

Interest Rate Volatility: Identifying optimal swaption structures

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EUR structures

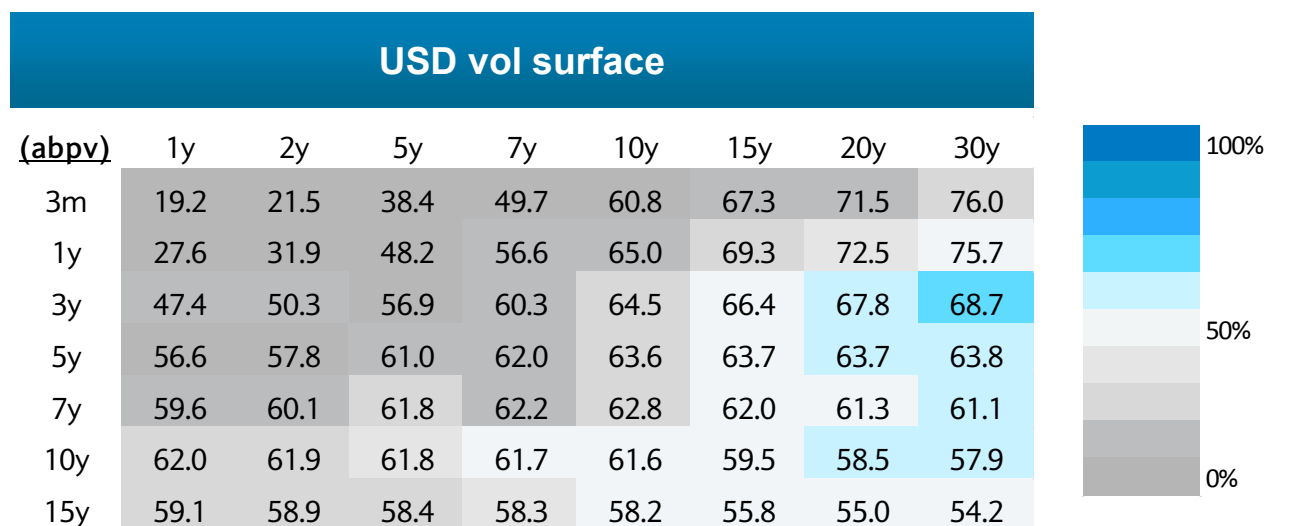
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GBP structures

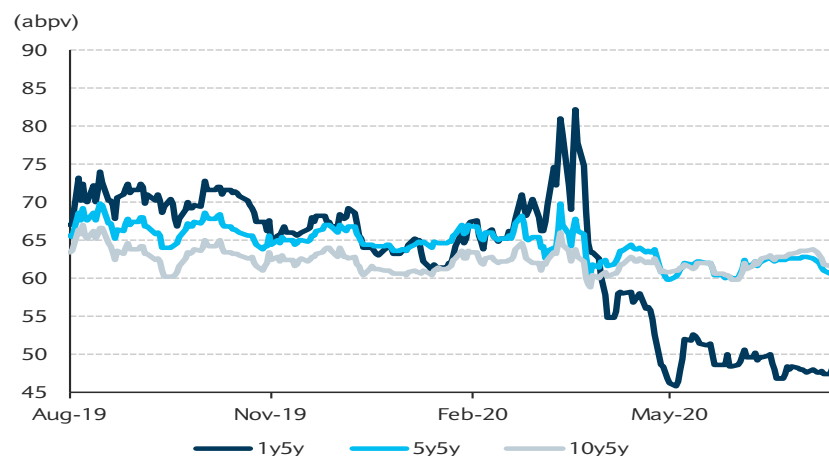
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Vol & skew overview

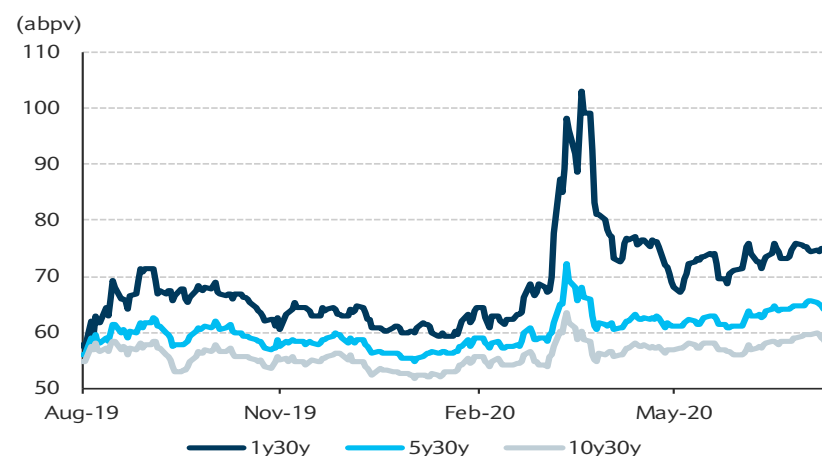
USD vol surface: Top-left vols remain cheap



USD 1y*5y remains at a 1y low while...

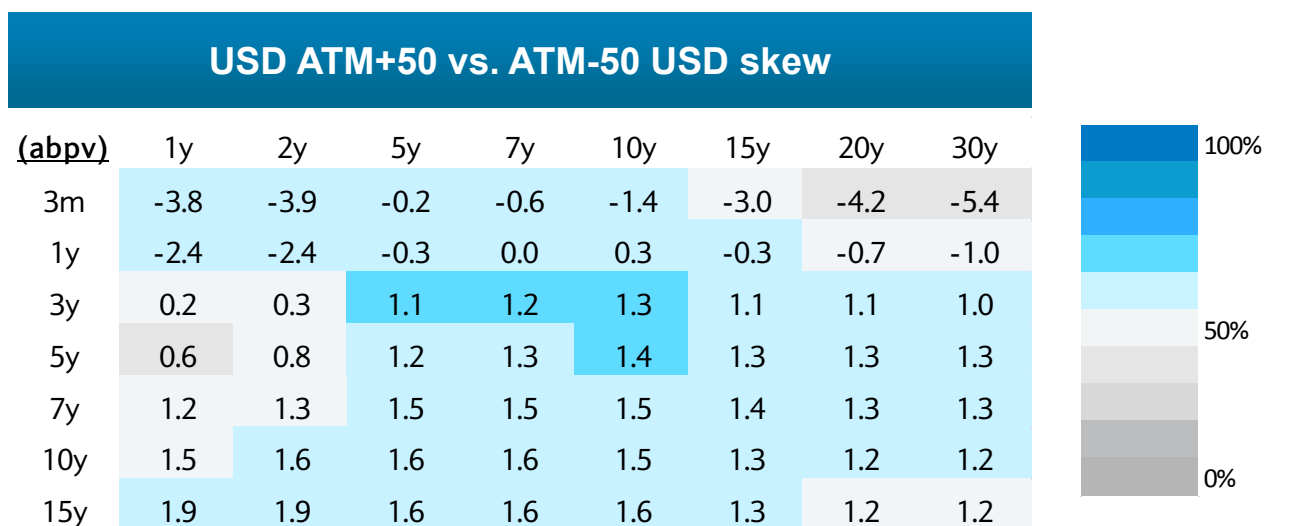


...USD 1y*30y vol is still higher than pre-COVID 19 levels

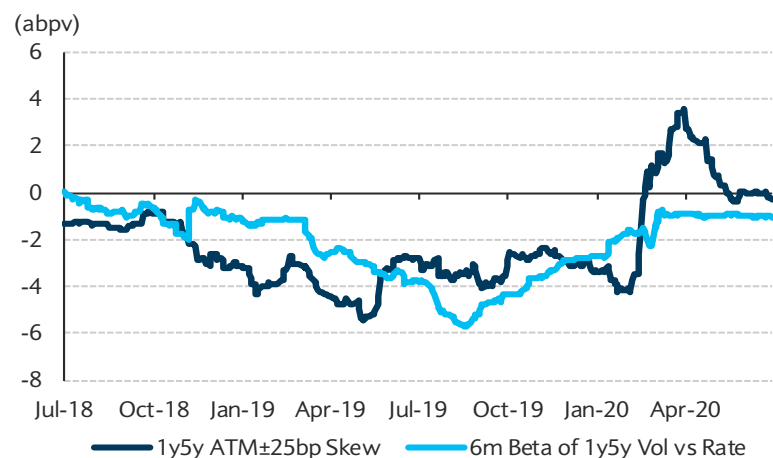


Note: As of 15 July 2020. Source for table and charts: Barclays Research

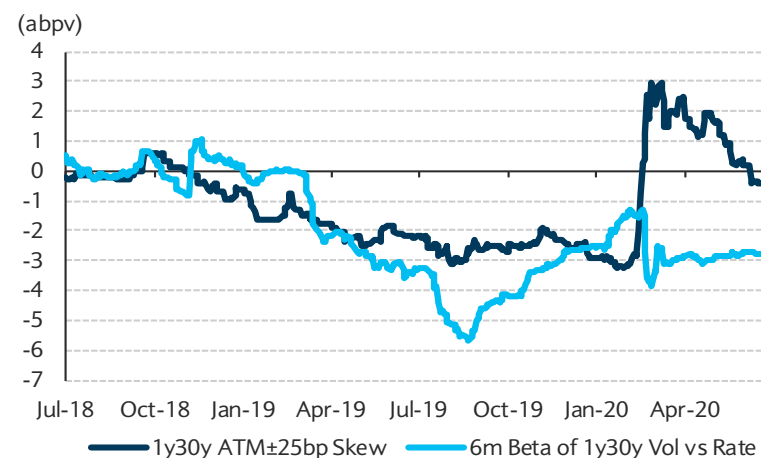
USD vol skew: Skews across the surface are somewhat rich



USD 1y*5y skew looks reasonably priced while...

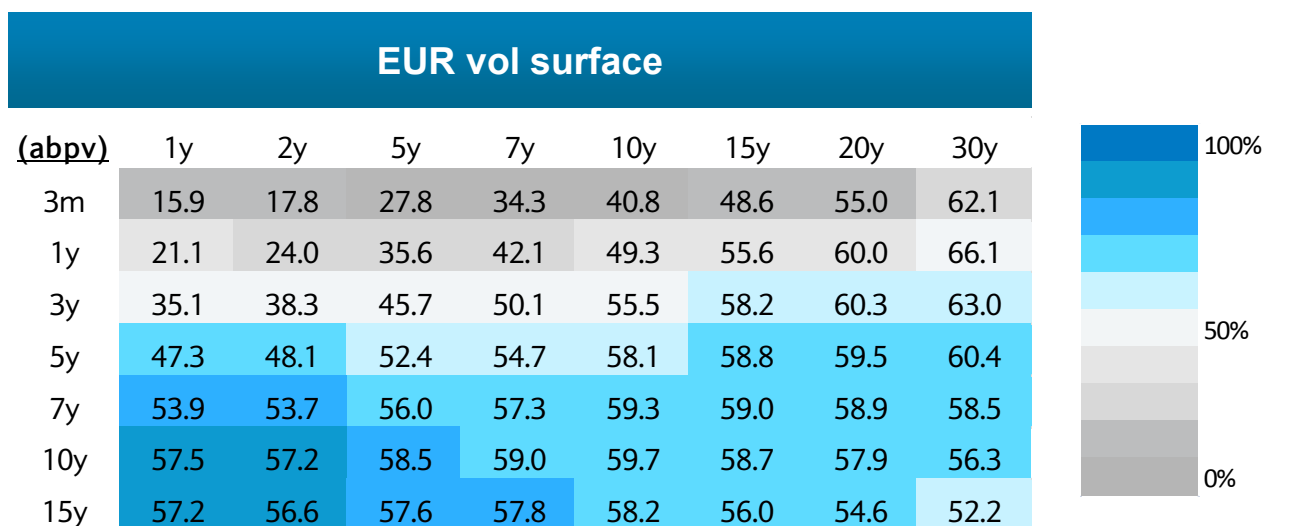


...1y*30y skew looks rich compared with realized rate vol relationship



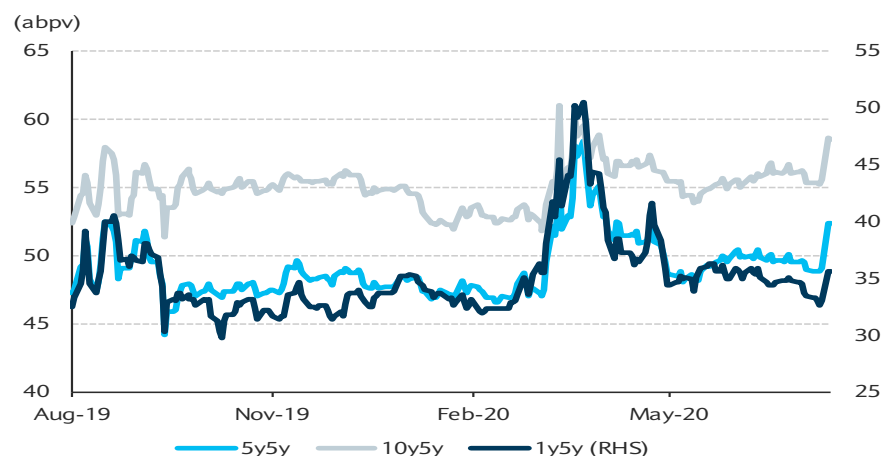
Note: 6m Beta of vol vs rate is normalized to be comparable with 50bp wide skew and then multiplied by 0.5. As of 15 July 2020. Source for table and charts: Barclays Research

EUR vol surface: Mid-to-long expiry vols are high

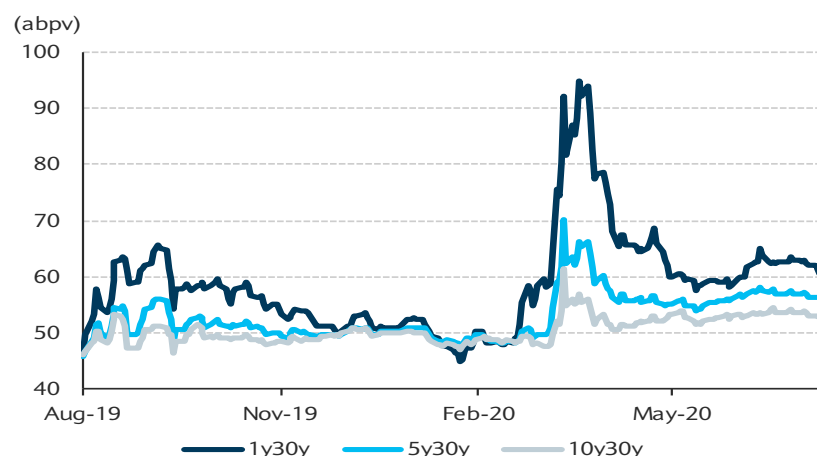


Note: Richness/Cheapness is determined using the expression $(\text{current value} - 1\text{y min.}) / (1\text{y max} - 1\text{y min})$

EUR 1y*5y vols and...

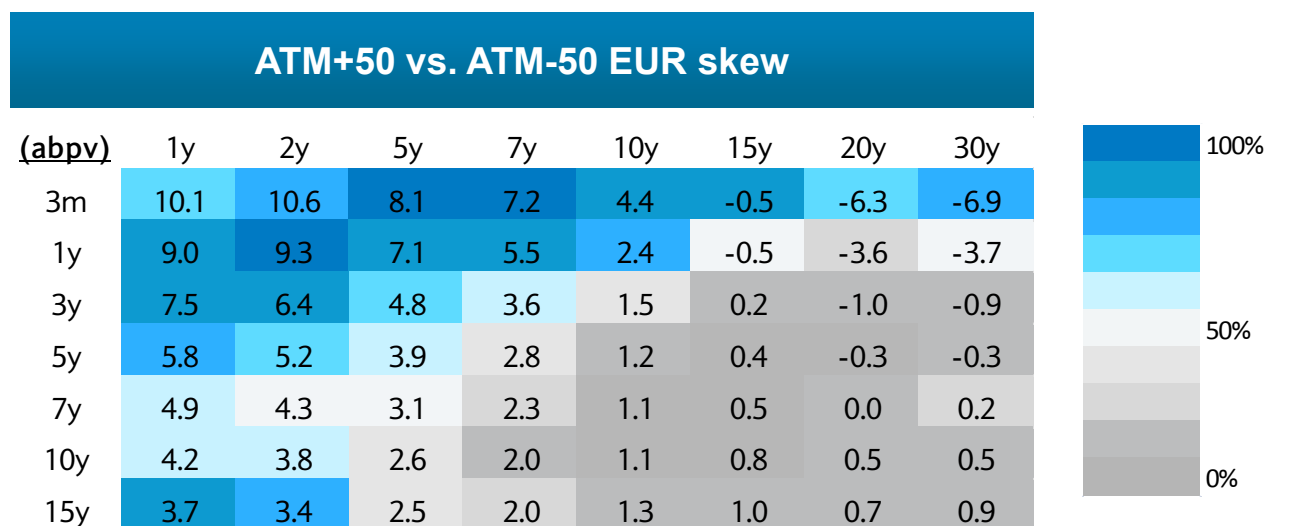


...EUR 1y*30y vols have bounced higher recently



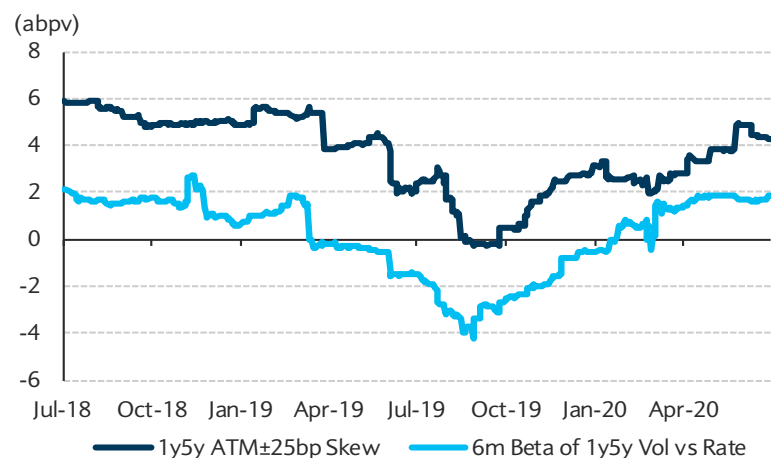
Note: As of 15 July 2020. Source for table and charts: Barclays Research

EUR vol skew: Short expiry skews remain rich

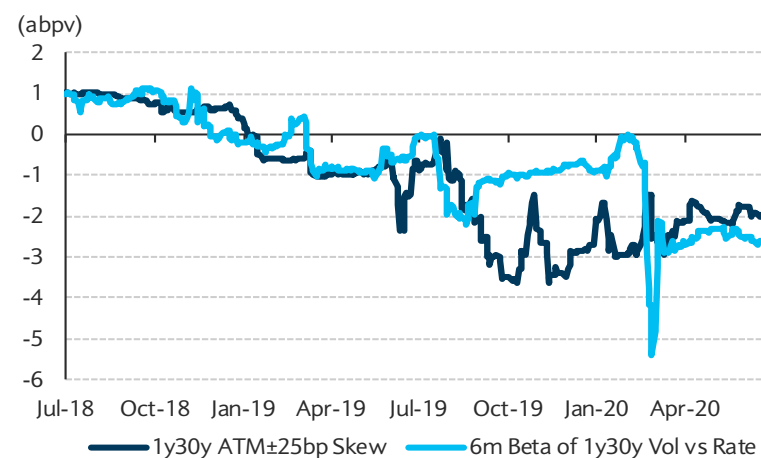


Note: Richness/Cheapness is determined using the expression $(\text{current value} - 1y \text{ min.}) / (1y \text{ max} - 1y \text{ min})$

Payer versus receiver skew in EUR 1y*5y remains fairly rich...

