Conditional curve trades

Eyeballing relative value

We introduce a simple report for eyeballing a wide range of (zero-cost) conditional steepeners and flatteners and a wide range of conditional butterfly trades. The hope is to avoid reams and reams of paper analysing every combination and enable the user to simply eyeball trades based on their carry, moneyness (or pickup of entry-level strikes to forwards), and total pickup (of entry-level strikes to spot). These are some of the primary tools for judging whether a conditional curve trade (e.g., a steepener, flattener, or butterfly trade done through swaptions) provides some advantage to doing the same trade without the conditionality through swaps directly. We present the reports for USD and EUR rates together with a brief analysis of the trades that would carry well or express a given view. In the Appendix, we explain how to use the tables with simple arithmetic.

Intro and Definitions

A conditional curve trade uses options of the same expiry on different points on the yield curve to express a view on yield curve reshaping. It expresses a more nuanced view than a pure curve trade (e.g., a steepener, flattener, butterfly) because it pays off if the curve steepens (or flattens) only in a rally (or sell-off), implicitly a play on correlation between different motions of the yield curve. In part, due to this more nuanced view, it is typical for investors to expect to be compensated for putting on a conditional curve trade by some benefit to the underlying curve trade. We present a simple means of estimating this pickup.

We note that all conditional curve trades will be dv01 weighted (i.e., one leg may have fixed notional, while the other legs have notional scaled so that they have the same dv01). This is because payoffs of individual swaptions all depend on the dv01s together with the swap rates. Scaling notionals by dv01s should ensure that the resulting portfolio payoff depends primarily on the spreads between the underlying swaps.

In Figures 1 and 2, we provide definitions of the eight standard conditional spread trades, noting that, for butterflies, wideners always benefit from rising butterfly spreads, while tighteners benefit from their decline.

We continue with a list of relevant terms:

Conditional Curve Trade – A curve trade (i.e., steepener, flattener, butterfly) that is done entirely through one type of swaption. Bearish Conditional Trades are done through payers, and Bullish Conditional Trades are done through receivers.

Entry-level strikes or entry-level spread – The strikes of the underlying swaptions (chosen to make the trade costless) or the spread between the strikes of a trade.

Pickup to forwards – For a steepener, investors benefit from entry spreads that are flatter than forwards. For a flattener, investors benefit from entry spreads that are steeper than forwards. For a butterfly, a positive pickup is an advantage over forwards in terms of entry levels into the given spread trade.

Total pickup – This is the pickup from forwards to spot, a form of carry. It is effectively the gain or loss in basis points between the entry-level spread and the spot spread.

Fig. 1: Conditional spread trades
Simple nomenclature

Trade	Short Leg	Long Leg	Performs When	Comments
Bull Steepener	Long Receiver	Short Receiver	Curve steepens in a rally	One of the most common motions of the yield curve. Bull steepening usually occurs when there is a fall in growth and inflation expectations such as during the onset of a recession (i.e., a negative demand shock).
Bull Flattener	Short Receiver	Long Receiver	Curve flattens in a rally	A less common motion of the yield curve, flattening in a rally. Usually associated with flight to quality or expectations of QE (i.e., a supply shock).
Bear Steepener	Short Payer	Long Payer	Curve steepens in a sell-off	A less common motion of the yield curve, steepening in a sell-off. Usually associated with flight from quality or concerns over cessation of QE (i.e., a supply shock).
Bear Flattener	Long Payer	Short Payer	Curve flattens in a sell-off	One of the most common motions of the yield curve. Bear flattening usually occurs during a pickup in growth and inflation expectations (i.e., a positive demand shock).

Source: Nomura research

Bull Steepener – Buying a receiver on a short tenor and selling a receiver on a long tenor swap for zero cost, e.g., buying 9m2y receivers and selling 9m10y receivers. The trade benefits from steepening in a rally, loses money from flattening in a rally, and expires worthless in a sell-off.

Bull Flattener – Buying a receiver on a long tenor and selling a receiver on a short tenor swap for zero cost, e.g., buying 1y10y and selling 1y1y receivers. The trade benefits from flattening in a rally, loses money from steepening in a rally, and expires worthless in a sell-off.

Bear Steepener – Selling a payer on a short tenor and buying a payer on a long tenor swap for zero cost, e.g., selling 3m1y payers and selling 3m5y payers. The trade benefits from steepening in a sell-off, loses money from flattening in a sell-off, and expires worthless in a rally.

