Defined as $15Yx5Y - 0.133*5Yx5Y - 0.778*30Yx5Y$

Exhibit 6: ...which, by construction, does not exhibit any relationship with macro variables

Regression statistics from regressing a PCA weighted level and curve fly* and 50:50 5Yx5Y/15Yx5Y/30Yx5Y fly versus various macro variables; past 1Y; %

	PCA weighted fly			50:50 swap fly		
	Beta	Rsqr	Residual	Beta	Rsqr	Residual
10Y	-1%	0%	3.2	-26%	63%	1.5
Fronts/golds	-1%	0%	3.2	-18%	67%	1.5
10s/30s curve	17%	10%	3.1	90%	76%	6.7

* Defined as $15Yx5Y - 0.133*5Yx5Y - 0.778*30Yx5Y$

Finally, the 5Yx5Y/15Yx5Y/30Yx5Y 50:50 swap fly currently appears cheap versus other ultra-long end swap flies such as 10Y/10Yx10Y/20Yx10Y (**Exhibit 7**). **On 50:50 fly, we see value as an RV trade receiving the body of the 5Y forward fly versus a beta-weighted amount of paying the body in the 10Y forward fly (100%/140%)**. The current RV is around 4bp. This trade essentially reflects that the 15s/20s curve is trading too steep versus 5s/10s and 25s/30s curve.

² These weights are very similar to that obtained by constructing a regression based curve- and level-neutral fly.

Exhibit 7: The 5Yx5Y/15Yx5Y/30Yx5Y 50:50 swap fly currently appears cheap versus other ultra-long end swap flies such as 10Y/10Yx10Y/20Yx10Y

5Yx5Y/15Yx5Y/30Yx5Y 50:50 swap fly regressed against 10Y/10Yx10Y/20Yx10Y 50:50 swap fly; since 1 Jan 2018; bp

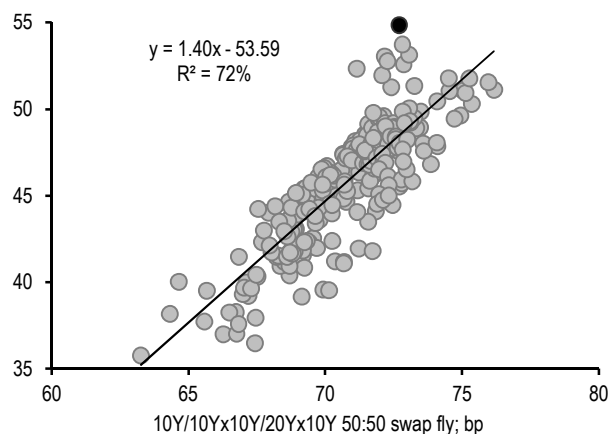


Exhibit 8 shows a few other such PCA weighted receiving body flies. Similar to our analysis of last week, we also present a list of market-neutral weighted steepeners.

Exhibit 8: We present a list of weighted flies and curve steepeners at the ultra-long end which appear attractive on RV considerations

PCA weights* of curve (fly) trades, 3M carry, and statistics including current dislocation of various market neutral curve and fly trade**; bp

Weighted steepening curve trades													
Curve points		Weights		Weighted curve							Reg stats to 10Y swap curve		
Receive	Pay	Receive	Pay	3M carry	Current	1Y avg	SD	Dislocation*	Zscore	Beta	R-squared		
15Yx5Y	30Yx5Y	100%	-95%	-0.7	-62	-58	2	-3.6	-1.9	-4%	3%		
15Yx5Y	30Yx10Y	98%	-100%	-0.7	-54	-49	2	-4.8	-2.2	-6%	7%		
20Yx5Y	30Yx10Y	92%	-100%	-0.9	-19	-14	2	-5.9	-3.3	-2%	1%		
10Yx10Y	30Yx10Y	97%	-100%	0.4	-55	-51	3	-3.7	-1.4	-11%	15%		
Weighted fly Trades (short body)													
Curve points			Weights			Weighted fly							Reg stats to 10Y swap curve
Receive	Pay	Receive	Receive	Pay	Receive	3M carry	Current	1Y avg	SD	Dislocation*	Zscore	Beta	R-squared
5Yx5Y	15Yx5Y	30Yx5Y	-13%	100%	-78%	-1.4	-65.9	-62.4	1.7	-3.5	-2.1	1%	0%
5Yx5Y	15Yx5Y	30Yx10Y	-19%	100%	-76%	-1.8	-63.2	-58.9	1.8	-4.4	-2.5	1%	0%
5Yx5Y	20Yx5Y	30Yx10Y	-11%	100%	-93%	-1.6	-25.6	-19.5	1.7	-6.0	-3.5	2%	1%
5Yx5Y	10Yx10Y	30Yx10Y	-32%	100%	-59%	-1.3	-69.8	-66.8	1.5	-3.0	-1.9	1%	0%
5Yx5Y	20Yx10Y	40Yx10Y	-41%	100%	-87%	-2.9	4.4	13.5	3.3	-9.0	-2.7	4%	1%

* 1Y PCA conducted using several points on the swap curve, including various forward points.

** Curve trades are constructed to be neutral to the first factor whereas the flies are constructed to be neutral to the first two factors.

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