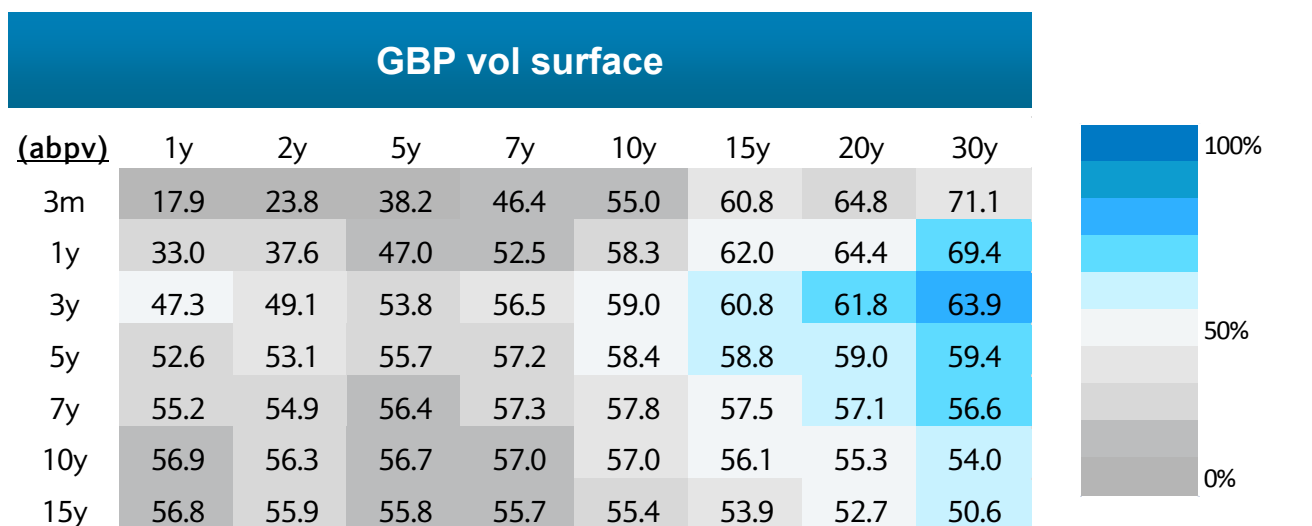


...while EUR 1y*30y skew looks reasonably compared with the realised rate-vol relationship



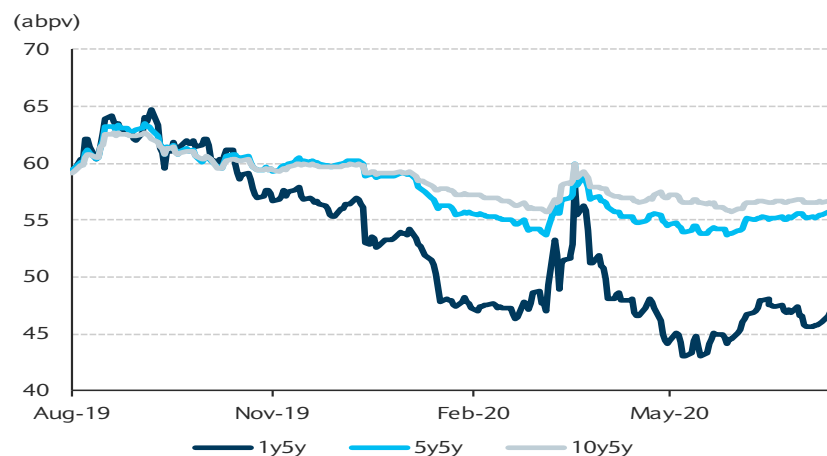
Note: 6m Beta of vol vs rate is normalized to be comparable with 50bp wide skew and then multiplied by 0.5. As of 15 July 2020. Source for table and charts: Barclays Research

GBP vol surface: Vols on long tenors are high

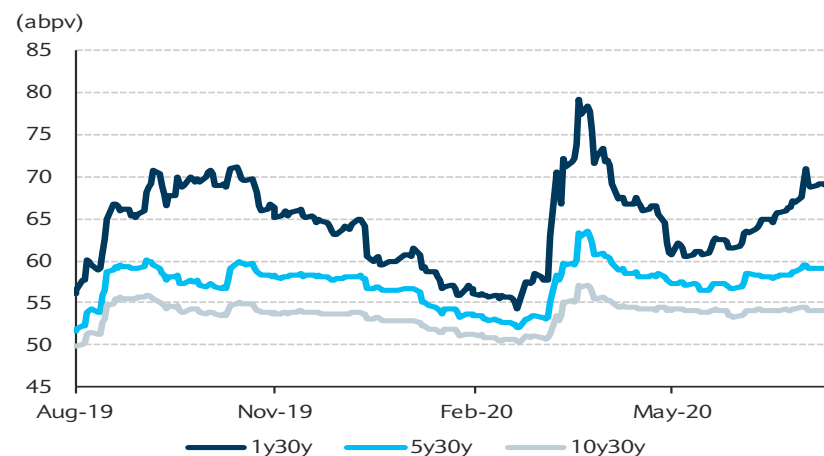


Note: Richness/Cheapness is determined using the expression $(\text{current value} - 1y \text{ min.}) / (1y \text{ max} - 1y \text{ min})$

GBP 1y*5y vol remains low while...

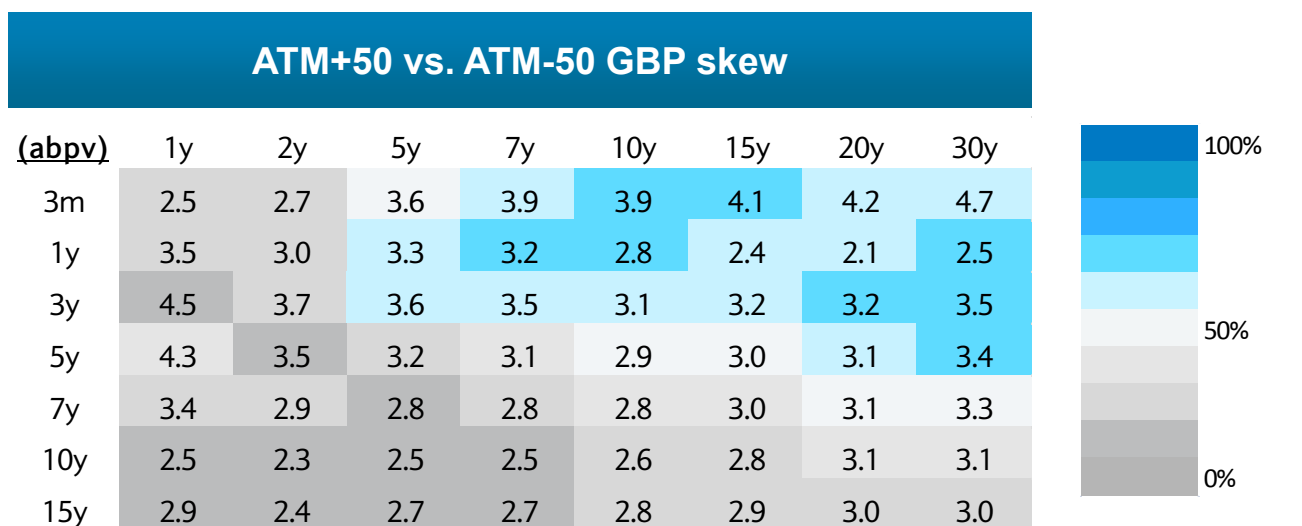


...GBP 1y*30y vol has richened sizeably over the past month



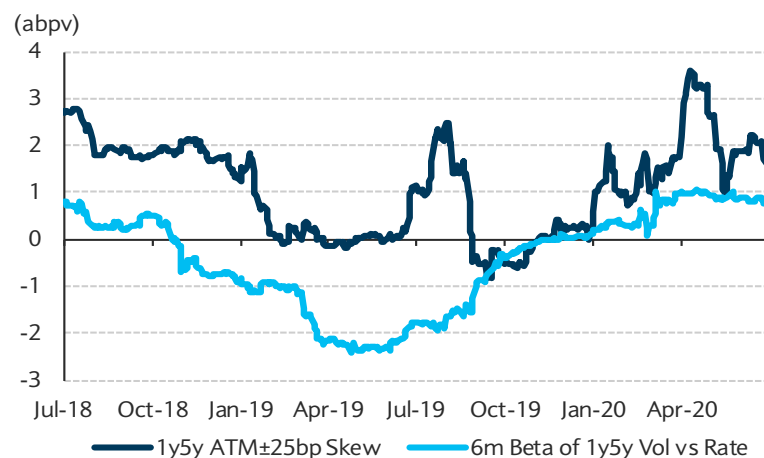
Note: As of 15 July 2020. Source for table and charts: Barclays Research

GBP vol skew: Top-right skews are slightly rich

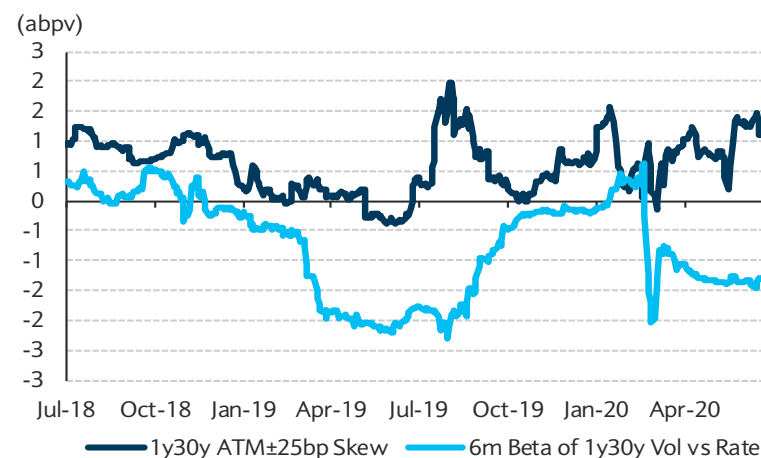


Note: Richness/Cheapness is determined using the expression (current value – 1y min.) / (1y max – 1y min)

While skew in GBP 1y*5y appears to be reasonably priced...



...GBP 1y*30y appears rich compared with realised rate-vol relationship



Note: 6m Beta of vol vs rate is normalized to be comparable with 50bp wide skew and then multiplied by 0.5. As of 15 July 2020. Source for table and charts: Barclays Research

Opportunities in forward vol space

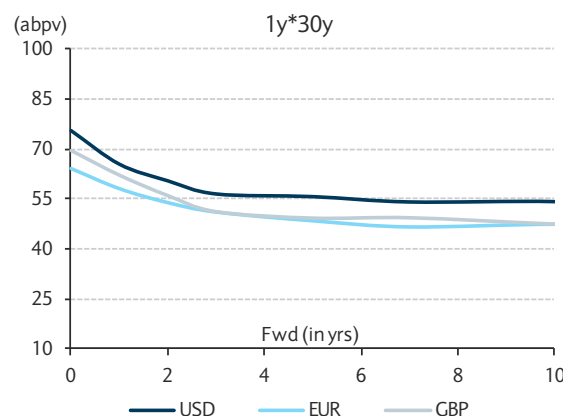
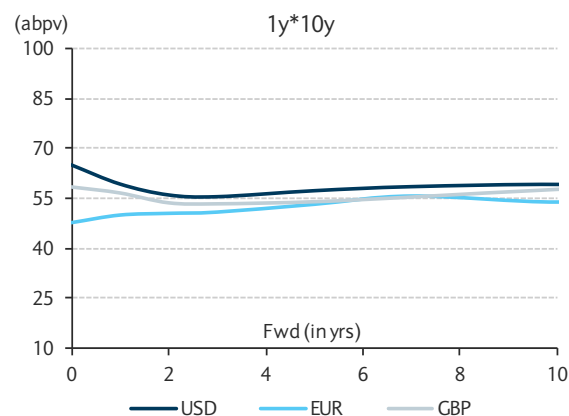
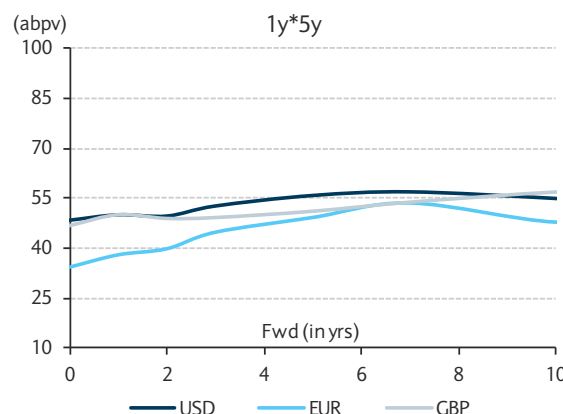
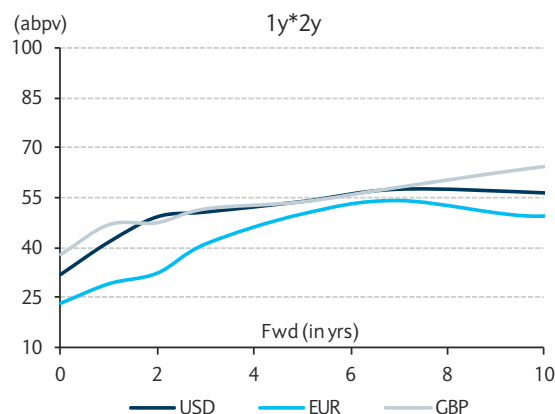
Forward vol calculations and comparison

- Forward vols, ie, implied vols starting at future dates, offer a way to analyse how the market expects the implied vol surface to evolve.
- **Calculation:** Forward vols are usually not quoted in the market, but can be calculated by the option triangulation method using mid-curve vols.¹
- **Comparison:** We plot the forward vols for short (1y) and long (5y) expiry options on various tenors, across USD, EUR and GBP. Opportunities are identified by looking at the slope of the forward vol curves.
 - **Steep upward slope:** Implies that vols are richer in the forward space. If the vol surface remains unchanged, then forward vols are likely to roll down to lower spot vol levels. Selling forward vols is, therefore, more attractive.
 - **Inverted slope:** Implies that vols are cheaper in the forward space. If the vol surface remains unchanged, then forward vols are likely to roll up to higher spot vol levels. Buying forward vols is, therefore, more attractive.
- Dislocations or views in forward vols are typically traded using calendar spreads and option triangles, although pure forward vol options are also occasionally traded.

Note: ¹As an example, 5yf 5y*10y forward vol can be approximated by subtracting the time-weighted variance of 5y*(5yf 10y) mid-curve options from the variance of 10y*10y options. 5y*(5yf 10y) mid-curve vol, in turn, can be calculated using its two constituent vanilla implied vols, 5y*5y and 5y*15y. An implied correlation between 5yf 5y and 5yf 15y rates is required for the mid-curve vol calculation, which we have assumed to be 100%. Note that this assumption can lead to an underestimation of the mid-curve vol, and, hence, an overestimation of the forward vol.