Bear Flattener – Buying a payer on a short tenor and selling a payer on a long tenor swap for zero cost, e.g., buying 6m2y payers and selling 6m10y payers. The trade benefits from flattening in a sell-off, loses money from steepening in a sell-off, and expires worthless in a rally.

Fig. 2: Conditional butterflies
Carefully trying to avoid ambiguity

Trade	Short Wing	Belly	Long Wing	Performs when	Comments
Bull Widener	Long Receiver	**Short Receiver**	Long Receiver	Butterfly spreads widen (rise) in a rally	Belly typically outperforms in a steepening and steepening usually occurs in a rally, making this an alternative to a bull steepener.
Bull Tightener	Short Receiver	**Long Receiver**	Short Receiver	Butterfly spreads tighten (fall) in a sell-off	Less common motion of yield curve, usually associated with bull flattening supply shocks.
Bear Widener	Short Payer	**Long Payer**	Short Payer	Butterfly spreads widen (rise) in a sell-off	Less common motion of yield curve, usually associated with bear steepening supply shocks.
Bear Tightener	Long Payer	**Short Payer**	Long Payer	Butterfly spreads tighten (fall) in a sell-off	Belly typically underperforms in a flattening, and flattening usually occurs in a sell-off, making this an alternative to a bear flattener.

Source: Nomura research

Bull Widener Butterfly – Selling twice the dv01-weighted notional of the receiver on the belly and buying the dv01-weighted notional of the receivers on the wings. The trade benefits from butterfly spreads rising in a rally, loses money if spreads fall in a rally, and expires worthless in a sell-off. Payoffs are more complex if some options expire ITM and some OTM.

Bull Tightener Butterfly – Buying twice the dv01-weighted notional of the receiver on the belly and selling the dv01-weighted notional of the receivers on the wings. The trade benefits from butterfly spreads falling in a rally, loses money if spreads rise in a rally, and

expires worthless in a sell-off. Payoffs are more complex if some options expire ITM and some OTM.

Bear Widener Butterfly – Selling twice the dv01-weighted notional of the payer on the belly and buying the dv01-weighted notional of payers on the wings. The trade benefits from butterfly spreads rising in a sell-off, loses money if spreads fall in a sell-off, and expires worthless in a rally. Payoffs are more complex if some options expire ITM and some OTM.

Bear Tightener Butterfly – Buying a twice the dv01-weighted notional of the payer on the belly, and selling the dv01-scaled notionals of payers on the wings. The trade benefits from butterfly spreads declining in a sell-off, loses money if butterfly spreads rise in a sell-off, and expires worthless in a rally. Payoffs are more complex if some options expire ITM and some OTM.

The following four terms are used in Figures 3 and 4 and are also depicted in the example charts (for USD 3m5y and EUR 3m5y) in the upper right hand corner of these figures.

Yield Curve Carry is Forward – Spot. It will almost always be positive.

Payers Moneyness is the Forward – Strike of the corresponding payer (with notional scaled to have same dv01, and strike adjusted to have same PV as the ATMF 10y payer). Swaptions with positive entries mean that conditional trades, long the swaption vs the same expiry 10y, have a pickup to forwards. We call this a pickup of the option to the forward.

Payers Total Pickup is the Payers Moneyness less the Yield Curve Carry (since payers are effectively short underlying swaps). This is Strike – Spot. Payers carry negatively except in rare circumstances such as when yield curves are flat or inverted.

Receivers Moneyness is the Strike – Forward of the corresponding receiver (with notional scaled to have the same dv01, with strike adjusted to have the same PV as the ATMF 10y receiver). Swaptions with positive entries mean that conditional trades, long the swaption vs the same expiry 10y, have a pickup to forwards.

Receivers Total Pickup is the Receivers Moneyness plus the Yield Curve Carry (since Receivers are long underlying swaps). This is Strike – Spot. Receivers carry positively except under rare circumstances such as when yield curves are flat or inverted.

In any given row, if you buy a receiver/payer you add that corresponding number, and if you sell a receiver /payer you subtract that corresponding number to get the total carry, moneyness, or total pickup of a spread or butterfly trade.

The tables are a means of exploring conditional trades. Rather than providing further analysis, we suggest that the reader look at the pickup, and total carry of a wide variety of trades, given that these can be identified with little more than arithmetic and eyeballing alone.