Forward vol surface analysis offers RV opportunities

Forward vol curves for 1y expiry options



USD	2y	5y	10y	30y	EUR	2y	5y	10y	30y
1y	31	47	64	74	1y	24	36	49	66
1yf 1y	42	50	59	66	1yf 1y	28	38	50	58
2yf 1y	50	49	56	60	2yf 1y	33	40	50	54
3yf 1y	50	52	55	56	3yf 1y	39	44	51	51
4yf 1y	58	58	55	51	4yf 1y	43	47	52	50

GBP	2y	5y	10y	30y
1y	38	47	58	69
1yf 1y	46	50	56	62
2yf 1y	47	49	54	56
3yf 1y	50	49	53	51
4yf 1y	53	51	53	50

0% 50% 100%

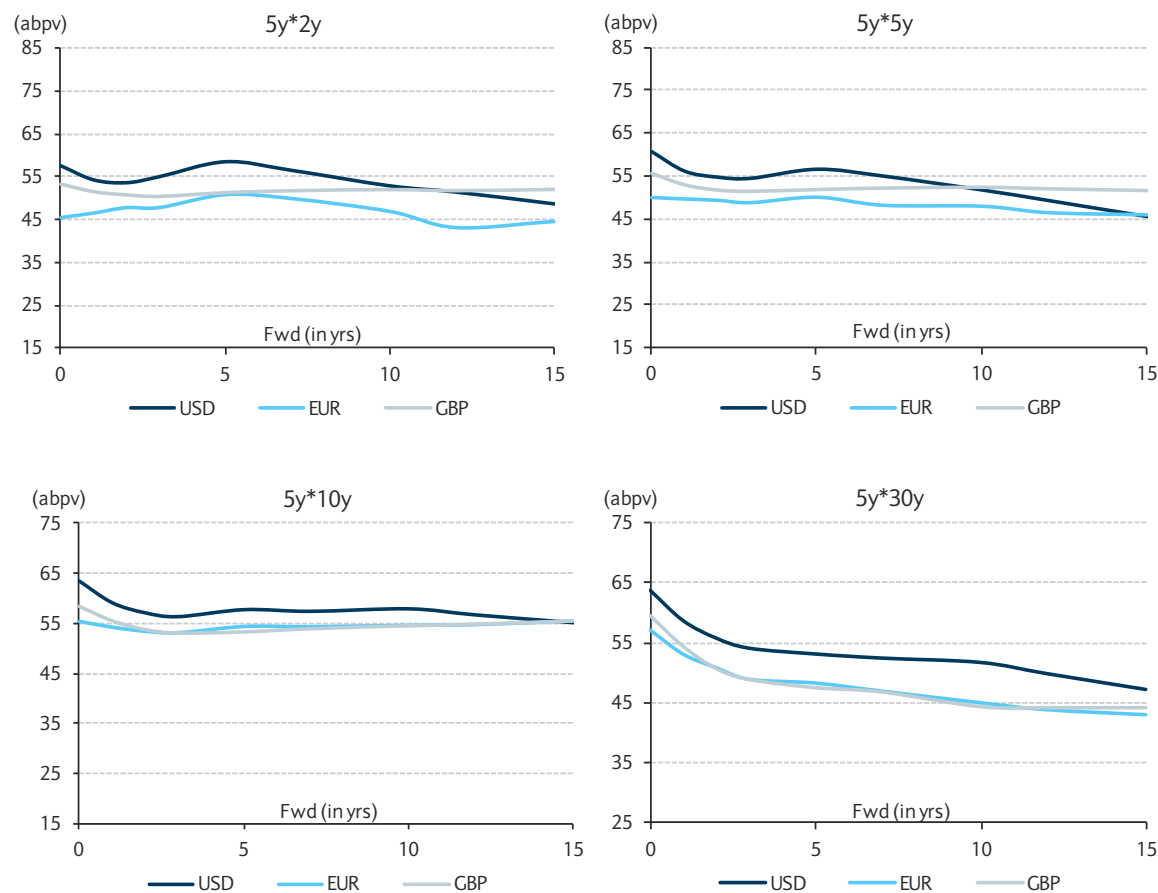
(Richness/Cheapness as been determined by as (current value – 1ymin) / (1y max – 1y min))

- 1y*2y forward vol remains upward sloping in EUR

Note: As of 15 July 2020. Source for tables and charts: Barclays Research

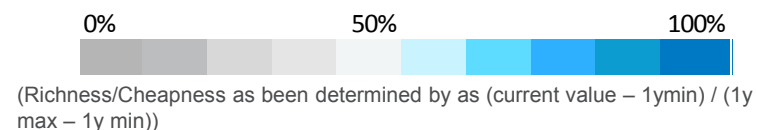
Forward vol surface analysis offers RV opportunities

Forward vol curves for 5y expiry options



USD	2y	5y	10y	30y	EUR	2y	5y	10y	30y
5y	58	61	63	63	5y	48	52	58	60
5yf 5y	59	57	58	53	5yf 5y	51	50	54	49
10yf 5y	53	52	58	52	10yf 5y	47	48	54	45
15yf 5y	49	46	55	47	15yf 5y	44	46	55	43

GBP	2y	5y	10y	30y
5y	53	56	58	59
5yf 5y	52	52	54	49
10yf 5y	52	52	54	45
15yf 5y	51	51	55	44



Note: As of 15 July 2020. Source for tables and charts: Barclays Research

Identification of optimal option triangle structures

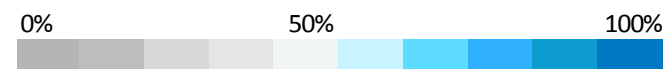
Methodology

- We analyze option triangle structures in USD, EUR and GBP on the following metrics:
 - **Forward vol level (in abpv):** The level is calculated using the spot implied vol surface for the respective currency. We format the forward vols based on how rich (in blue) or cheap (in grey) they are compared with their respective two-year histories.
 - **Price of the option triangle (cents):** When buying an option triangle, a low initial premium outlay (in grey), compared with its own two-year history, is preferred. Conversely, when selling an option triangle, a higher premium intake (in blue) is desirable.
 - **1y carry (cents):** Carry is calculated under a scenario in which the rates curve and vol surface remain unchanged over time, and forward rates and vols roll to spot. We format the carry based on how high or low it is compared with its own two-year history. A higher carry (in blue), from a historical context, is desirable when buying an option triangle.
 - **P&L in 1y, if underlying rates stay at their strikes (as % of initial premium):** An option triangle has a short gamma exposure. Therefore, barring any gains from a breakdown in correlation of underlying rates, an option triangle typically has its maximum P&L if the forward rates get realised, ie, underlying rates remain at their respective strikes.
 - **P&L in 1y, normalised for option expiries:** The above-mentioned P&L depends on the expiries of the different options in the triangle. Therefore, to make the P&L numbers comparable across various structures, we normalise them for the expiries of the options. The resulting normalised P&L is then largely a function of the roll-down in the vol surface. When buying an option triangle, a higher normalised P&L is desirable (in green).
- Based on these metrics, we identify wedges that are **cheap** on a relative value basis (in blue) and those that are **rich** (in grey).

Option triangle structures in USD

USD Option Triangles								
Long Legs	Short Leg	fwd vol	Fwd vol level (abpv)	Price of option triangle (cts)	1y carry (cts)	1y P&L, if rates stay at their strikes (as % of initial cost)	1y P&L, normalised for expiries of options	
1y1y	2y1y	1y2y	1yf 1y1y	40	14	13	0.50	0.36
2y1y	3y1y	2y2y	2yf 1y1y	47	12	2	0.20	0.65
1y2y	3y1y	1y3y	1yf 2y1y	45	25	8	0.74	0.80
2y2y	4y1y	2y3y	2yf 2y1y	50	22	2	0.12	0.47
1y3y	4y1y	1y4y	1yf 3y1y	51	39	11	0.68	0.93
2y3y	5y1y	2y4y	2yf 3y1y	54	32	5	0.19	0.88
1y1y	2y2y	1y3y	1yf 1y2y	42	27	20	0.86	0.61
2y1y	3y2y	2y3y	2yf 1y2y	49	25	1	0.10	0.31
1y2y	3y2y	1y4y	1yf 2y2y	49	54	17	0.78	0.83
2y2y	4y2y	2y4y	2yf 2y2y	51	43	9	0.25	0.99
1y3y	4y2y	1y5y	1yf 3y2y	51	72	36	0.92	1.25
2y3y	5y2y	2y5y	2yf 3y2y	53	60	11	0.20	0.91
1y2y	3y5y	1y7y	1yf 2y5y	52	127	116	1.37	1.47
3y2y	5y5y	3y7y	3yf 2y5y	56	97	0	-0.02	-0.10
1y5y	6y5y	1y10y	1yf 5y5y	56	265	237	0.99	1.83
5y5y	10y5y	5y10y	5yf 5y5y	57	176	2	-0.00	-0.04
1y10y	11y5y	1y15y	1yf 10y5y	59	463	270	0.57	1.55
5y10y	15y5y	5y15y	5yf 10y5y	56	300	16	0.04	0.63

USD Option Triangles								
Long Legs	Short Leg	fwd vol	Fwd vol level (abpv)	Price of option triangle (cts)	1y carry (cts)	1y P&L, if rates stay at their strikes (as % of initial cost)	1y P&L, normalised for expiries of options	
1y5y	6y10y	1y15y	1yf 5y10y	59	567	491	0.90	1.66
5y5y	10y10y	5y15y	5yf 5y10y	58	361	8	0.01	0.13
10y5y	15y10y	10y15y	10yf 5y10y	58	290	6	0.01	0.34
1y10y	11y10y	1y20y	1yf 10y10y	59	886	553	0.60	1.64
5y10y	15y10y	5y20y	5yf 10y10y	55	581	23	0.03	0.49
10y10y	20y10y	10y20y	10yf 10y10y	54	477	10	0.02	0.50
1y5y	6y20y	1y25y	1yf 5y20y	58	1051	1026	0.97	1.79
5y5y	10y20y	5y25y	5yf 5y20y	52	574	32	0.04	0.54
10y5y	15y20y	10y25y	10yf 5y20y	50	433	15	0.03	0.59
1y10y	11y20y	1y30y	1yf 10y20y	55	1542	1088	0.67	1.84
5y10y	15y20y	5y30y	5yf 10y20y	50	954	52	0.05	0.70
10y10y	20y20y	10y30y	10yf 10y20y	47	703	31	0.04	0.96



(Note: Richness/Cheapness as been determined by as (current value – 2ymin) / (2y max – 2y min))

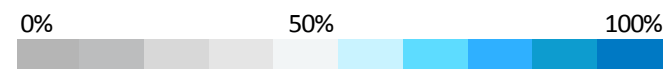
Note: For 1y P&L, normalised for expiries: Consider an option triangle where the longer expiry is t_2 years and the shorter expiry is t_1 years. If the normal implied vol surface is flat across expiries and tenors, then the P&L of the trade in t_{carry} years (as a fraction of the initial cost), under the conditions of the forward rates getting realised, is approximately equal to $[\sqrt{t_2 - t_{carry}} - \sqrt{t_1 - t_{carry}}] / [\sqrt{t_2} - \sqrt{t_1}] - 1$. We therefore divide the P&L by this factor to normalise them for expiries.

The forward vols have been calculated from the vanilla implied vol surfaces. 1y P&L, if rates stay at their strikes, has been calculated assuming constant implied vols after roll-down. Normalized 1y P&L numbers have been formatted based on how rich/cheap they are compared with other points. As of 15 July 2020. Source: Barclays Research

Option triangle structures in EUR

EUR Option Triangles									
Long Legs			Short Leg	fwd vol	Fwd vol level (abpv)	Price of option triangle (cts)	1y carry (cts)	1y P&L, if rates stay at their strikes (as % of initial cost)	1y P&L, normalised for expiries of options
1y1y	2y1y	1y2y	1yf 1y1y	27	9	8	0.85	0.60	
2y1y	3y1y	2y2y	2yf 1y1y	34	9	0	0.00	0.02	
1y2y	3y1y	1y3y	1yf 2y1y	32	18	9	0.70	0.75	
2y2y	4y1y	2y3y	2yf 2y1y	36	15	3	0.23	0.92	
1y3y	4y1y	1y4y	1yf 3y1y	39	30	11	0.59	0.80	
2y3y	5y1y	2y4y	2yf 3y1y	45	31	-0	-0.00	-0.01	
1y1y	2y2y	1y3y	1yf 1y2y	29	18	17	1.14	0.80	
2y1y	3y2y	2y3y	2yf 1y2y	32	15	3	0.23	0.75	
1y2y	3y2y	1y4y	1yf 2y2y	35	39	20	0.78	0.84	
2y2y	4y2y	2y4y	2yf 2y2y	39	34	5	0.15	0.62	
1y3y	4y2y	1y5y	1yf 3y2y	41	63	27	0.66	0.90	
2y3y	5y2y	2y5y	2yf 3y2y	45	59	4	0.08	0.36	
1y2y	3y5y	1y7y	1yf 2y5y	42	115	80	1.00	1.08	
3y2y	5y5y	3y7y	3yf 2y5y	46	86	8	0.09	0.55	
1y5y	6y5y	1y10y	1yf 5y5y	50	272	146	0.68	1.26	
5y5y	10y5y	5y10y	5yf 5y5y	50	171	12	0.05	0.67	
1y10y	11y5y	1y15y	1yf 10y5y	54	485	224	0.47	1.28	
5y10y	15y5y	5y15y	5yf 10y5y	54	346	21	0.04	0.63	

EUR Option Triangles									
Long Legs			Short Leg	fwd vol	Fwd vol level (abpv)	Price of option triangle (cts)	1y carry (cts)	1y P&L, if rates stay at their strikes (as % of initial cost)	1y P&L, normalised for expiries of options
1y5y	6y10y	1y15y	1yf 5y10y	54	604	350	0.65	1.21	
5y5y	10y10y	5y15y	5yf 5y10y	54	398	27	0.05	0.64	
10y5y	15y10y	10y15y	10yf 5y10y	55	306	20	0.05	1.07	
1y10y	11y10y	1y20y	1yf 10y10y	55	973	493	0.48	1.32	
5y10y	15y10y	5y20y	5yf 10y10y	54	687	42	0.04	0.67	
10y10y	20y10y	10y20y	10yf 10y10y	53	552	28	0.04	1.13	
1y5y	6y20y	1y25y	1yf 5y20y	54	1136	894	0.79	1.45	
5y5y	10y20y	5y25y	5yf 5y20y	51	697	38	0.04	0.48	
10y5y	15y20y	10y25y	10yf 5y20y	49	506	29	0.04	0.91	
1y10y	11y20y	1y30y	1yf 10y20y	52	1761	1090	0.59	1.61	
5y10y	15y20y	5y30y	5yf 10y20y	48	1133	85	0.06	0.91	
10y10y	20y20y	10y30y	10yf 10y20y	46	869	53	0.05	1.41	



(Note: Richness/Cheapness as been determined by as (current value – 2ymin) / (2y max – 2y min))

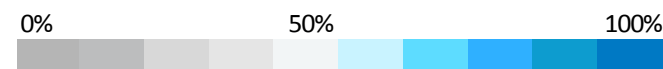
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Option triangle structures in GBP

GBP Option Triangles									
Long Legs			Short Leg	fwd vol	Fwd vol level (abpv)	Price of option triangle (cts)	1y carry (cts)	1y P&L, if rates stay at their strikes (as % of initial cost)	1y P&L, normalise d for expiries of options
1y1y	2y1y	1y2y	1yf 1y1y		41	13	19	1.02	0.72
2y1y	3y1y	2y2y	2yf 1y1y		44	11	2	0.24	0.79
1y2y	3y1y	1y3y	1yf 2y1y		49	30	10	0.58	0.63
2y2y	4y1y	2y3y	2yf 2y1y		49	22	8	0.36	1.44
1y3y	4y1y	1y4y	1yf 3y1y		50	38	21	0.74	1.01
2y3y	5y1y	2y4y	2yf 3y1y		51	31	7	0.22	1.02
1y1y	2y2y	1y3y	1yf 1y2y		47	32	28	0.88	0.62
2y1y	3y2y	2y3y	2yf 1y2y		47	23	9	0.44	1.46
1y2y	3y2y	1y4y	1yf 2y2y		49	58	30	0.78	0.84
2y2y	4y2y	2y4y	2yf 2y2y		49	43	15	0.36	1.43
1y3y	4y2y	1y5y	1yf 3y2y		50	74	51	0.86	1.18
2y3y	5y2y	2y5y	2yf 3y2y		50	60	14	0.24	1.10
1y2y	3y5y	1y7y	1yf 2y5y		52	140	120	1.09	1.17
3y2y	5y5y	3y7y	3yf 2y5y		50	88	17	0.19	1.17
1y5y	6y5y	1y10y	1yf 5y5y		53	272	204	0.81	1.50
5y5y	10y5y	5y10y	5yf 5y5y		52	174	10	0.05	0.62
1y10y	11y5y	1y15y	1yf 10y5y		55	467	236	0.49	1.34
5y10y	15y5y	5y15y	5yf 10y5y		54	328	18	0.04	0.63

GBP Option Triangles									
Long Legs			Short Leg	fwd vol	Fwd vol level (abpv)	Price of option triangle (cts)	1y carry (cts)	1y P&L, if rates stay at their strikes (as % of initial cost)	1y P&L, normalise d for expiries of options
1y5y	6y10y	1y15y	1yf 5y10y		56	575	431	0.77	1.42
5y5y	10y10y	5y15y	5yf 5y10y		54	361	22	0.05	0.59
10y5y	15y10y	10y15y	10yf 5y10y		55	304	8	0.02	0.50
1y10y	11y10y	1y20y	1yf 10y10y		55	916	483	0.51	1.39
5y10y	15y10y	5y20y	5yf 10y10y		53	642	30	0.04	0.61
10y10y	20y10y	10y20y	10yf 10y10y		54	559	8	0.02	0.43
1y5y	6y20y	1y25y	1yf 5y20y		55	1084	925	0.85	1.57
5y5y	10y20y	5y25y	5yf 5y20y		50	639	37	0.05	0.61
10y5y	15y20y	10y25y	10yf 5y20y		50	529	16	0.03	0.65
1y10y	11y20y	1y30y	1yf 10y20y		52	1631	1027	0.61	1.68
5y10y	15y20y	5y30y	5yf 10y20y		49	1081	55	0.05	0.72
10y10y	20y20y	10y30y	10yf 10y20y		49	934	16	0.02	0.45



(Note: Richness/Cheapness as been determined by as (current value – 2ymin) / (2y max – 2y min))

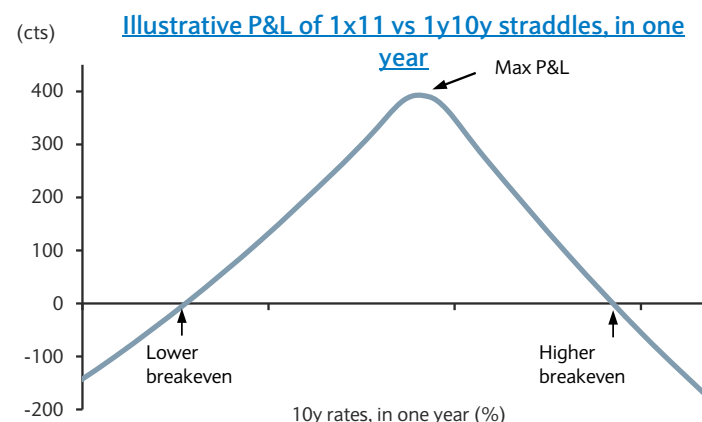
Note For 1y P&L, normalised for expiries: Consider an option triangle where the longer expiry is t_2 years and the shorter expiry is t_1 years. If the normal implied vol surface is flat across expiries and tenors, then the P&L of the trade in t_{carry} years (as a fraction of the initial cost), under the conditions of the forward rates getting realised, is approximately equal to $[\sqrt{t_2 - t_{carry}} - \sqrt{t_1 - t_{carry}}] / [\sqrt{t_2} - \sqrt{t_1}] - 1$. We therefore divide the P&L by this factor to normalise them for expiries.

The forward vols have been calculated from the vanilla implied vol surfaces. 1y P&L, if rates stay at their strikes, has been calculated assuming constant implied vols after roll-down. Normalized 1y P&L numbers have been formatted based on how rich/cheap they are compared with other points. As of 15 July 2020. Source: Barclays Research

Selection of cap-floor versus swaption straddle wedges

Methodology

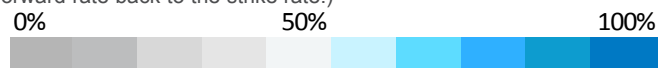
- We analyze the attractiveness of cap-floor versus swaption ATM straddle wedges in USD, EUR and GBP on the following metrics:
 - **Cap-floor versus swaption vol difference:** When buying the wedge, a lower vol difference is desirable, as it implies a lower upfront cost. We compare the vol differences with respect to their own two-year history (**blue:** historically high, **grey:** historically low).
 - **Price of the wedge (in cts):** A cheaper wedge, from a historical perspective, is desirable when looking to buy cap-floor straddles. Conversely, an expensive structure implies that it may be more attractive to sell. We compare the prices with respect to their own two-year history (**blue:** historically rich, **grey:** cheap).
 - **1y carry (bp):** Calculated under a scenario in which the curve remains unchanged over time, forward rates and vols roll to spot. A higher carry is generally desirable when buying the wedge, as it implies a higher expected return under the unchanged curve scenario.
 - **Maximum P&L in 1y:** Since the trade has short gamma exposure, its max. P&L is if rates remain close to the strikes (see figure). A higher max. P&L, normalised by the initial premium, is generally desirable when buying a wedge. We calculate this max. P&L by parallel shifts in the rate curve, assuming vols (swaption & cap-floor) remain constant, after roll-down.
 - **Breakeven range in 1y:** A long wedge typically profits if rates remain within a range (see figure). Therefore, a wide range, compared with the history of the underlying rates, is generally desirable when buying the wedge. We show these ranges, calculated assuming constant vols after the roll-down, with the help of charts.
- Based on these metrics, we identify wedges that are **cheap** on a relative value basis (**in blue**) and those that are **rich** (**in grey**).



USD cap-floor versus swaption straddle wedges

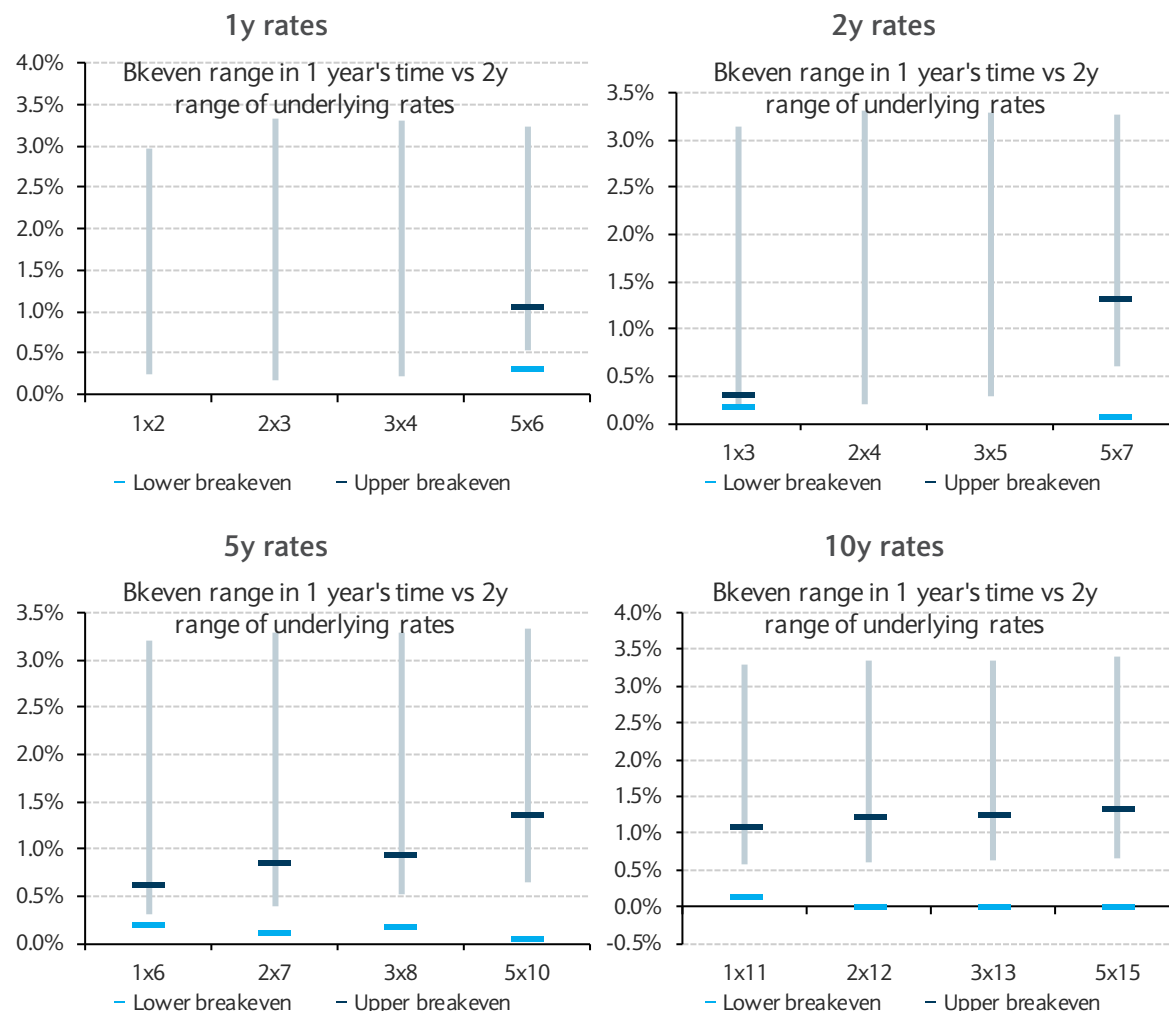
USD Cap-Floor versus Swaption Straddle Wedge				
Wedge	Vol difference (abpv)	Price (cts)	1y carry in bps (of swap DV01)	Max P&L in 1y / Initial Prem **
1x2 vs 1y1y	2.7	7	-0.8	0.49
1x3 vs 1y2y	4.5	29	4.6	0.35
1x6 vs 1y5y	2.0	179	9.6	0.49
1x11 vs 1y10y	-6.7	604	31.6	0.62
2x3 vs 2y1y	2.5	8	-1.1	-0.14
2x4 vs 2y2y	3.0	29	-0.3	-0.00
2x7 vs 2y5y	0.9	160	4.5	0.14
2x12 vs 2y10y	-5.2	512	10.3	0.18
3x4 vs 3y1y	2.6	9	-1.6	-0.16
3x5 vs 3y2y	2.6	30	-0.3	-0.01
3x8 vs 3y5y	1.1	151	2.4	0.07
3x13 vs 3y10y	-3.7	460	5.7	0.11
5x6 vs 5y1y	2.6	10	0.5	0.06
5x7 vs 5y2y	2.1	29	2.1	0.14
5x10 vs 5y5y	0.5	127	3.0	0.11
5x15 vs 5y10y	-2.0	396	3.1	0.07

(** Max P&L has been calculated using constant vols, after roll-down. To calculate this max P&L, we parallel bump the rates curve to bring the forward rate back to the strike rate.)



(Note: Richness/Cheapness as been determined by as (current value – 2ymin) / (2y max – 2y min))

Note: All cap-floor straddles have been calculated vs 3m Libor. All swaption straddles have also been calculated vs 3m Libor. As of 15 July 2020. Source: Barclays Research

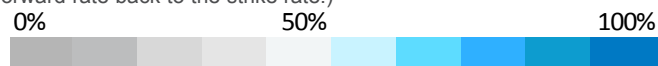


(Note: Breakeven range has been calculated assuming constant swaption and cap-floor vols and parallel rate shifts in the rate curve, after roll-down. Where breakeven ranges have not been shown, the structure does not have positive MTM for any levels of rates, assuming vol levels remain unchanged after roll-down.)

EUR cap-floor versus swaption straddle wedges

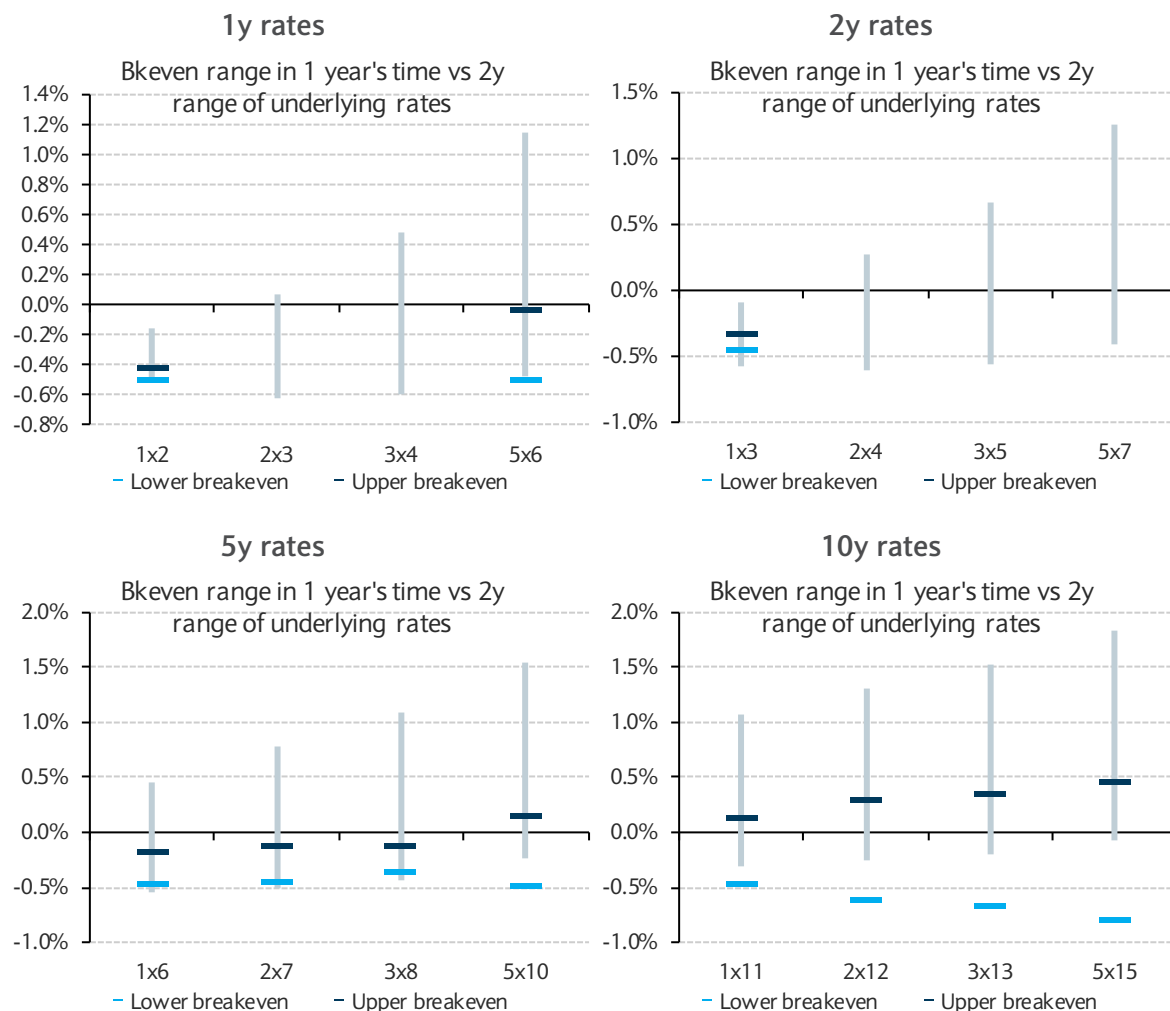
EUR Cap-Floor versus Swaption Straddle Wedge				
Wedge	Vol difference (abpv)	Price (cts)	1y carry in bp (of swap DV01)	Max P&L in 1y / Initial Prem **
1x2 vs 1y1y	1.8	5	0.8	0.54
1x3 vs 1y2y	2.6	20	3.2	0.45
1x6 vs 1y5y	3.0	140	8.8	0.42
1x11 vs 1y10y	0.6	580	19.9	0.44
2x3 vs 2y1y	2.3	6	-1.2	-0.20
2x4 vs 2y2y	2.7	22	-0.9	-0.08
2x7 vs 2y5y	2.9	138	1.2	0.04
2x12 vs 2y10y	-0.5	515	7.8	0.15
3x4 vs 3y1y	2.2	7	-0.8	-0.12
3x5 vs 3y2y	2.9	26	-1.1	-0.09
3x8 vs 3y5y	3.0	141	0.3	0.01
3x13 vs 3y10y	-0.8	476	5.1	0.10
5x6 vs 5y1y	1.9	8	0.2	0.03
5x7 vs 5y2y	3.0	30	-0.6	-0.04
5x10 vs 5y5y	2.8	140	1.0	0.03
5x15 vs 5y10y	-0.6	423	3.3	0.07

(** Max P&L has been calculated using constant vols, after roll-down. To calculate this max P&L, we parallel bump the rates curve to bring the forward rate back to the strike rate.)



(Note: Richness/Cheapness as been determined by as (current value – 2ymin) / (2y max – 2y min))

Note: All cap-floor straddles have been calculated vs 3m Euribor. For swaptions, 1y tenor options are vs 3m Euribor, while rest are vs 6m Euribor. As of 15 July 2020. Source: Barclays Research

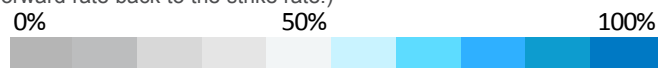


(Note: Breakeven range has been calculated assuming constant swaption and cap-floor vols and parallel rate shifts in the rate curve, after roll-down. Where breakeven ranges have not been shown, the structure does not have positive MTM for any levels of rates, assuming vol levels remain unchanged after roll-down.)

GBP cap-floor versus swaption straddle wedges

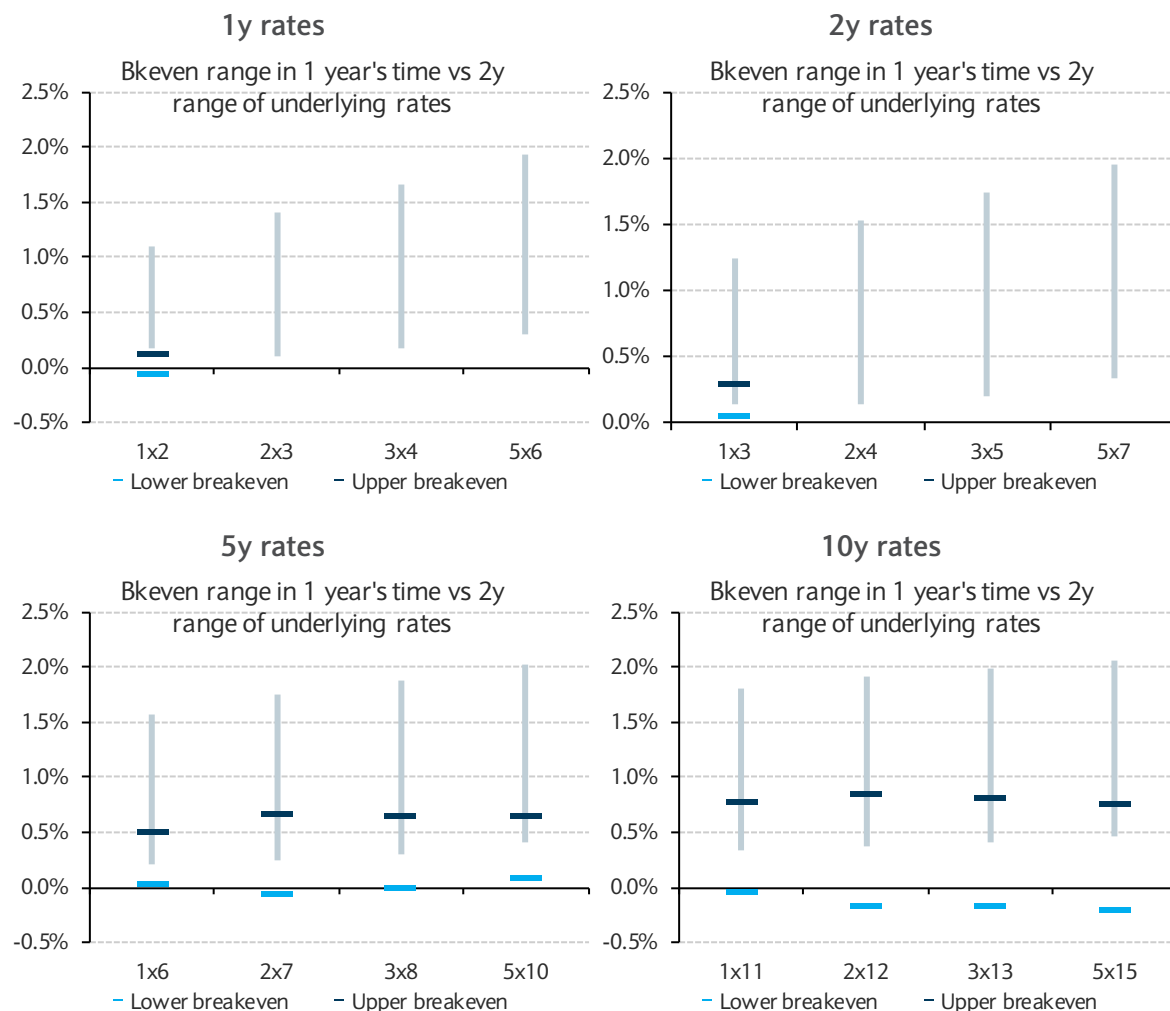
GBP Cap-Floor versus Swaption Straddle Wedge				
Wedge	Vol difference (abpv)	Price (cts)	1y carry in bp (of swap DV01)	Max P&L in 1y / Initial Prem **
1x2 vs 1y1y	0.4	5	1.1	1.10
1x3 vs 1y2y	1.6	25	8.6	0.71
1x6 vs 1y5y	2.2	167	14.4	0.55
1x11 vs 1y10y	-2.7	587	28.1	0.54
2x3 vs 2y1y	2.3	7	-2.5	-0.34
2x4 vs 2y2y	2.2	26	-0.8	-0.03
2x7 vs 2y5y	1.2	148	4.1	0.14
2x12 vs 2y10y	-2.0	516	7.6	0.14
3x4 vs 3y1y	2.9	8	-1.4	-0.16
3x5 vs 3y2y	2.9	28	-0.6	-0.04
3x8 vs 3y5y	1.8	142	1.7	0.06
3x13 vs 3y10y	-0.6	483	3.7	0.07
5x6 vs 5y1y	3.2	10	-0.6	-0.06
5x7 vs 5y2y	3.6	30	-0.3	-0.02
5x10 vs 5y5y	2.7	138	0.5	0.02
5x15 vs 5y10y	1.2	449	1.4	0.03

(** Max P&L has been calculated using constant vols, after roll-down. To calculate this max P&L, we parallel bump the rates curve to bring the forward rate back to the strike rate.)