USD Conditional Trade Report

We see in Figure 3 the USD Conditional Trade report, starting with the carry for each given forward (1m to 12m forwards for a variety of major tenors). We follow with Payers Moneyness, Payers Total Pickup, and the corresponding Receivers Moneyness and Receivers Total Pickup.
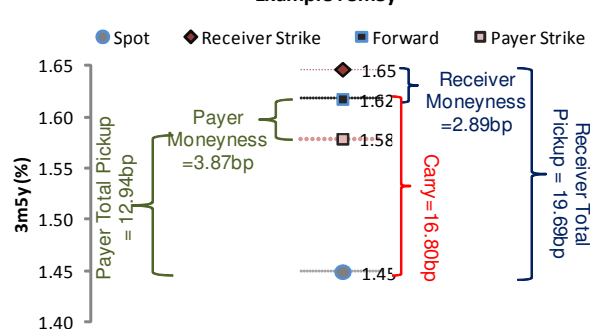
Some simple observations:

- **Carry** peaks at the 5y, so front end vs 5y flatteners have positive carry, as do 5y vs long end steepeners. Receiving the belly on a 2s5s10s butterfly has very positive carry (and the buffer for underperformance is quite sizeable), and other flies (e.g., front end/10s30s) have sizeable carry and good entry points.

- **10y tail vols** are the richest on the curve (followed closely by the 7y), as every other tail has a positive spread to them in the moneyness tables (the second row of tables in Figure 3).

- **Conditional Bear Flatteners** all have pickup to forwards (as in the entry levels are effectively steeper than forwards and one can benefit from the vol differential) where both legs are shorter than 10y. If the front leg is 1y to 3y and the back leg 7y to 10y, the bear flattener has positive carry.

- **Conditional Bear Steepeners** at the long end have positive pickup to forwards (i.e., from 7y onwards) due to the richness of 7y to 10y vols. For front legs of around 3y to 10y and long legs past 10y, they also have positive carry due to the peak in carry at the belly of the curve.

- **Conditional Bear Tightener Butterflies** (short payers on belly, and long payers on wings) have greater pickups than conditional bear flatteners where the belly is in 7y to 10y. They all have positive carry.

- **Conditional Bull Steepeners** have a pickup to forwards for the front leg being 3y or shorter

- **Conditional Bull Flatteners** have a pickup to forwards or are flat to forwards for the front leg being longer than 5y.

- **Conditional Bull Tightener Butterflies** (long receivers on the belly, short receivers on the wings) have positive carry due to the sizeable carry in the 3y to 7y part of the curve.

Fig. 3: Conditional USD Curve Trades 25-Nov-11

USD Yield Curve Carry (Fwd - Spot) (bp)

Option Expiry	Swap Tenor							
	1y	2y	3y	5y	7y	10y	20Y	30Y
1m	1.0	2.5	4.3	6.0	5.1	3.8	2.0	1.5
2m	2.0	5.2	8.9	11.4	10.0	7.7	4.2	3.1
3m	2.9	7.7	13.1	16.8	14.5	11.3	6.3	4.8
4m	4.0	10.6	17.5	22.0	19.2	14.8	8.3	6.3
5m	5.7	14.3	22.9	28.4	24.3	18.8	10.4	7.9
6m	7.2	18.0	28.4	34.2	29.1	22.6	12.6	9.6
7m	8.9	21.4	33.4	39.8	33.8	26.2	14.6	11.1
8m	11.2	26.0	39.9	46.3	39.0	30.2	16.8	12.8
9m	13.4	30.5	45.5	52.2	44.1	33.9	18.9	14.4
10m	16.2	35.3	51.7	58.6	49.0	37.9	21.2	16.1
11m	19.3	40.6	58.1	64.5	53.8	41.5	23.2	17.6
12m	22.6	45.6	64.4	70.7	58.9	45.4	25.3	19.3

Example : 3m5y

Spot ● Receiver Strike ◆ Forward ■ Payer Strike ▢

3m5y (%)

- ◆ 1.65
- ■ 1.62 — Receiver Moneyness =2.89bp
- ▢ 1.58 — Payer Moneyness =3.87bp
- ● 1.45

Payer Total Pickup = 12.94bp
Carry = 16.80bp
Receiver Total Pickup = 19.69bp

Payers Moneyness (Fwd - Strike) (bp)