(Note: Richness/Cheapness as been determined by as (current value - 2ymin) / (2y max - 2y min))

Note: All cap-floor straddles have been calculated vs 3m Libor. For swaptions, 1y tenor options are vs 3m Libor, while rest are vs 6m Libor. As of 15 July 2020. Source: Barclays Research



(Note: Breakeven range has been calculated assuming constant swaption and cap-floor vols and parallel rate shifts in the rate curve, after roll-down. Where breakeven ranges have not been shown, the structure does not have positive MTM for any levels of rates, assuming vol levels remain unchanged after roll-down.)

Optimal expiry/tenor selection for zero-cost receiver spreads

Methodology

- We construct zero-cost 1x2 and 1x1.5 receiver spreads for up to 3y expiries along the USD, EUR and GBP surfaces.
 - For each spread, one leg is struck ATM
 - The lower strike is selected so that the trade is zero cost
- We use the following metrics to evaluate each structure. The metrics are shown in the tables that follow.
 - **3m/1y Carry:** Calculated under a scenario in which the curve remains unchanged over time, forward rates and vols roll to spot. A higher carry is desirable, as it implies a higher expected return under the unchanged curve scenario (in Blue). We calculate 3m carry for options with less than 1y expiry and 1y carry for longer expiry options.
 - **Rate below which trade loses over a 3m/1y horizon:** Should be low compared with lowest levels for that particular rate over the past one/two years (in Blue). This metric evaluates the trade on the basis of its historical downside.
 - **Breakeven rate on expiry:** Should be low compared with the current spot rate (in Grey). This metric evaluates the trade, from a terminal perspective, on the basis of its downside relative to current levels.
- We highlight tenor/expiry combinations that do the best on all three metrics.

USD zero-cost receiver spreads (short expiry)

USD 1x2 Receiver spreads								USD 1x1.5 Receiver spreads							
Option	Fwd rate	Moneyne ss of lower strike (ATM +)	Analysis on expiry		Analysis in three months			Option	Fwd rate	Moneyne ss of lower strike (ATM +)	Analysis on expiry		Analysis in three months		
			Breakeven rate on expiry	Spot Rate	3m carry (bp of underlying swap)	Rate Level at which trade loses in 3m	Lowest rate level in last 1yr				Breakeven rate on expiry	Spot Rate	3m carry (bp of underlying swap)	Rate Level at which trade loses in 3m	Lowest rate level in last 1yr
3m1y	0.24%	-6	0.12%	0.26%	0.0	0.12%	0.24%	3m1y	0.24%	-4	0.12%	0.26%	0.0	0.12%	0.24%
3m2y	0.22%	-6	0.10%	0.23%	0.0	0.10%	0.21%	3m2y	0.22%	-4	0.10%	0.23%	0.0	0.10%	0.21%
3m5y	0.34%	-10	0.14%	0.32%	1.9	0.14%	0.31%	3m5y	0.34%	-6	0.16%	0.32%	1.9	0.16%	0.31%
3m10y	0.63%	-16	0.31%	0.61%	2.0	0.31%	0.59%	3m10y	0.63%	-10	0.33%	0.61%	1.7	0.33%	0.59%
3m20y	0.84%	-20	0.44%	0.83%	0.5	0.44%	0.64%	3m20y	0.84%	-12	0.48%	0.83%	0.6	0.48%	0.64%
3m30y	0.87%	-21	0.45%	0.86%	0.2	0.45%	0.63%	3m30y	0.87%	-13	0.48%	0.86%	0.1	0.48%	0.63%
6m1y	0.22%	-9	0.04%	0.26%	0.6	0.09%	0.22%	6m1y	0.22%	-5	0.07%	0.26%	0.5	0.11%	0.22%
6m2y	0.21%	-10	0.01%	0.23%	1.2	0.06%	0.20%	6m2y	0.21%	-6	0.03%	0.23%	0.8	0.07%	0.20%
6m5y	0.36%	-16	0.04%	0.32%	2.7	0.13%	0.32%	6m5y	0.36%	-10	0.06%	0.32%	1.7	0.13%	0.32%
6m10y	0.65%	-24	0.17%	0.61%	3.5	0.33%	0.59%	6m10y	0.65%	-14	0.23%	0.61%	2.2	0.36%	0.59%
6m20y	0.85%	-28	0.29%	0.83%	3.7	0.49%	0.64%	6m20y	0.85%	-17	0.34%	0.83%	2.3	0.51%	0.64%
6m30y	0.87%	-29	0.29%	0.86%	3.9	0.51%	0.63%	6m30y	0.87%	-18	0.33%	0.86%	2.4	0.52%	0.63%
9m1y	0.20%	-12	-0.04%	0.26%	1.1	0.05%	0.20%	9m1y	0.20%	-7	-0.01%	0.26%	0.7	0.07%	0.20%
9m2y	0.21%	-14	-0.07%	0.23%	1.5	0.03%	0.19%	9m2y	0.21%	-8	-0.03%	0.23%	1.0	0.05%	0.19%
9m5y	0.39%	-21	-0.03%	0.32%	2.4	0.15%	0.34%	9m5y	0.39%	-13	0.00%	0.32%	1.5	0.16%	0.34%
9m10y	0.67%	-29	0.09%	0.61%	2.8	0.41%	0.60%	9m10y	0.67%	-18	0.13%	0.61%	1.7	0.41%	0.60%
9m20y	0.86%	-33	0.20%	0.83%	2.9	0.59%	0.64%	9m20y	0.86%	-20	0.26%	0.83%	1.7	0.60%	0.64%
9m30y	0.88%	-35	0.18%	0.86%	2.9	0.60%	0.63%	9m30y	0.88%	-21	0.25%	0.86%	1.7	0.61%	0.63%

Note: Rate level at which trade loses in 1y has been calculated under assumptions of constant vol. As of 15 July 2020. Source: Barclays Research

USD zero-cost receiver spreads (mid expiry)

USD 1x2 Receiver spreads								USD 1x1.5 Receiver spreads							
Option	Fwd rate	Moneyne ss of lower strike (ATM +)	Analysis on expiry		Analysis in one year			Option	Fwd rate	Moneyne ss of lower strike (ATM +)	Analysis on expiry		Analysis in one year		
			Breakeven rate on expiry	Spot Rate	1y carry (bp of underlying swap)	Rate Level at which trade loses in 1y	Lowest rate level in last 2 yrs				Breakeven rate on expiry	Spot Rate	1y carry (bp of underlying swap)	Rate Level at which trade loses in 1y	Lowest rate level in last 2 yrs
1y1y	0.19%	-15	-0.11%	0.26%	0.0	-0.11%	0.24%	1y1y	0.19%	-9	-0.08%	0.26%	0.0	-0.08%	0.24%
1y2y	0.22%	-17	-0.12%	0.22%	0.0	-0.12%	0.21%	1y2y	0.22%	-11	-0.11%	0.22%	0.0	-0.11%	0.21%
1y5y	0.41%	-25	-0.09%	0.32%	8.6	-0.09%	0.31%	1y5y	0.41%	-15	-0.04%	0.32%	8.7	-0.04%	0.31%
1y10y	0.67%	-33	0.01%	0.60%	7.9	0.01%	0.59%	1y10y	0.67%	-20	0.07%	0.59%	7.7	0.07%	0.59%
1y20y	0.85%	-38	0.09%	0.82%	3.2	0.09%	0.64%	1y20y	0.85%	-23	0.16%	0.82%	3.3	0.16%	0.64%
1y30y	0.87%	-39	0.09%	0.85%	2.0	0.09%	0.63%	1y30y	0.87%	-24	0.15%	0.84%	1.7	0.15%	0.63%
2y1y	0.24%	-29	-0.34%	0.26%	6.1	-0.26%	0.17%	2y1y	0.24%	-17	-0.27%	0.26%	4.1	-0.22%	0.17%
2y2y	0.31%	-32	-0.33%	0.22%	7.3	-0.24%	0.20%	2y2y	0.30%	-19	-0.27%	0.22%	4.7	-0.19%	0.20%
2y5y	0.53%	-39	-0.25%	0.32%	7.4	-0.03%	0.39%	2y5y	0.53%	-23	-0.16%	0.32%	4.5	0.01%	0.39%
2y10y	0.76%	-46	-0.16%	0.60%	6.7	0.20%	0.61%	2y10y	0.76%	-28	-0.08%	0.59%	4.1	0.23%	0.61%
2y20y	0.89%	-50	-0.11%	0.82%	6.2	0.34%	0.65%	2y20y	0.89%	-30	-0.01%	0.82%	3.9	0.37%	0.65%
2y30y	0.89%	-51	-0.13%	0.85%	5.9	0.37%	0.63%	2y30y	0.89%	-31	-0.04%	0.84%	3.7	0.38%	0.63%
3y1y	0.37%	-43	-0.49%	0.26%	7.6	-0.23%	0.22%	3y1y	0.37%	-26	-0.41%	0.26%	4.6	-0.20%	0.22%
3y2y	0.45%	-45	-0.45%	0.22%	7.2	-0.13%	0.29%	3y2y	0.45%	-27	-0.36%	0.22%	4.2	-0.09%	0.29%
3y5y	0.66%	-49	-0.32%	0.32%	5.8	0.16%	0.52%	3y5y	0.66%	-30	-0.24%	0.32%	3.4	0.18%	0.52%
3y10y	0.84%	-56	-0.28%	0.60%	5.1	0.38%	0.64%	3y10y	0.84%	-34	-0.18%	0.59%	3.0	0.40%	0.64%
3y20y	0.93%	-58	-0.23%	0.82%	4.7	0.52%	0.66%	3y20y	0.93%	-36	-0.15%	0.82%	2.8	0.52%	0.66%
3y30y	0.91%	-59	-0.27%	0.85%	4.5	0.52%	0.64%	3y30y	0.91%	-36	-0.17%	0.84%	2.7	0.53%	0.64%

Note: Rate level at which trade loses in 1y has been calculated under assumptions of constant vol. As of 15 July 2020. Source: Barclays Research

EUR zero-cost receiver spreads (short expiry)

EUR 1x2 Receiver spreads								EUR 1x1.5 Receiver spreads							
Option	Fwd rate	Moneyne ss of lower strike (ATM +)	Analysis on expiry		Analysis in three months			Option	Fwd rate	Moneyne ss of lower strike (ATM +)	Analysis on expiry		Analysis in three months		
			Breakeven rate on expiry	Spot Rate	3m carry (bp of underlying swap)	Rate Level at which trade loses in 3m	Lowest rate level in last 1yr				Breakeven rate on expiry	Spot Rate	3m carry (bp of underlying swap)	Rate Level at which trade loses in 3m	Lowest rate level in last 1yr
3m1y	-0.46%	-4	-0.54%	-0.45%	0.0	-0.54%	-0.57%	3m1y	-0.46%	-3	-0.55%	-0.45%	0.0	-0.55%	-0.57%
3m2y	-0.39%	-5	-0.49%	-0.38%	0.0	-0.49%	-0.57%	3m2y	-0.39%	-3	-0.48%	-0.38%	0.0	-0.48%	-0.57%
3m5y	-0.34%	-7	-0.48%	-0.35%	0.2	-0.48%	-0.55%	3m5y	-0.34%	-4	-0.46%	-0.35%	0.5	-0.46%	-0.55%
3m10y	-0.17%	-11	-0.39%	-0.18%	1.0	-0.39%	-0.32%	3m10y	-0.17%	-7	-0.38%	-0.18%	0.9	-0.38%	-0.32%
3m20y	0.06%	-16	-0.26%	0.05%	0.3	-0.26%	-0.12%	3m20y	0.06%	-10	-0.24%	0.05%	0.1	-0.24%	-0.12%
3m30y	0.00%	-18	-0.36%	0.00%	0.1	-0.36%	-0.24%	3m30y	0.00%	-11	-0.33%	0.00%	0.0	-0.33%	-0.24%
6m1y	-0.46%	-6	-0.58%	-0.45%	0.6	-0.54%	-0.64%	6m1y	-0.46%	-4	-0.58%	-0.45%	0.4	-0.54%	-0.64%
6m2y	-0.39%	-7	-0.53%	-0.38%	1.1	-0.49%	-0.60%	6m2y	-0.39%	-4	-0.51%	-0.38%	0.7	-0.48%	-0.60%
6m5y	-0.34%	-11	-0.56%	-0.35%	2.0	-0.49%	-0.55%	6m5y	-0.34%	-7	-0.55%	-0.35%	1.2	-0.49%	-0.55%
6m10y	-0.15%	-17	-0.49%	-0.18%	2.9	-0.41%	-0.30%	6m10y	-0.15%	-10	-0.45%	-0.18%	1.8	-0.38%	-0.30%
6m20y	0.06%	-24	-0.42%	0.05%	3.1	-0.27%	-0.11%	6m20y	0.06%	-14	-0.36%	0.05%	2.0	-0.24%	-0.11%
6m30y	0.00%	-27	-0.54%	0.00%	3.3	-0.36%	-0.24%	6m30y	0.00%	-16	-0.48%	0.00%	2.1	-0.33%	-0.24%
9m1y	-0.47%	-7	-0.61%	-0.45%	1.0	-0.54%	-0.67%	9m1y	-0.47%	-5	-0.62%	-0.45%	0.5	-0.55%	-0.67%
9m2y	-0.39%	-9	-0.57%	-0.38%	1.1	-0.49%	-0.61%	9m2y	-0.39%	-5	-0.54%	-0.38%	0.7	-0.47%	-0.61%
9m5y	-0.33%	-14	-0.61%	-0.35%	1.6	-0.47%	-0.54%	9m5y	-0.33%	-9	-0.60%	-0.35%	1.0	-0.47%	-0.54%
9m10y	-0.14%	-21	-0.56%	-0.18%	2.2	-0.34%	-0.29%	9m10y	-0.14%	-13	-0.53%	-0.18%	1.3	-0.34%	-0.29%
9m20y	0.07%	-29	-0.51%	0.05%	2.3	-0.19%	-0.11%	9m20y	0.07%	-17	-0.44%	0.05%	1.4	-0.17%	-0.11%
9m30y	0.01%	-33	-0.65%	0.00%	2.3	-0.27%	-0.24%	9m30y	0.01%	-19	-0.56%	0.00%	1.5	-0.25%	-0.24%

Note: Rate level at which trade loses in 1y has been calculated under assumptions of constant vol. As of 15 July 2020. Source: Barclays Research

EUR zero-cost receiver spreads (mid expiry)

EUR 1x2 Receiver spreads								EUR 1x1.5 Receiver spreads							
Option	Fwd rate	Moneyne ss of lower strike (ATM +)	Analysis on expiry		Analysis in one year			Option	Fwd rate	Moneyne ss of lower strike (ATM +)	Analysis on expiry		Analysis in one year		
			Breakeven rate on expiry	Spot Rate	1y carry (bp of underlying swap)	Rate Level at which trade loses in 1y	Lowest rate level in last 2 yrs				Breakeven rate on expiry	Spot Rate	1y carry (bp of underlying swap)	Rate Level at which trade loses in 1y	Lowest rate level in last 2 yrs
1y1y	-0.48%	-10	-0.68%	-0.45%	0.0	-0.68%	-0.57%	1y1y	-0.48%	-6	-0.66%	-0.45%	0.0	-0.66%	-0.57%
1y2y	-0.40%	-11	-0.62%	-0.38%	0.0	-0.62%	-0.57%	1y2y	-0.40%	-7	-0.61%	-0.38%	0.0	-0.61%	-0.57%
1y5y	-0.32%	-17	-0.66%	-0.35%	2.9	-0.66%	-0.55%	1y5y	-0.32%	-10	-0.62%	-0.35%	3.1	-0.62%	-0.55%
1y10y	-0.13%	-25	-0.63%	-0.19%	5.4	-0.63%	-0.32%	1y10y	-0.13%	-15	-0.58%	-0.19%	5.5	-0.58%	-0.32%
1y20y	0.07%	-33	-0.59%	0.04%	1.8	-0.59%	-0.12%	1y20y	0.07%	-19	-0.50%	0.04%	2.2	-0.50%	-0.12%
1y30y	0.00%	-36	-0.72%	0.00%	0.2	-0.72%	-0.24%	1y30y	0.00%	-21	-0.63%	0.00%	0.4	-0.63%	-0.24%
2y1y	-0.45%	-17	-0.79%	-0.45%	4.2	-0.74%	-0.69%	2y1y	-0.45%	-11	-0.78%	-0.45%	2.6	-0.73%	-0.69%
2y2y	-0.36%	-20	-0.76%	-0.38%	5.0	-0.70%	-0.61%	2y2y	-0.36%	-12	-0.72%	-0.38%	3.2	-0.67%	-0.61%
2y5y	-0.26%	-27	-0.80%	-0.35%	5.6	-0.66%	-0.51%	2y5y	-0.26%	-16	-0.74%	-0.35%	3.5	-0.63%	-0.51%
2y10y	-0.06%	-37	-0.80%	-0.19%	6.3	-0.57%	-0.26%	2y10y	-0.06%	-22	-0.72%	-0.19%	3.9	-0.53%	-0.26%
2y20y	0.09%	-44	-0.79%	0.04%	5.2	-0.42%	-0.10%	2y20y	0.09%	-27	-0.72%	0.04%	3.3	-0.41%	-0.10%
2y30y	0.01%	-47	-0.93%	0.00%	4.8	-0.48%	-0.25%	2y30y	0.01%	-28	-0.83%	0.00%	3.1	-0.46%	-0.25%
3y1y	-0.40%	-27	-0.94%	-0.45%	5.4	-0.77%	-0.66%	3y1y	-0.40%	-16	-0.88%	-0.45%	3.3	-0.74%	-0.66%
3y2y	-0.30%	-29	-0.88%	-0.38%	5.6	-0.69%	-0.57%	3y2y	-0.30%	-18	-0.84%	-0.38%	3.4	-0.67%	-0.57%
3y5y	-0.19%	-36	-0.91%	-0.35%	5.0	-0.58%	-0.43%	3y5y	-0.19%	-22	-0.85%	-0.35%	3.0	-0.56%	-0.43%
3y10y	0.01%	-47	-0.93%	-0.19%	5.0	-0.44%	-0.20%	3y10y	0.01%	-28	-0.83%	-0.19%	3.0	-0.41%	-0.20%
3y20y	0.11%	-53	-0.95%	0.04%	4.1	-0.30%	-0.09%	3y20y	0.11%	-32	-0.85%	0.04%	2.5	-0.29%	-0.09%
3y30y	0.01%	-55	-1.09%	0.00%	3.8	-0.36%	-0.25%	3y30y	0.01%	-33	-0.98%	0.00%	2.3	-0.34%	-0.25%