Option Expiry	Swap Tenor							
	1y	2y	3y	5y	7y	10y	20Y	30Y
1m	9.0	8.9	7.4	1.8	0.4	-	1.3	1.7
2m	12.6	12.5	10.7	2.8	0.6	-	1.8	2.5
3m	16.1	16.0	13.7	3.9	0.8	-	2.3	3.3
4m	19.1	18.8	15.8	4.4	1.0	-	2.9	4.1
5m	21.7	21.3	17.5	4.9	1.0	-	3.5	4.9
6m	24.3	23.6	18.9	5.2	1.1	-	4.1	5.7
7m	26.5	25.4	19.9	5.2	1.1	-	4.8	6.4
8m	28.6	27.0	20.6	5.1	1.0	-	5.5	7.2
9m	30.7	28.5	21.0	4.9	0.9	-	6.2	8.0
10m	32.6	29.6	20.8	4.7	0.8	-	6.9	8.7
11m	34.3	30.5	20.3	4.3	0.7	-	7.5	9.4
12m	35.9	31.1	19.6	3.9	0.6	-	8.2	10.1

Receivers Moneyness (Strike - Fwd) (bp)

Option Expiry	Swap Tenor							
	1y	2y	3y	5y	7y	10y	20Y	30Y
1m	8.8	8.5	6.5	1.5	0.3	-	1.2	1.7
2m	12.3	11.7	8.9	2.2	0.5	-	1.6	2.4
3m	15.5	14.6	11.1	2.9	0.6	-	2.1	3.1
4m	18.1	16.8	12.5	3.3	0.7	-	2.6	3.9
5m	20.3	18.5	13.6	3.6	0.8	-	3.1	4.7
6m	22.2	20.0	14.5	3.8	0.8	-	3.6	5.4
7m	23.8	21.0	14.9	3.8	0.8	-	4.3	6.1
8m	25.3	21.9	15.2	3.7	0.8	-	4.9	6.9
9m	26.7	22.5	15.4	3.6	0.7	-	5.6	7.6
10m	27.7	22.8	14.9	3.4	0.6	-	6.2	8.3
11m	28.5	23.0	14.3	3.1	0.6	-	6.8	9.0
12m	29.2	23.0	13.6	2.8	0.5	-	7.4	9.7

Payers Total Pickup (Strike - Spot) (bp)

Option Expiry	Swap Tenor							
	1y	2y	3y	5y	7y	10y	20Y	30Y
1m	8.0	6.4	3.2	-4.1	-4.8	-3.8	-0.7	0.2
2m	10.7	7.3	1.7	-8.6	-9.4	-7.7	-2.4	-0.7
3m	13.2	8.2	0.5	-12.9	-13.7	-11.3	-4.0	-1.5
4m	15.1	8.2	-1.7	-17.6	-18.2	-14.8	-5.4	-2.2
5m	16.1	7.0	-5.4	-23.5	-23.2	-18.8	-6.9	-3.0
6m	17.1	5.6	-9.4	-29.0	-28.0	-22.6	-8.5	-3.9
7m	17.6	4.0	-13.6	-34.6	-32.8	-26.2	-9.9	-4.7
8m	17.4	1.0	-19.4	-41.1	-38.0	-30.2	-11.3	-5.6
9m	17.3	-2.0	-24.5	-47.3	-43.1	-33.9	-12.6	-6.4
10m	16.4	-5.6	-30.9	-54.0	-48.1	-37.9	-14.3	-7.4
11m	15.0	-10.1	-37.8	-60.2	-53.1	-41.5	-15.6	-8.2
12m	13.3	-14.5	-44.8	-66.9	-58.3	-45.4	-17.1	-9.2

Receivers Total Pickup (Strike - Spot) (bp)

Option Expiry	Swap Tenor							
	1y	2y	3y	5y	7y	10y	20Y	30Y
1m	9.8	11.0	10.8	7.5	5.4	3.8	3.2	3.1
2m	14.3	16.9	17.8	13.7	10.5	7.7	5.8	5.5
3m	18.4	22.3	24.2	19.7	15.1	11.3	8.3	7.9
4m	22.1	27.4	30.0	25.3	19.9	14.8	10.8	10.2
5m	25.9	32.8	36.5	31.9	25.0	18.8	13.5	12.6
6m	29.4	38.0	42.9	38.1	29.9	22.6	16.2	15.0
7m	32.8	42.4	48.4	43.7	34.7	26.2	18.9	17.3
8m	36.5	47.9	55.1	50.0	39.8	30.2	21.7	19.6
9m	40.1	53.0	60.8	55.8	44.8	33.9	24.5	22.0
10m	43.8	58.1	66.6	62.0	49.6	37.9	27.4	24.4
11m	47.9	63.6	72.4	67.6	54.4	41.5	30.0	26.6
12m	51.8	68.6	78.0	73.6	59.3	45.4	32.8	28.9

Source: Nomura research

EUR Conditional Trade Report

We see in Figure 4 the EUR Conditional Trade report, starting with the carry for each given forward (1m to 12m forwards for a variety of major tenors). We follow with Payers Moneyness, Payers Total Pickup, and the corresponding Receivers Moneyness and Receivers Total Pickup.
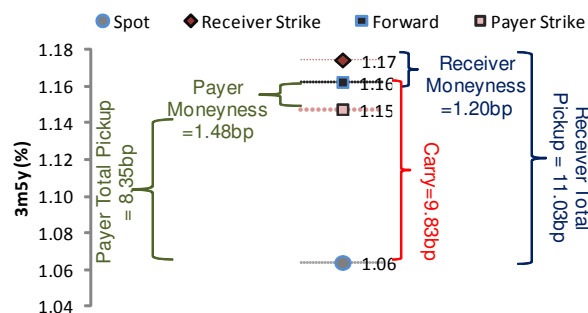
Some simple observations:

- **Carry** plateaus from 3y to 7y, so very front end flatteners have positive carry and from 7Y onwards, steepeners have positive carry. Receiving the belly on 2s5s10s, 2s7s10s, 2s5s30s, 2s7s30s, etc. butterfly has positive carry. We note that the difference in carry in particular leads to some subtle differences between EUR and USD conditional trades.

- **10y tail vols** are the richest on the curve (closely followed by the 7y), as every other tail has a positive spread to them in the moneyness tables (the second row of tables in Figure 3).

- **Conditional Bear Flatteners** all have pickup to forwards (as the entry levels are effectively steeper than forwards and one can benefit from the vol differential) where both legs are shorter than 10y. If the front leg is 1y to 2y and the back leg 3y to 30y, the bear flattener has positive carry.

- **Conditional Bear Steepeners** at the long end have positive pickup to forwards (i.e., from 7y onwards) due to the richness of 7y to10y vols. For front legs of around 3y to 10y and long legs past 10y, they also have positive carry due to the peak in carry at the belly of the curve.

- **Conditional Bear Tightener Butterflies** (short payers on belly, and long payers on wings) have greater pickups than conditional bear flatteners where the belly is in 7y to10y. They all have positive carry.

- **Conditional Bull Steepeners** have a pickup to forwards for the front leg being 3y or shorter.

- **Conditional Bull Flatteners** have a pickup to forwards or are flat to forwards for the front leg being longer than 5y.

- **Conditional Bull Tightener Butterflies** (long receivers on the belly) have positive carry if the belly is between 2y and 7y, in part due to the large carry pickup in that area.

Fig. 4: Conditional EUR Curve Trades 25-Nov-11

EUR Yield Curve Carry (Fwd - Spot) (bp)

Option Expiry	Swap Tenor							
	1y	2y	3y	5y	7y	10y	20Y	30Y
1m	1.0	1.9	2.8	3.5	3.4	2.7	1.3	0.9
2m	1.5	3.8	5.6	6.7	6.4	5.4	2.6	1.8
3m	2.2	5.5	8.1	9.8	9.3	7.9	3.9	2.7
4m	2.9	7.5	10.8	12.9	12.3	10.3	5.1	3.6
5m	4.1	9.9	14.0	16.6	15.7	13.2	6.5	4.6
6m	5.1	12.2	17.1	19.9	18.7	15.7	7.7	5.4
7m	6.3	14.6	20.2	23.3	21.9	18.3	9.0	6.3
8m	7.8	17.6	23.9	27.0	25.1	21.0	10.2	7.2
9m	9.2	20.3	27.0	30.4	28.3	23.6	11.5	8.2
10m	11.0	23.3	30.7	34.3	31.7	26.4	12.9	9.2
11m	13.1	26.6	34.2	37.8	34.8	28.9	14.0	10.0
12m	15.0	29.5	37.7	41.2	38.1	31.5	15.4	10.9

Example : 3m5y

Payers Moneyness (Fwd - Strike) (bp)