Note: Rate level at which trade loses in 1y has been calculated under assumptions of constant vol. As of 15 July 2020. Source: Barclays Research

GBP zero-cost receiver spreads (short expiry)

GBP 1x2 Receiver spreads								GBP 1x1.5 Receiver spreads							
Option	Fwd rate	Moneyne ss of lower strike (ATM +)	Analysis on expiry		Analysis in three months			Option	Fwd rate	Moneyne ss of lower strike (ATM +)	Analysis on expiry		Analysis in three months		
			Breakeven rate on expiry	Spot Rate	3m carry (bp of underlying swap)	Rate Level at which trade loses in 3m	Lowest rate level in last 1yr				Breakeven rate on expiry	Spot Rate	3m carry (bp of underlying swap)	Rate Level at which trade loses in 3m	Lowest rate level in last 1yr
3m1y	0.07%	-5	-0.03%	0.08%	0.0	-0.03%	0.08%	3m1y	0.07%	-3	-0.02%	0.08%	0.0	-0.02%	0.08%
3m2y	0.13%	-6	0.01%	0.14%	0.0	0.01%	0.13%	3m2y	0.13%	-4	0.01%	0.14%	0.0	0.01%	0.13%
3m5y	0.21%	-10	0.01%	0.21%	0.1	0.01%	0.19%	3m5y	0.21%	-6	0.03%	0.21%	0.3	0.03%	0.19%
3m10y	0.36%	-14	0.08%	0.35%	0.5	0.08%	0.33%	3m10y	0.36%	-9	0.09%	0.35%	0.4	0.09%	0.33%
3m20y	0.47%	-16	0.15%	0.46%	0.1	0.15%	0.42%	3m20y	0.47%	-10	0.17%	0.46%	0.0	0.17%	0.42%
3m30y	0.46%	-18	0.10%	0.46%	0.0	0.10%	0.38%	3m30y	0.46%	-11	0.13%	0.46%	0.0	0.13%	0.38%
6m1y	0.04%	-8	-0.12%	0.08%	1.2	-0.08%	0.07%	6m1y	0.04%	-5	-0.11%	0.08%	0.7	-0.08%	0.07%
6m2y	0.13%	-10	-0.07%	0.14%	2.0	-0.02%	0.11%	6m2y	0.13%	-6	-0.05%	0.14%	1.2	-0.01%	0.11%
6m5y	0.23%	-15	-0.07%	0.21%	2.7	0.01%	0.19%	6m5y	0.23%	-9	-0.04%	0.21%	1.6	0.02%	0.19%
6m10y	0.37%	-20	-0.03%	0.35%	3.4	0.10%	0.34%	6m10y	0.37%	-13	-0.02%	0.35%	2.0	0.10%	0.34%
6m20y	0.47%	-23	0.01%	0.46%	3.7	0.18%	0.42%	6m20y	0.47%	-14	0.05%	0.46%	2.2	0.20%	0.42%
6m30y	0.46%	-25	-0.04%	0.46%	3.9	0.14%	0.38%	6m30y	0.46%	-15	0.01%	0.46%	2.4	0.17%	0.38%
9m1y	0.02%	-12	-0.22%	0.08%	1.8	-0.14%	0.04%	9m1y	0.02%	-8	-0.22%	0.08%	1.0	-0.15%	0.04%
9m2y	0.13%	-14	-0.15%	0.14%	2.2	-0.05%	0.11%	9m2y	0.13%	-9	-0.14%	0.14%	1.3	-0.05%	0.11%
9m5y	0.24%	-19	-0.14%	0.21%	2.4	0.04%	0.21%	9m5y	0.24%	-12	-0.12%	0.21%	1.4	0.05%	0.21%
9m10y	0.39%	-25	-0.11%	0.35%	2.6	0.16%	0.35%	9m10y	0.39%	-15	-0.06%	0.35%	1.5	0.18%	0.35%
9m20y	0.48%	-28	-0.08%	0.46%	2.7	0.24%	0.42%	9m20y	0.48%	-17	-0.03%	0.46%	1.6	0.26%	0.42%
9m30y	0.46%	-30	-0.14%	0.46%	2.9	0.22%	0.38%	9m30y	0.46%	-19	-0.11%	0.46%	1.6	0.22%	0.38%

Note: Rate level at which trade loses in 1y has been calculated under assumptions of constant vol. As of 15 July 2020. Source: Barclays Research

GBP zero-cost receiver spreads (mid expiry)

GBP 1x2 Receiver spreads								GBP 1x1.5 Receiver spreads							
Option	Fwd rate	Moneyne ss of lower strike (ATM +)	Analysis on expiry		Analysis in one year			Option	Fwd rate	Moneyne ss of lower strike (ATM +)	Analysis on expiry		Analysis in one year		
			Breakeven rate on expiry	Spot Rate	1y carry (bp of underlying swap)	Rate Level at which trade loses in 1y	Lowest rate level in last 2 yrs				Breakeven rate on expiry	Spot Rate	1y carry (bp of underlying swap)	Rate Level at which trade loses in 1y	Lowest rate level in last 2 yrs
1y1y	0.00%	-17	-0.34%	0.07%	0.0	-0.34%	0.08%	1y1y	0.00%	-10	-0.30%	0.07%	0.0	-0.30%	0.08%
1y2y	0.12%	-19	-0.26%	0.13%	0.0	-0.26%	0.14%	1y2y	0.12%	-12	-0.24%	0.13%	0.0	-0.24%	0.14%
1y5y	0.23%	-24	-0.25%	0.19%	3.5	-0.25%	0.20%	1y5y	0.23%	-14	-0.19%	0.19%	4.1	-0.19%	0.20%
1y10y	0.37%	-29	-0.21%	0.33%	4.0	-0.21%	0.34%	1y10y	0.37%	-18	-0.17%	0.33%	3.8	-0.17%	0.34%
1y20y	0.46%	-32	-0.18%	0.44%	1.4	-0.18%	0.42%	1y20y	0.46%	-20	-0.14%	0.45%	1.2	-0.14%	0.42%
1y30y	0.45%	-35	-0.25%	0.44%	0.1	-0.25%	0.38%	1y30y	0.45%	-21	-0.18%	0.44%	0.5	-0.18%	0.38%
2y1y	0.02%	-30	-0.58%	0.07%	5.8	-0.45%	0.01%	2y1y	0.02%	-18	-0.52%	0.07%	3.7	-0.41%	0.01%
2y2y	0.19%	-31	-0.43%	0.13%	6.7	-0.28%	0.14%	2y2y	0.19%	-19	-0.38%	0.13%	4.1	-0.26%	0.14%
2y5y	0.30%	-36	-0.42%	0.19%	6.5	-0.20%	0.24%	2y5y	0.30%	-22	-0.36%	0.19%	4.0	-0.17%	0.24%
2y10y	0.42%	-41	-0.40%	0.33%	6.3	-0.08%	0.37%	2y10y	0.42%	-25	-0.33%	0.33%	3.8	-0.05%	0.37%
2y20y	0.48%	-44	-0.40%	0.44%	6.1	-0.03%	0.43%	2y20y	0.48%	-27	-0.33%	0.45%	3.6	0.00%	0.43%
2y30y	0.46%	-46	-0.46%	0.44%	5.9	-0.03%	0.38%	2y30y	0.46%	-28	-0.38%	0.44%	3.5	-0.01%	0.38%
3y1y	0.10%	-40	-0.70%	0.07%	5.6	-0.36%	0.04%	3y1y	0.10%	-24	-0.62%	0.07%	3.5	-0.34%	0.04%
3y2y	0.27%	-41	-0.55%	0.13%	5.2	-0.16%	0.21%	3y2y	0.27%	-25	-0.48%	0.13%	3.1	-0.14%	0.21%
3y5y	0.36%	-44	-0.52%	0.19%	4.9	-0.03%	0.30%	3y5y	0.36%	-27	-0.45%	0.19%	2.9	-0.02%	0.30%
3y10y	0.47%	-49	-0.51%	0.33%	4.5	0.08%	0.41%	3y10y	0.47%	-30	-0.43%	0.33%	2.7	0.10%	0.41%
3y20y	0.50%	-51	-0.52%	0.44%	4.1	0.15%	0.44%	3y20y	0.50%	-31	-0.43%	0.45%	2.5	0.16%	0.44%
3y30y	0.46%	-52	-0.58%	0.44%	3.8	0.15%	0.38%	3y30y	0.46%	-32	-0.50%	0.44%	2.3	0.16%	0.38%

Note: Rate level at which trade loses in 1y has been calculated under assumptions of constant vol. As of 15 July 2020. Source: Barclays Research

Optimal expiry/tenor selection for zero-cost payer spreads

Methodology

- We construct zero-cost 1x2 and 1x1.5 payer spreads for up to 3y expiries along the USD, EUR and GBP surfaces.
 - For each spread, one leg is struck ATM
 - The higher strike is selected so that the trade is zero cost
- We use the following metrics to evaluate each structure. The metrics are shown in the tables that follow.
 - **3m/1y Carry:** Calculated under a scenario in which the curve remains unchanged over time, forward rates and vols roll to spot. A higher carry is desirable, as it implies a higher expected return under the unchanged curve scenario (in Blue). We calculate 3m carry for options with less than 1y expiry and 1y carry for longer expiry options.
 - **Rate above which trade loses over a 3m/1y horizon:** Should be high compared with highest levels for that particular rate over the past one/two years (in Blue). This metric evaluates the trade on the basis of its historical downside
 - **Breakeven rate on expiry:** Should be high compared with the current spot rate (in Grey). This metric evaluates the trade, from a terminal perspective, on the basis of its downside relative to current levels
- We highlight tenor/expiry combinations that do the best on all three metrics.

USD zero-cost payer spreads (short expiry)

USD 1x2 Payer spreads								USD 1x1.5 Payer spreads							
Option	Fwd rate	Moneyne ss of higher strike (ATM +)	Analysis on expiry		Analysis in three months			Option	Fwd rate	Moneyne ss of higher strike (ATM +)	Analysis on expiry		Analysis in three months		
			Breakeven rate on expiry	Spot Rate	3m carry (bp of underlying swap)	Rate Level at which trade loses in 3m	Highest rate level in last 1yr				Breakeven rate on expiry	Spot Rate	3m carry (bp of underlying swap)	Rate Level at which trade loses in 3m	Highest rate level in last 1yr
3m1y	0.24%	5	0.34%	0.26%	1.8	0.34%	2.10%	3m1y	0.24%	3	0.33%	0.26%	2.0	0.33%	2.10%
3m2y	0.22%	3	0.28%	0.23%	2.2	0.28%	1.93%	3m2y	0.22%	2	0.28%	0.23%	1.5	0.28%	1.93%
3m5y	0.34%	8	0.50%	0.32%	0.0	0.50%	1.83%	3m5y	0.34%	4	0.46%	0.32%	0.0	0.46%	1.83%
3m10y	0.63%	14	0.91%	0.61%	0.0	0.91%	2.00%	3m10y	0.63%	8	0.87%	0.61%	0.0	0.87%	2.00%
3m20y	0.84%	16	1.16%	0.83%	0.0	1.16%	2.21%	3m20y	0.84%	9	1.11%	0.83%	0.0	1.11%	2.21%
3m30y	0.87%	17	1.21%	0.86%	0.0	1.21%	2.24%	3m30y	0.87%	10	1.17%	0.86%	0.0	1.17%	2.24%
6m1y	0.22%	7	0.36%	0.26%	1.5	0.33%	1.97%	6m1y	0.22%	5	0.37%	0.26%	0.9	0.34%	1.97%
6m2y	0.21%	7	0.35%	0.23%	1.8	0.32%	1.85%	6m2y	0.21%	3	0.30%	0.23%	1.1	0.30%	1.85%
6m5y	0.36%	14	0.64%	0.32%	2.5	0.55%	1.81%	6m5y	0.36%	8	0.60%	0.32%	1.6	0.54%	1.81%
6m10y	0.65%	21	1.07%	0.61%	3.8	0.92%	2.00%	6m10y	0.65%	12	1.01%	0.61%	2.4	0.90%	2.00%
6m20y	0.85%	24	1.33%	0.83%	4.0	1.15%	2.21%	6m20y	0.85%	14	1.27%	0.83%	2.5	1.12%	2.21%
6m30y	0.87%	25	1.37%	0.86%	4.2	1.18%	2.24%	6m30y	0.87%	14	1.29%	0.86%	2.7	1.14%	2.24%
9m1y	0.20%	10	0.40%	0.26%	1.7	0.33%	1.86%	9m1y	0.20%	6	0.38%	0.26%	1.0	0.32%	1.86%
9m2y	0.21%	10	0.41%	0.23%	2.1	0.33%	1.79%	9m2y	0.21%	5	0.36%	0.23%	1.2	0.31%	1.79%
9m5y	0.39%	18	0.75%	0.32%	2.5	0.56%	1.80%	9m5y	0.39%	10	0.69%	0.32%	1.6	0.54%	1.80%
9m10y	0.67%	27	1.21%	0.61%	2.9	0.89%	2.01%	9m10y	0.67%	15	1.12%	0.61%	1.8	0.86%	2.01%
9m20y	0.86%	30	1.46%	0.83%	3.3	1.11%	2.21%	9m20y	0.86%	17	1.37%	0.83%	2.0	1.08%	2.21%
9m30y	0.88%	31	1.50%	0.86%	3.5	1.13%	2.24%	9m30y	0.88%	18	1.42%	0.86%	2.0	1.10%	2.24%

Note: Rate level at which trade loses in 1y has been calculated under assumptions of constant vol. As of 15 July 2020. Source: Barclays Research

USD zero-cost payer spreads (mid expiry)

USD 1x2 Payer spreads								USD 1x1.5 Payer spreads							
Option	Fwd rate	Moneyne ss of higher strike (ATM +)	Analysis on expiry		Analysis in one year			Option	Fwd rate	Moneyne ss of higher strike (ATM +)	Analysis on expiry		Analysis in one year		
			Breakeven rate on expiry	Spot Rate	1y carry (bp of underlying swap)	Rate Level at which trade loses in 1y	Highest rate level in last 2 yrs				Breakeven rate on expiry	Spot Rate	1y carry (bp of underlying swap)	Rate Level at which trade loses in 1y	Highest rate level in last 2 yrs
1y1y	0.19%	14	0.47%	0.26%	5.9	0.47%	2.93%	1y1y	0.19%	8	0.43%	0.26%	6.3	0.43%	2.93%
1y2y	0.22%	16	0.54%	0.22%	0.3	0.54%	3.15%	1y2y	0.22%	10	0.52%	0.22%	0.3	0.52%	3.15%
1y5y	0.41%	25	0.91%	0.32%	0.0	0.91%	3.21%	1y5y	0.41%	15	0.86%	0.32%	0.0	0.86%	3.21%
1y10y	0.68%	34	1.36%	0.60%	0.0	1.36%	3.28%	1y10y	0.68%	20	1.28%	0.60%	0.0	1.28%	3.28%
1y20y	0.86%	37	1.60%	0.82%	0.0	1.60%	3.36%	1y20y	0.86%	22	1.52%	0.82%	0.0	1.52%	3.36%
1y30y	0.87%	38	1.63%	0.85%	0.0	1.63%	3.34%	1y30y	0.87%	23	1.56%	0.85%	0.0	1.56%	3.34%
2y1y	0.24%	28	0.80%	0.26%	4.3	0.72%	3.31%	2y1y	0.24%	17	0.75%	0.26%	3.0	0.69%	3.31%
2y2y	0.31%	31	0.93%	0.22%	4.3	0.82%	3.32%	2y2y	0.31%	19	0.88%	0.22%	2.9	0.80%	3.32%
2y5y	0.53%	40	1.33%	0.32%	5.0	1.09%	3.29%	2y5y	0.53%	24	1.25%	0.32%	3.3	1.06%	3.29%
2y10y	0.76%	48	1.72%	0.60%	6.3	1.35%	3.34%	2y10y	0.76%	29	1.63%	0.60%	4.0	1.32%	3.34%
2y20y	0.90%	51	1.92%	0.82%	7.0	1.49%	3.38%	2y20y	0.89%	31	1.82%	0.82%	4.3	1.47%	3.38%
2y30y	0.89%	52	1.93%	0.85%	7.0	1.48%	3.36%	2y30y	0.89%	32	1.85%	0.85%	4.3	1.46%	3.36%
3y1y	0.37%	43	1.23%	0.26%	5.3	0.93%	3.30%	3y1y	0.37%	26	1.15%	0.26%	3.5	0.90%	3.30%
3y2y	0.46%	45	1.36%	0.22%	5.5	1.00%	3.29%	3y2y	0.46%	27	1.27%	0.22%	3.5	0.97%	3.29%
3y5y	0.67%	52	1.71%	0.32%	5.1	1.15%	3.29%	3y5y	0.67%	31	1.60%	0.32%	3.3	1.12%	3.29%
3y10y	0.85%	59	2.03%	0.60%	4.8	1.28%	3.35%	3y10y	0.85%	35	1.90%	0.60%	3.1	1.26%	3.35%
3y20y	0.93%	61	2.15%	0.82%	5.1	1.38%	3.39%	3y20y	0.93%	37	2.04%	0.82%	3.1	1.35%	3.39%
3y30y	0.91%	62	2.15%	0.85%	5.0	1.34%	3.36%	3y30y	0.91%	37	2.02%	0.85%	3.0	1.32%	3.36%

Note: Rate level at which trade loses in 1y has been calculated under assumptions of constant vol. As of 15 July 2020. Source: Barclays Research

EUR zero-cost payer spreads (short expiry)