Option Expiry	Swap Tenor							
	1y	2y	3y	5y	7y	10y	20Y	30Y
1m	5.8	4.6	2.7	0.9	0.4	-	0.5	0.5
2m	8.7	7.0	4.2	1.2	0.5	-	0.9	0.9
3m	11.6	9.4	5.8	1.5	0.6	-	1.5	1.5
4m	13.7	11.0	6.9	1.7	0.7	-	1.8	2.1
5m	15.8	12.6	8.0	1.9	0.8	-	2.3	2.7
6m	17.8	14.0	9.0	2.1	0.9	-	2.7	3.4
7m	19.5	15.1	9.6	2.2	0.9	-	3.0	3.8
8m	21.0	16.0	10.2	2.3	0.9	-	3.3	4.3
9m	22.4	16.8	10.6	2.3	1.0	-	3.6	4.7
10m	23.7	17.4	10.9	2.3	0.9	-	3.9	5.1
11m	24.8	17.9	11.1	2.2	0.9	-	4.1	5.4
12m	25.7	18.3	11.2	2.1	0.8	-	4.3	5.6

Receivers Moneyness (Strike - Fwd) (bp)

Option Expiry	Swap Tenor							
	1y	2y	3y	5y	7y	10y	20Y	30Y
1m	5.4	4.0	2.3	0.8	0.4	-	0.4	0.5
2m	7.9	5.9	3.5	1.0	0.5	-	0.9	0.9
3m	10.3	7.8	4.6	1.2	0.5	-	1.4	1.5
4m	12.0	8.9	5.3	1.3	0.6	-	1.7	2.1
5m	13.5	9.9	6.0	1.5	0.6	-	2.1	2.7
6m	14.9	10.8	6.7	1.6	0.7	-	2.5	3.3
7m	16.0	11.4	7.1	1.7	0.7	-	2.7	3.8
8m	16.9	12.0	7.4	1.7	0.7	-	3.0	4.2
9m	17.7	12.4	7.7	1.8	0.8	-	3.3	4.6
10m	18.3	12.8	7.9	1.7	0.7	-	3.5	4.9
11m	18.8	13.1	8.0	1.7	0.7	-	3.7	5.1
12m	19.2	13.3	8.0	1.6	0.6	-	3.9	5.4

Payers Total Pickup (Strike - Spot) (bp)

Option Expiry	Swap Tenor							
	1y	2y	3y	5y	7y	10y	20Y	30Y
1m	4.8	2.6	-0.1	-2.7	-3.0	-2.7	-0.8	-0.4
2m	7.1	3.2	-1.3	-5.5	-5.9	-5.4	-1.7	-0.9
3m	9.4	3.9	-2.3	-8.3	-8.7	-7.9	-2.4	-1.2
4m	10.8	3.5	-3.9	-11.2	-11.6	-10.3	-3.2	-1.5
5m	11.8	2.7	-6.0	-14.7	-14.9	-13.2	-4.2	-1.9
6m	12.7	1.8	-8.2	-17.8	-17.8	-15.7	-5.0	-2.1
7m	13.2	0.4	-10.6	-21.1	-21.0	-18.3	-6.0	-2.5
8m	13.2	-1.6	-13.7	-24.7	-24.2	-21.0	-6.9	-2.9
9m	13.2	-3.5	-16.4	-28.1	-27.3	-23.6	-7.9	-3.5
10m	12.6	-5.9	-19.8	-32.0	-30.8	-26.4	-9.0	-4.1
11m	11.7	-8.6	-23.2	-35.5	-34.0	-28.9	-9.9	-4.6
12m	10.6	-11.2	-26.5	-39.1	-37.3	-31.5	-11.0	-5.3

Receivers Total Pickup (Strike - Spot) (bp)

Option Expiry	Swap Tenor							
	1y	2y	3y	5y	7y	10y	20Y	30Y
1m	6.3	6.0	5.1	4.3	3.7	2.7	1.7	1.4
2m	9.4	9.7	9.1	7.7	6.9	5.4	3.5	2.7
3m	12.5	13.3	12.8	11.0	9.8	7.9	5.3	4.3
4m	14.9	16.4	16.1	14.2	12.9	10.3	6.8	5.7
5m	17.6	19.9	20.1	18.1	16.3	13.2	8.6	7.3
6m	20.0	23.0	23.8	21.5	19.4	15.7	10.2	8.8
7m	22.3	26.1	27.3	25.0	22.6	18.3	11.7	10.1
8m	24.7	29.5	31.3	28.7	25.9	21.0	13.2	11.4
9m	26.9	32.7	34.8	32.2	29.0	23.6	14.8	12.8
10m	29.4	36.1	38.6	36.0	32.4	26.4	16.4	14.0
11m	31.9	39.6	42.2	39.4	35.5	28.9	17.8	15.1
12m	34.3	42.8	45.7	42.8	38.7	31.5	19.3	16.3

Source: Nomura research

Appendix: Using the tables – easy peasy

Our method is exceptionally simple. Given that the10y is always ATMF and we have chosen to scale the notionals and PVs uniformly, we have now a very simple way to identify conditional trades. We will now be able to eyeball conditional trades merely by considering which columns we want to subtract from each other.

Fig. 5: Conditional EUR Bear Flattener Pickup to Forwards
Just the difference of two numbers

EUR 6m 2s10s Bear Flattener- Long 6m2y short 6m10y gives 14.0bp - 0.0bp = 14.0bp pickup to forwards

Payers Moneyness (Fwd - Strike) (bp)

Option Expiry		Swap Tenor							
		1y	2y	3y	5y	7y	10y	20Y	30Y
	1m	5.8	4.6	2.7	0.9	0.4	-	0.5	0.5
	2m	8.7	7.0	4.2	1.2	0.5	-	0.9	0.9
	3m	11.6	9.4	5.8	1.5	0.6	-	1.5	1.5
	4m	13.7	11.0	6.9	1.7	0.7	-	1.8	2.1
	5m	15.8	12.6	8.0	1.9	0.8	-	2.3	2.7
	6m	17.8	14.0	9.0	2.1	0.9	-	2.7	3.4
	7m	19.5	15.1	9.6	2.2	0.9	-	3.0	3.8
	8m	21.0	16.0	10.2	2.3	0.9	-	3.3	4.3
	9m	22.4	16.8	10.6	2.3	1.0	-	3.6	4.7
	10m	23.7	17.4	10.9	2.3	0.9	-	3.9	5.1
	11m	24.8	17.9	11.1	2.2	0.9	-	4.1	5.4
	12m	25.7	18.3	11.2	2.1	0.8	-	4.3	5.6

EUR 9m 1s7s Bear Flattener - Long 9m1y short 9m7y gives 22.4bp - 1.0bp = 21.5bp pickup to forwards

Source: Nomura research

For instance, in Figure 5, we see two trades: a EUR 6m 2s10s conditional bear flattener, which involves buying the 6m2y payer and selling the 6m10y payer. The pickup to forwards is merely 14bp – 0bp, meaning that the 10y strike is ATMF and the 2y strike is ATMF-14bp, i.e., an entry point 14bp steeper than the 6m forwards.

Correspondingly, we see in Figure 5 the EUR 9m 1s7s conditional bear flattener, which involves buying 9m1y payers ATMF-22.4bp and selling 9m7y payers ATMF-1bp, i.e., at an entry point of 22.4bp – 1.0bp or 21.5bp steeper than forwards (given small rounding errors). As we can see in Figures 1 and 2, these pickups to forwards are easily found merely by subtracting two numbers. Purists may complain that neither option is ATMF in this example. At the same time, we need not separately analyse every spread combination.

If we use the yield curve carry or corresponding payers or receivers total pickup, we will similarly be able to subtract two entries in the same row to get the pickup of a given expiry conditional bear flattener (or similarly using the Receivers tables, a conditional bull steepener).

Conditional butterflies are similarly easy, as we see in Figure 6. To get the moneyness or total pickup of a EUR 6m 3s7s30s conditional bear tightener butterfly (effectively long the belly in swaps, which is has a similar behaviour to putting on a flattener, often for a better pickup to forwards), we only have to scale the corresponding belly entry by -2 and add the entries for wings. We perform a calculation of total pickup this time, where the 6m expiry 3s10s30s can be seen to be put on at 6m3y at Spot - 8.2bp, 6m7y at Spot - 17.8bp, 6m30y at Spot - 2.1bp, leaving a total pickup of -8.2 + 2*(-17.8) - 2.1 = 25.4bp, a total positive carry for this bearish fly. Notionals are effectively dv01-neutral and 50-50

weighted. We can see that the conditional butterfly has a greater total pickup (and greater moneyness) than the corresponding conditional 3s10s flattener, making it somewhat more attractive.