EUR 1x2 Payer spreads								EUR 1x1.5 Payer spreads							
Option	Fwd rate	Moneyness of higher strike (ATM +)	Analysis on expiry		Analysis in three months			Option	Fwd rate	Moneyness of higher strike (ATM +)	Analysis on expiry		Analysis in three months		
			Breakeven rate on expiry	Spot Rate	3m carry (bp of underlying swap)	Rate Level at which trade loses in 3m	Highest rate level in last 1yr				Breakeven rate on expiry	Spot Rate	3m carry (bp of underlying swap)	Rate Level at which trade loses in 3m	Highest rate level in last 1yr
3m1y	-0.46%	6	-0.34%	-0.45%	0.4	-0.34%	-0.22%	3m1y	-0.46%	4	-0.34%	-0.45%	0.3	-0.34%	-0.22%
3m2y	-0.39%	4	-0.31%	-0.38%	2.0	-0.31%	-0.19%	3m2y	-0.39%	2	-0.33%	-0.38%	1.8	-0.33%	-0.19%
3m5y	-0.34%	7	-0.20%	-0.35%	0.0	-0.20%	-0.04%	3m5y	-0.34%	3	-0.25%	-0.35%	0.0	-0.25%	-0.04%
3m10y	-0.17%	10	0.03%	-0.18%	0.0	0.03%	0.21%	3m10y	-0.17%	5	-0.02%	-0.18%	0.0	-0.02%	0.21%
3m20y	0.06%	12	0.30%	0.05%	0.0	0.30%	0.61%	3m20y	0.06%	7	0.27%	0.05%	0.0	0.27%	0.61%
3m30y	0.00%	14	0.28%	0.00%	0.0	0.28%	0.68%	3m30y	0.00%	8	0.24%	0.00%	0.0	0.24%	0.68%
6m1y	-0.46%	9	-0.28%	-0.45%	0.9	-0.33%	-0.25%	6m1y	-0.46%	5	-0.31%	-0.45%	0.6	-0.36%	-0.25%
6m2y	-0.39%	8	-0.23%	-0.38%	1.4	-0.27%	-0.20%	6m2y	-0.39%	4	-0.27%	-0.38%	0.9	-0.30%	-0.20%
6m5y	-0.34%	12	-0.10%	-0.35%	2.1	-0.15%	0.00%	6m5y	-0.34%	6	-0.16%	-0.35%	1.4	-0.19%	0.00%
6m10y	-0.15%	16	0.17%	-0.18%	2.6	0.06%	0.24%	6m10y	-0.15%	9	0.12%	-0.18%	1.7	0.04%	0.24%
6m20y	0.06%	19	0.44%	0.05%	3.4	0.32%	0.62%	6m20y	0.06%	11	0.39%	0.05%	2.1	0.29%	0.62%
6m30y	0.00%	22	0.44%	0.00%	3.8	0.29%	0.69%	6m30y	0.00%	12	0.36%	0.00%	2.4	0.25%	0.69%
9m1y	-0.47%	11	-0.25%	-0.45%	1.0	-0.32%	-0.28%	9m1y	-0.47%	7	-0.26%	-0.45%	0.6	-0.32%	-0.28%
9m2y	-0.39%	11	-0.17%	-0.38%	1.2	-0.27%	-0.21%	9m2y	-0.39%	6	-0.21%	-0.38%	0.7	-0.29%	-0.21%
9m5y	-0.33%	16	-0.01%	-0.35%	1.5	-0.18%	0.03%	9m5y	-0.33%	9	-0.06%	-0.35%	0.9	-0.20%	0.03%
9m10y	-0.14%	21	0.28%	-0.18%	2.1	0.05%	0.27%	9m10y	-0.14%	11	0.19%	-0.18%	1.4	0.02%	0.27%
9m20y	0.07%	24	0.55%	0.05%	2.4	0.26%	0.64%	9m20y	0.07%	13	0.46%	0.05%	1.5	0.23%	0.64%
9m30y	0.01%	27	0.55%	0.00%	2.6	0.21%	0.70%	9m30y	0.01%	15	0.46%	0.00%	1.6	0.19%	0.70%

Note: Rate level at which trade loses in 1y has been calculated under assumptions of constant vol. As of 15 July 2020. Source: Barclays Research

EUR zero-cost payer spreads (mid expiry)

EUR 1x2 Payer spreads							
Option	Fwd rate	Moneyne ss of higher strike (ATM +)	Analysis on expiry		Analysis in one year		
			Breakeven rate on expiry	Spot Rate	1y carry (bp of underlying swap)	Rate Level at which trade loses in 1y	Highest rate level in last 2 yrs
1y1y	-0.48%	15	-0.18%	-0.45%	2.3	-0.18%	-0.22%
1y2y	-0.40%	16	-0.08%	-0.38%	1.4	-0.08%	-0.09%
1y5y	-0.32%	21	0.10%	-0.35%	0.0	0.10%	0.46%
1y10y	-0.13%	27	0.41%	-0.19%	0.0	0.41%	1.07%
1y20y	0.06%	30	0.66%	0.04%	0.0	0.66%	1.56%
1y30y	0.00%	33	0.66%	0.00%	0.0	0.66%	1.62%
2y1y	-0.45%	25	0.05%	-0.45%	2.3	-0.06%	0.02%
2y2y	-0.36%	27	0.18%	-0.38%	2.4	0.05%	0.28%
2y5y	-0.26%	33	0.40%	-0.35%	3.1	0.18%	0.78%
2y10y	-0.06%	39	0.72%	-0.19%	4.4	0.42%	1.31%
2y20y	0.09%	42	0.93%	0.04%	5.5	0.58%	1.68%
2y30y	0.01%	45	0.91%	0.00%	5.5	0.49%	1.69%
3y1y	-0.40%	38	0.36%	-0.45%	3.0	0.12%	0.42%
3y2y	-0.31%	40	0.49%	-0.38%	3.3	0.20%	0.67%
3y5y	-0.19%	44	0.69%	-0.35%	3.8	0.27%	1.08%
3y10y	0.01%	50	1.01%	-0.19%	4.2	0.44%	1.52%
3y20y	0.11%	51	1.13%	0.04%	4.7	0.52%	1.78%
3y30y	0.01%	53	1.07%	0.00%	4.6	0.41%	1.76%

EUR 1x1.5 Payer spreads							
Option	Fwd rate	Moneyne ss of higher strike (ATM +)	Analysis on expiry		Analysis in one year		
			Breakeven rate on expiry	Spot Rate	1y carry (bp of underlying swap)	Rate Level at which trade loses in 1y	Highest rate level in last 2 yrs
1y1y	-0.48%	8	-0.24%	-0.45%	2.6	-0.24%	-0.22%
1y2y	-0.40%	9	-0.13%	-0.38%	1.4	-0.13%	-0.09%
1y5y	-0.32%	13	0.07%	-0.35%	0.0	0.07%	0.46%
1y10y	-0.13%	16	0.35%	-0.19%	0.0	0.35%	1.07%
1y20y	0.07%	18	0.61%	0.04%	0.0	0.61%	1.56%
1y30y	0.00%	20	0.60%	0.00%	0.0	0.60%	1.62%
2y1y	-0.45%	15	0.00%	-0.45%	1.5	-0.08%	0.02%
2y2y	-0.36%	16	0.12%	-0.38%	1.6	0.03%	0.28%
2y5y	-0.26%	20	0.34%	-0.35%	2.0	0.17%	0.78%
2y10y	-0.06%	24	0.66%	-0.19%	2.8	0.42%	1.31%
2y20y	0.09%	25	0.84%	0.04%	3.6	0.56%	1.68%
2y30y	0.01%	27	0.82%	0.00%	3.5	0.47%	1.69%
3y1y	-0.40%	22	0.26%	-0.45%	2.0	0.08%	0.42%
3y2y	-0.30%	23	0.39%	-0.38%	2.2	0.16%	0.67%
3y5y	-0.19%	26	0.59%	-0.35%	2.5	0.24%	1.08%
3y10y	0.01%	30	0.91%	-0.19%	2.7	0.43%	1.52%
3y20y	0.11%	31	1.04%	0.04%	2.8	0.50%	1.78%
3y30y	0.01%	32	0.97%	0.00%	2.8	0.39%	1.76%

Note: Rate level at which trade loses in 1y has been calculated under assumptions of constant vol. As of 15 July 2020. Source: Barclays Research

GBP zero-cost payer spreads (short expiry)

GBP 1x2 Payer spreads								GBP 1x1.5 Payer spreads							
Option	Fwd rate	Moneyne ss of higher strike (ATM +)	Analysis on expiry		Analysis in three months			Option	Fwd rate	Moneyne ss of higher strike (ATM +)	Analysis on expiry		Analysis in three months		
			Breakeven rate on expiry	Spot Rate	3m carry (bp of underlying swap)	Rate Level at which trade loses in 3m	Highest rate level in last 1yr				Breakeven rate on expiry	Spot Rate	3m carry (bp of underlying swap)	Rate Level at which trade loses in 3m	Highest rate level in last 1yr
3m1y	0.07%	5	0.17%	0.08%	1.2	0.17%	0.79%	3m1y	0.07%	3	0.16%	0.08%	1.3	0.16%	0.79%
3m2y	0.13%	5	0.23%	0.14%	2.3	0.23%	0.84%	3m2y	0.13%	2	0.19%	0.14%	2.5	0.19%	0.84%
3m5y	0.21%	8	0.37%	0.21%	0.0	0.37%	0.92%	3m5y	0.21%	4	0.33%	0.21%	0.0	0.33%	0.92%
3m10y	0.36%	13	0.62%	0.35%	0.0	0.62%	1.06%	3m10y	0.36%	7	0.57%	0.35%	0.0	0.57%	1.06%
3m20y	0.47%	15	0.77%	0.46%	0.0	0.77%	1.16%	3m20y	0.47%	8	0.71%	0.46%	0.0	0.71%	1.16%
3m30y	0.46%	16	0.78%	0.46%	0.0	0.78%	1.17%	3m30y	0.46%	9	0.73%	0.46%	0.0	0.73%	1.17%
6m1y	0.04%	9	0.22%	0.08%	1.9	0.20%	0.79%	6m1y	0.04%	5	0.19%	0.08%	1.2	0.17%	0.79%
6m2y	0.13%	9	0.31%	0.14%	2.2	0.27%	0.84%	6m2y	0.13%	5	0.28%	0.14%	1.3	0.25%	0.84%
6m5y	0.23%	14	0.51%	0.21%	2.8	0.42%	0.93%	6m5y	0.23%	8	0.47%	0.21%	1.7	0.40%	0.93%
6m10y	0.37%	20	0.77%	0.35%	3.6	0.64%	1.07%	6m10y	0.37%	11	0.70%	0.35%	2.2	0.60%	1.07%
6m20y	0.47%	22	0.91%	0.46%	3.9	0.76%	1.17%	6m20y	0.47%	13	0.86%	0.46%	2.3	0.74%	1.17%
6m30y	0.46%	24	0.94%	0.46%	4.1	0.77%	1.17%	6m30y	0.46%	14	0.88%	0.46%	2.4	0.74%	1.17%
9m1y	0.02%	13	0.28%	0.08%	2.2	0.21%	0.78%	9m1y	0.02%	8	0.26%	0.08%	1.3	0.20%	0.78%
9m2y	0.13%	13	0.39%	0.14%	2.5	0.29%	0.84%	9m2y	0.13%	7	0.34%	0.14%	1.5	0.27%	0.84%
9m5y	0.24%	19	0.62%	0.21%	2.5	0.43%	0.95%	9m5y	0.24%	11	0.57%	0.21%	1.5	0.41%	0.95%
9m10y	0.39%	25	0.89%	0.35%	2.7	0.60%	1.08%	9m10y	0.39%	14	0.81%	0.35%	1.6	0.56%	1.08%
9m20y	0.48%	28	1.04%	0.46%	2.7	0.70%	1.17%	9m20y	0.48%	16	0.96%	0.46%	1.6	0.67%	1.17%
9m30y	0.46%	30	1.06%	0.46%	2.9	0.70%	1.18%	9m30y	0.46%	17	0.97%	0.46%	1.7	0.67%	1.18%

Note: Rate level at which trade loses in 1y has been calculated under assumptions of constant vol. As of 15 July 2020. Source: Barclays Research

GBP zero-cost payer spreads (mid expiry)

GBP 1x2 Payer spreads								GBP 1x1.5 Payer spreads							
Option	Fwd rate	Moneyne ss of higher strike (ATM +)	Analysis on expiry		Analysis in one year			Option	Fwd rate	Moneyne ss of higher strike (ATM +)	Analysis on expiry		Analysis in one year		
			Breakeven rate on expiry	Spot Rate	1y carry (bp of underlying swap)	Rate Level at which trade loses in 1y	Highest rate level in last 2 yrs				Breakeven rate on expiry	Spot Rate	1y carry (bp of underlying swap)	Rate Level at which trade loses in 1y	Highest rate level in last 2 yrs
1y1y	0.00%	19	0.38%	0.07%	7.1	0.38%	1.01%	1y1y	0.00%	11	0.33%	0.07%	7.3	0.33%	1.01%
1y2y	0.12%	21	0.54%	0.13%	0.0	0.54%	1.24%	1y2y	0.12%	13	0.51%	0.13%	0.0	0.51%	1.24%
1y5y	0.23%	25	0.73%	0.19%	0.0	0.73%	1.56%	1y5y	0.23%	15	0.68%	0.19%	0.0	0.68%	1.56%
1y10y	0.37%	31	0.99%	0.33%	0.0	0.99%	1.80%	1y10y	0.37%	19	0.94%	0.33%	0.0	0.94%	1.80%
1y20y	0.46%	34	1.14%	0.45%	0.0	1.14%	1.91%	1y20y	0.46%	21	1.09%	0.45%	0.0	1.09%	1.91%
1y30y	0.45%	36	1.17%	0.44%	0.0	1.17%	1.90%	1y30y	0.45%	22	1.11%	0.44%	0.0	1.11%	1.90%
2y1y	0.02%	35	0.72%	0.07%	5.5	0.60%	1.34%	2y1y	0.02%	21	0.65%	0.07%	3.5	0.55%	1.34%
2y2y	0.19%	35	0.89%	0.13%	5.1	0.72%	1.53%	2y2y	0.19%	21	0.82%	0.13%	3.3	0.69%	1.53%
2y5y	0.30%	40	1.10%	0.19%	5.7	0.86%	1.75%	2y5y	0.30%	24	1.02%	0.19%	3.6	0.82%	1.75%
2y10y	0.42%	45	1.32%	0.33%	6.2	0.99%	1.91%	2y10y	0.42%	27	1.23%	0.33%	3.8	0.95%	1.91%
2y20y	0.48%	48	1.44%	0.45%	6.7	1.07%	1.97%	2y20y	0.48%	29	1.35%	0.45%	4.0	1.03%	1.97%
2y30y	0.46%	50	1.46%	0.44%	6.6	1.04%	1.93%	2y30y	0.46%	30	1.36%	0.44%	4.0	1.00%	1.93%
3y1y	0.10%	49	1.08%	0.07%	3.9	0.62%	1.58%	3y1y	0.10%	29	0.97%	0.07%	2.7	0.60%	1.58%
3y2y	0.27%	48	1.23%	0.13%	4.9	0.78%	1.74%	3y2y	0.27%	28	1.11%	0.13%	3.2	0.73%	1.74%
3y5y	0.36%	52	1.40%	0.19%	5.1	0.86%	1.87%	3y5y	0.36%	31	1.29%	0.19%	3.1	0.83%	1.87%
3y10y	0.47%	56	1.59%	0.33%	5.0	0.94%	1.99%	3y10y	0.47%	34	1.49%	0.33%	3.0	0.92%	1.99%
3y20y	0.50%	58	1.66%	0.45%	5.0	0.96%	2.00%	3y20y	0.50%	35	1.55%	0.45%	3.0	0.93%	2.00%
3y30y	0.46%	60	1.66%	0.44%	4.9	0.92%	1.95%	3y30y	0.46%	36	1.54%	0.44%	2.9	0.89%	1.95%

Note: Rate level at which trade loses in 1y has been calculated under assumptions of constant vol. As of 15 July 2020. Source: Barclays Research

Selection of optimal long-duration structures

Methodology

- We analyse various long duration structures for 1y and longer expiries along the USD, EUR and GBP surfaces.
 - **Receiver spreads:** One receiver leg is struck ATM, while the strike of the second leg is such that the price of the receiver spread is 50% of ATM receiver.
 - **Short H.S. payers:** Strike of the payer is such that the premium is 50% of ATM payer.
 - **Rec. spread + H.S. payer (Seagull):** The above two structures are combined to create a roughly zero-cost long-duration structure.
- Notional of each structure is normalised, so that they all have the same initial delta.
- We use the following metrics to evaluate each structure. The metrics are shown in the tables that follow.
 - **1y Carry:** Calculated under a scenario in which the curve remains unchanged over time, forward rates and vols roll to spot. A higher carry is desirable (in Blue).
 - **Gain in 50bp instantaneous rally:** Indicates the potential upside in the near term if rates were to rally lower (in Blue).
 - **Loss in 50bp instantaneous sell-off:** Indicates the potential downside in the near term if rates were to sell off (in Grey).
- We highlight the structures and tenor/expiry combinations that fare the best on all three metrics.