Fig. 6: Conditional EUR Bear Flies

Simple as adding three numbers

Payers Total Pickup (Strike - Spot) (bp)

				Swap Tenor				
	1y	2y	3y	5y	7y	10y	20Y	30Y
1m	4.8	2.6	-0.1	-2.7	-3.0	-2.7	-0.8	-0.4
2m	7.1	3.2	-1.3	-5.5	-5.9	-5.4	-1.7	-0.9
3m	9.4	3.9	-2.3	-8.3	-8.7	-7.9	-2.4	-1.2
4m	10.8	3.5	-3.9	-11.2	-11.6	-10.3	-3.2	-1.5
5m	11.8	2.7	-6.0	-14.7	-14.9	-13.2	-4.2	-1.9
6m	12.7	1.8	-8.2	-17.8	-17.8	-15.7	-5.0	-2.1
7m	13.2	0.4	-10.6	-21.1	-21.0	-18.3	-6.0	-2.5
8m	13.2	-1.6	-13.7	-24.7	-24.2	-21.0	-6.9	-2.9
9m	13.2	-3.5	-16.4	-28.1	-27.3	-23.6	-7.9	-3.5
10m	12.6	-5.9	-19.8	-32.0	-30.8	-26.4	-9.0	-4.1
11m	11.7	-8.6	-23.2	-35.5	-34.0	-28.9	-9.9	-4.6
12m	10.6	-11.2	-26.5	-39.1	-37.3	-31.5	-11.0	-5.3

Option Expiry (row label, vertical)

EUR 6m 3s7s30s bear tightener fly (i.e., sell payer on belly, buy payers on wings) total pickup is (-8.2)bp - 2*(-17.8)bp + (-2.1)bp = 25.4bp

Source: Nomura research

Additivity is only possible in any given row, and we have not made any attempt to look at calendar spreads or other trades with multiple expiries in this report.

How it's done

We justify the use of the tables quite simply. The method is to take a $10m notional for the 10y and for every other tenor, we choose a scaled notional, i.e., $10m multiplied by the ratio of dv01s of 10y to the respective dv01, as we see in Figure 5. For the 10y swaption, we price an ATMF option and get the PV. For the other tails, we adjust the strikes so that they have the same PV as the corresponding 10y swaption. The *moneyness* of the underlying swaption is reported in the corresponding Moneyness table (e.g., in Figures 1 and 2) and similarly for the *yield curve carry* and *total pickup*.

Fig. 7: How it is done: keep 10y ATMF, scale notionals and PVs

Pickups are just additive in the end

6m Expiry		1y	2y	3y	5y	7y	10y	20Y	30Y
	Spot	0.27	0.38	0.64	1.45	2.15	2.80	3.57	3.74
	Fwd	**0.34**	**0.56**	**0.93**	**1.79**	**2.44**	**3.03**	**3.69**	**3.84**
	Swap PV01	1.0	2.0	3.0	4.9	6.6	9.0	15.0	19.0
	Notional traded	90,414,841	45,234,884	30,305,079	18,529,281	13,604,458	10,000,000	6,000,245	4,753,810
Payers	**Strike**	**0.10**	**0.32**	**0.74**	**1.74**	**2.43**	**ATMF**	**3.65**	**3.78**
	PV	219,394	219,394	219,394	219,394	219,394	219,394	219,394	219,394
	Moneyness	24.3	23.6	18.9	5.2	1.1	0.0	4.1	5.7
	Yield Curve Carry (Fwd - Spot)	7.2	18.0	28.4	34.2	29.1	22.6	12.6	9.6
	Total pickup	17.1	5.6	-9.4	-29.0	-28.0	-22.6	-8.5	-3.9
Receivers	**Strike**	**0.56**	**0.76**	**1.07**	**1.83**	**2.45**	**ATMF**	**3.73**	**3.89**
	PV	219,394	219,394	219,394	219,394	219,394	219,394	219,394	219,394
	Moneyness	22.2	20.0	14.5	3.8	0.8	0.0	3.6	5.4
	Yield Curve Carry (Fwd - Spot)	7.2	18.0	28.4	34.2	29.1	22.6	12.6	9.6
	Total pickup	29.4	38.0	42.9	38.1	29.9	22.6	16.2	15.0

Source: Nomura research

And, as we can tell the corresponding moneyness and carry and total pickup tables are now all additive. They are normalized for swaptions with underlying 10y swap being ATMF for ease, and obviously do not capture skew in all its detail. But we view this as a first stage in identifying interesting conditional trades, allowing us to look at a single table and eyeball all conditional curve trades in one fell swoop.

We plan to reproduce this report on a biweekly basis in exactly this same form, highlighting any major changes that have taken place in the intervening weeks.

Appendix A-1

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