Long duration strategies in USD

Option	Fwd rate	Receiver spread				High-strike payer				Seagull		
		Strike of LS option (ATM +)	Carry in one year (\$ mn)	Gain in a 50bp rally (\$ mn)	Loss in a 50bp sell-off (\$ mn)	Strike of HS option (ATM +)	Carry in one year (\$ mn)	Gain in a 50bp rally (\$ mn)	Loss in a 50bp sell-off (\$ mn)	Carry in one year (\$ mn)	Gain in a 50bp rally (\$ mn)	Loss in a 50bp sell-off (\$ mn)
1y2y	0.22%	-18	-3.1	4.5	-2.9	16	2.0	1.9	-9.8	-0.1	3.0	-7.0
1y3y	0.27%	-21	-1.9	4.8	-3.2	19	2.5	2.3	-9.0	0.7	3.3	-6.7
1y5y	0.41%	-25	-0.2	5.0	-3.7	25	3.1	2.7	-8.1	1.8	3.6	-6.3
1y10y	0.69%	-34	-2.4	5.2	-4.0	34	4.3	3.2	-7.2	1.5	4.0	-5.9
1y20y	0.87%	-38	-5.0	5.3	-4.0	37	4.9	3.4	-6.8	0.7	4.2	-5.6
1y30y	0.88%	-40	-5.9	5.5	-4.0	39	5.2	3.5	-6.6	0.3	4.4	-5.5
2y2y	0.31%	-32	0.2	5.2	-4.0	31	3.3	3.1	-7.5	2.1	3.9	-6.1
2y3y	0.39%	-34	0.8	5.2	-4.1	34	3.4	3.2	-7.3	2.4	4.0	-6.0
2y5y	0.54%	-39	0.9	5.2	-4.2	40	3.7	3.4	-6.9	2.5	4.1	-5.8
2y10y	0.78%	-46	0.3	5.3	-4.3	49	3.6	3.7	-6.5	2.2	4.3	-5.6
2y20y	0.91%	-50	-0.5	5.4	-4.3	52	3.4	3.8	-6.2	1.7	4.5	-5.4
2y30y	0.91%	-51	-0.6	5.5	-4.2	53	3.3	3.9	-6.1	1.5	4.6	-5.3
3y2y	0.46%	-45	1.2	5.2	-4.3	46	3.8	3.6	-6.7	2.8	4.3	-5.7
3y3y	0.55%	-47	1.3	5.2	-4.4	48	3.8	3.7	-6.6	2.8	4.3	-5.7
3y5y	0.68%	-50	1.0	5.3	-4.4	52	3.5	3.8	-6.4	2.5	4.4	-5.6
3y10y	0.86%	-56	0.4	5.3	-4.4	59	2.9	3.9	-6.2	1.8	4.5	-5.4
3y20y	0.95%	-59	-0.1	5.4	-4.4	61	2.5	4.0	-6.0	1.4	4.7	-5.3
3y30y	0.93%	-59	-0.3	5.5	-4.3	62	2.4	4.1	-5.9	1.2	4.8	-5.2

Note: Each structure has been normalised, so that the initial delta (normal) is \$100k/bp. Gain/loss in rally/sell-off have been calculated under assumptions of constant vol). As of 15 July 2020.
Source: Barclays Research

Long duration strategies in EUR

Option	Fwd rate	Receiver spread				High-strike payer				Seagull		
		Strike of LS option (ATM +)	Carry in one year (€ mn)	Gain in a 50bp rally (€ mn)	Loss in a 50bp sell-off (€ mn)	Strike of HS option (ATM +)	Carry in one year (€ mn)	Gain in a 50bp rally (€ mn)	Loss in a 50bp sell-off (€ mn)	Carry in one year (€ mn)	Gain in a 50bp rally (€ mn)	Loss in a 50bp sell-off (€ mn)
1y2y	-0.39%	-11	-2.6	3.2	-2.5	16	1.7	1.6	-10.9	-0.1	2.3	-7.5
1y3y	-0.37%	-13	-2.5	3.6	-2.8	18	1.9	1.9	-10.2	0.2	2.6	-7.2
1y5y	-0.31%	-17	-1.9	4.3	-3.2	21	2.4	2.2	-9.1	0.7	3.1	-6.7
1y10y	-0.12%	-25	-1.8	5.0	-3.6	27	3.2	2.7	-8.0	1.1	3.7	-6.2
1y20y	0.07%	-33	-4.4	5.4	-3.7	30	3.9	3.0	-7.3	0.4	4.0	-5.8
1y30y	0.01%	-36	-5.5	5.6	-3.8	33	4.4	3.3	-7.0	0.0	4.3	-5.6
2y2y	-0.36%	-20	-0.1	4.5	-3.6	27	2.0	2.6	-8.4	1.2	3.4	-6.5
2y3y	-0.33%	-23	-0.0	4.7	-3.8	30	2.3	2.8	-7.9	1.4	3.6	-6.3
2y5y	-0.26%	-27	0.1	4.9	-4.0	33	2.5	3.0	-7.5	1.5	3.8	-6.1
2y10y	-0.05%	-37	0.1	5.2	-4.1	39	3.0	3.4	-6.9	1.8	4.1	-5.7
2y20y	0.09%	-44	-0.8	5.4	-4.1	42	2.9	3.6	-6.5	1.3	4.4	-5.5
2y30y	0.01%	-47	-0.9	5.6	-4.1	45	2.8	3.7	-6.4	1.1	4.6	-5.4
3y2y	-0.30%	-29	0.2	4.9	-4.2	40	2.5	3.2	-7.2	1.6	3.9	-6.0
3y3y	-0.26%	-32	0.3	5.0	-4.2	42	2.5	3.3	-7.0	1.6	4.0	-5.9
3y5y	-0.18%	-36	0.3	5.1	-4.3	44	2.6	3.5	-6.8	1.7	4.1	-5.8
3y10y	0.02%	-47	0.2	5.3	-4.3	50	2.7	3.7	-6.4	1.7	4.4	-5.5
3y20y	0.11%	-53	-0.4	5.5	-4.2	51	2.3	3.8	-6.2	1.1	4.6	-5.3
3y30y	0.02%	-55	-0.5	5.6	-4.2	53	2.2	4.0	-6.1	0.9	4.8	-5.2

Note: Each structure has been normalised, so that the initial delta (normal) is €100k/bp. Gain/loss in rally/sell-off have been calculated under assumptions of constant vol). As of 15 July 2020.
Source: Barclays Research

Long duration strategies in GBP

Option	Fwd rate	Receiver spread				High-strike payer				Seagull		
		Strike of LS option (ATM +)	Carry in one year (£ mn)	Gain in a 50bp rally (£ mn)	Loss in a 50bp sell-off (£ mn)	Strike of HS option (ATM +)	Carry in one year (£ mn)	Gain in a 50bp rally (£ mn)	Loss in a 50bp sell-off (£ mn)	Carry in one year (£ mn)	Gain in a 50bp rally (£ mn)	Loss in a 50bp sell-off (£ mn)
1y2y	0.13%	-19	-3.8	4.5	-3.3	20	2.4	2.3	-9.1	-0.1	3.2	-6.8
1y3y	0.17%	-20	-2.7	4.6	-3.4	22	2.6	2.4	-8.8	0.5	3.3	-6.7
1y5y	0.25%	-23	-2.6	4.8	-3.7	25	3.1	2.7	-8.2	0.9	3.5	-6.4
1y10y	0.39%	-29	-3.7	5.1	-4.0	31	3.9	3.0	-7.4	0.8	3.9	-6.0
1y20y	0.48%	-32	-5.5	5.2	-4.0	34	4.4	3.2	-7.1	0.3	4.1	-5.8
1y30y	0.46%	-35	-6.2	5.4	-4.0	36	4.9	3.4	-6.8	0.1	4.3	-5.6
2y2y	0.21%	-31	0.2	5.0	-4.1	35	3.2	3.2	-7.3	2.0	3.9	-6.1
2y3y	0.25%	-33	0.1	5.1	-4.2	37	3.3	3.2	-7.2	2.0	4.0	-6.0
2y5y	0.32%	-35	0.0	5.1	-4.2	40	3.3	3.4	-7.0	2.0	4.1	-5.9
2y10y	0.44%	-41	-0.2	5.2	-4.3	45	3.2	3.6	-6.6	1.8	4.2	-5.7
2y20y	0.50%	-44	-0.6	5.3	-4.3	48	3.2	3.7	-6.4	1.5	4.4	-5.5
2y30y	0.47%	-46	-0.7	5.5	-4.2	50	3.2	3.8	-6.2	1.4	4.6	-5.3
3y2y	0.29%	-41	0.3	5.1	-4.4	47	3.0	3.6	-6.7	1.9	4.2	-5.8
3y3y	0.32%	-42	0.3	5.1	-4.4	48	2.8	3.6	-6.6	1.8	4.2	-5.7
3y5y	0.38%	-44	0.2	5.2	-4.4	51	2.8	3.7	-6.5	1.7	4.3	-5.6
3y10y	0.49%	-49	-0.1	5.2	-4.4	56	2.6	3.8	-6.3	1.4	4.4	-5.5
3y20y	0.51%	-51	-0.4	5.4	-4.4	58	2.3	4.0	-6.1	1.1	4.6	-5.3
3y30y	0.48%	-52	-0.5	5.5	-4.3	60	2.3	4.1	-6.0	1.0	4.7	-5.2

Note: Each structure has been normalised, so that the initial delta (normal) is \$100k/bp. Gain/loss in rally/sell-off have been calculated under assumptions of constant vol). As of 15 July 2020.
Source: Barclays Research

Optimal tenor pairs for conditional curve strategies

Methodology

- We compare various options pairs on the following metrics to identify optimal conditional curve strategies.
 - **Vol difference:** Calculated as the difference between ATM implied vols of the two options. A higher spread (positive or negative) implies that curve trades could be attractive in vol space.
 - **1y rate roll-down:** The change in the forward spread in one year, assuming the rate curve remains constant. A positive roll-down indicates that steepeners are likely to carry positively, while a negative number means that flatteners are likely to carry well.
 - **1y beta of rate slope versus rate level:** Calculated from the regression of the rate spread against the average of the rate levels. A positive beta implies that the curve tends to bear-steepen/bull-flatten, while a negative beta is indicative of bear-flattening/bull-steepening.
- Based on these metrics, we identify structures that are likely to carry positively.
- We then evaluate them on the following metrics:
 - **Zero-cost curve level:** Calculated by adjusting the strike of the longer tenor, so as to make the trade premium neutral. The level is then compared with the history of the spot curve (in Blue).
 - **6m Carry:** Under a scenario in which the curve remains unchanged over time, forward rates and vols roll to spot. A higher carry is desirable (in Blue).
- We highlight the structures that perform the best on these metrics.

Conditional curve strategies in USD

	<u>Vol Slope (abpv)</u>						
<u>Expiry</u>	2y-5y	2y-10y	5y-10y	5y-20y	5y-30y	10y-20y	10y-30y
6m	17.9	39.2	21.2	30.3	34.2	9.1	13.0
1y	16.2	33.1	16.9	24.3	27.5	7.4	10.6
2y	11.0	22.0	11.1	16.1	17.8	5.0	6.7
3y	6.6	14.1	7.5	10.9	11.8	3.4	4.3
5y	3.1	5.8	2.7	2.8	2.8	0.1	0.1

Note: Shows the difference in implied vols of longer versus shorter tails. Positive difference: Bull-steepeners/bear-flatteners are attractive. Negative difference: Bull-flatteners/bear-steepeners are attractive

From a vol perspective:

- Bull-steepeners/bear-flatteners offer value across all pairs

	<u>1y curve roll-down (bp)</u>						
<u>Expiry</u>	2y-5y	2y-10y	5y-10y	5y-20y	5y-30y	10y-20y	10y-30y
1y	-9.7	-8.6	1.1	5.2	6.8	4.1	5.7
2y	-3.5	0.3	3.7	8.6	10.2	4.8	6.5
3y	2.0	7.1	5.0	9.5	11.1	4.5	6.1
5y	4.1	8.3	4.2	7.3	8.6	3.2	4.4

Note: Shows the difference between the forward rate curve and the 1y rolled-down rate curve. Positive roll-down: Steepeners likely to carry well. Negative roll-down: Flatteners likely to carry well

From a roll-down perspective:

- Steepeners carry better in most expiries and longer tenors

	<u>1y Beta of slope versus average rate level</u>						
<u>Expiry</u>	2y-5y	2y-10y	5y-10y	5y-20y	5y-30y	10y-20y	10y-30y
6m	-12.2	-22.2	-10.0	-10.5	-10.2	-0.4	-0.1
1y	-11.7	-19.6	-7.8	-7.1	-6.6	0.8	1.3
2y	-10.8	-14.5	-3.6	-1.0	-0.1	2.6	3.5
3y	-7.7	-7.4	0.4	4.1	5.3	3.7	4.9
5y	1.2	5.6	4.4	8.3	9.7	3.9	5.3

Note: Shows the 1y beta of the rate slope (in bp) versus the average of the two rates (in %). Positive beta: Curve tends to bear-steepen/bull-flatten. Negative beta: Curve tends to bull-steepen/bear-flatten

Note: As 15 July 2020. Source for all tables: Barclays Research

From a slope vs. rate beta perspective:

- Bull-steepeners/bear-flatteners in short expiries and tenors offer value on this metric
- Bull-flatteners/bear-steepeners are better in longer expiries and tenors

Some positive carry conditional curve strategies in USD

USD bear-flatteners

Expiry	Curve	Spot Spread (bp)	Fwd spread(bp)	Zero cost curve (bp)	Carry in 6m (in bp)	1y Beta of slope versus rate level	Steepest spot curve level over the past yr (bp)
6m	2y-5y	10	15	27	1	-12	26
6m	2y-10y	38	44	75	1	-22	58
6m	5y-10y	29	28	41	0	-10	37
1y	2y-5y	10	20	34	1	-12	26
1y	2y-10y	38	47	81	1	-20	58
1y	5y-10y	29	27	42	-1	-8	37

- Short expiry 2y-5y and 2y-10y bear flatteners do not offers large positive carry

Note: Strike of longer tenor option has been adjusted to make the structure zero cost

- Long expiry 5y-20y and 5y-30y bull steepeners carry the best and benefit from a negative beta of slope vs rates

USD bull-steepeners

Expiry	Curve	Spot Spread (bp)	Fwd spread(bp)	Zero cost curve (bp)	Carry in 6m (in bp)	1y Beta of slope versus rate level	Flattest spot curve level over the past yr (bp)
6m	5y-20y	50	48	27	4.1	-10	11
6m	5y-30y	53	50	25	4.1	-10	10
6m	10y-30y	25	22	14	3.9	-0	-2
1y	5y-20y	50	45	23	2.2	-7	11
1y	5y-30y	53	46	20	2.6	-7	10
1y	10y-30y	25	19	11	1.6	1	-2
2y	5y-20y	50	36	17	1.5	-1	11
2y	5y-30y	53	36	15	1.5	-0	10

Note: Strike of longer tenor option has been adjusted to make the structure zero cost

Note: As of 15 July 2020. Source for all tables: Barclays Research

Conditional curve strategies in EUR

	<u>Vol Slope (abpv)</u>						
<u>Expiry</u>	2y-5y	2y-10y	5y-10y	5y-20y	5y-30y	10y-20y	10y-30y
6m	11.6	25.1	13.6	26.4	33.4	12.8	19.8
1y	11.6	25.3	13.7	24.4	30.5	10.7	16.8
2y	10.3	22.2	11.9	19.3	23.3	7.5	11.4
3y	7.4	17.2	9.8	14.6	17.3	4.8	7.5
5y	4.3	10.0	5.7	7.2	8.0	1.5	2.3

Note: Shows the difference in implied vols of longer versus shorter tails. Positive difference: Bull-steepeners/bear-flatteners are attractive. Negative difference: Bull-flatteners/bear-steepeners are attractive

From a vol perspective:

- Bull-steepeners/bear-flatteners offer value for most pairs

From a roll-down perspective:

- Flatteners carry better for pairs involving shorter tenors
- Steepeners are likely to carry better for pairs involving longer tenors

	<u>1y curve roll-down (bp)</u>						
<u>Expiry</u>	2y-5y	2y-10y	5y-10y	5y-20y	5y-30y	10y-20y	10y-30y
1y	-4.3	-6.8	-2.5	1.1	2.8	3.6	5.3
2y	-2.4	-3.5	-1.1	3.6	5.2	4.7	6.3
3y	-1.8	-1.6	0.1	5.3	6.6	5.2	6.5
5y	-0.6	1.8	2.3	7.6	8.4	5.3	6.0

Note: Shows the difference between the forward rate curve and the 1y rolled-down rate curve. Positive roll-down: Steepeners likely to carry well. Negative roll-down: Flatteners likely to carry well

	<u>1y Beta of slope versus average rate level</u>						
<u>Expiry</u>	2y-5y	2y-10y	5y-10y	5y-20y	5y-30y	10y-20y	10y-30y
6m	22.9	45.7	19.0	57.5	83.2	32.6	53.4
1y	19.6	39.9	17.5	52.9	76.2	30.5	49.6
2y	13.3	31.2	16.1	46.8	66.0	27.3	43.5
3y	8.1	25.2	15.8	42.7	58.3	24.6	38.3
5y	9.8	25.3	14.8	36.0	45.6	20.4	29.4

Note: Shows the 1y beta of the rate slope (in bp) versus the average of the two rates (in %). Positive beta: Curve tends to bear-steepen/ bull-flatten. Negative beta: Curve tends to bull-steepen/bear-flatten

Note: As of 15 July 2020. Source for all tables: Barclays Research

From a slope vs. rate beta perspective:

- Bull-flatteners/bear-steepeners generally offer value on this metric

Some positive carry conditional curve strategies in EUR

EUR bull-steepeners

Expiry	Curve	Spot Spread (bp)	Fwd spread(bp)	Zero cost curve (bp)	Carry in 6m (in bp)	1y Beta of slope versus rate level	Flattest spot curve level over the past yr (bp)
6m	5y-30y	35	34	7	1	83	13
6m	10y-30y	18	16	2	3	53	-6
1y	5y-30y	35	32	1	2	76	13
1y	10y-30y	18	13	-2	2	50	-6
2y	5y-20y	40	35	11	1	47	27
2y	5y-30y	35	27	-3	1	66	13
2y	10y-30y	18	6	-7	1	43	-6
3y	5y-30y	35	20	-5	1	58	13
3y	10y-30y	18	0	-10	1	38	-6

Note: Strike of longer tenor option has been adjusted to make the structure zero cost

- Short expiry 10s30s bull steepeners carry the best
- Risk to the trade comes from a flattening of the curve in a sharp bullish move

- EUR short expiry bear flatteners offer small positive carry

EUR bear-flatteners

Expiry	Curve	Spot Spread (bp)	Fwd spread(bp)	Zero cost curve (bp)	Carry in 6m (in bp)	1y Beta of slope versus rate level	Steepest spot curve level over the past yr (bp)
6m	2y-5y	4	7	15	1.5	23	23
6m	2y-10y	21	25	44	1.5	46	50
6m	5y-10y	17	18	26	0.0	19	37
1y	2y-5y	4	9	20	1.1	20	23
1y	2y-10y	21	28	54	1.6	40	50
1y	5y-10y	17	19	31	1.1	18	37
2y	2y-5y	4	11	23	-0.3	13	23
2y	2y-10y	21	31	60	-0.3	31	50

Note: As of 15 July 2020. Source for all tables: Barclays Research

Note: Strike of longer tenor option has been adjusted to make the structure zero cost

Conditional curve strategies in GBP

	<u>Vol Slope (abpv)</u>						
<u>Expiry</u>	2y-5y	2y-10y	5y-10y	5y-20y	5y-30y	10y-20y	10y-30y
6m	13.8	29.7	15.9	24.5	30.5	8.6	14.5
1y	9.3	20.7	11.3	17.5	22.5	6.1	11.1
2y	6.7	14.1	7.4	11.6	14.8	4.3	7.4
3y	4.7	9.9	5.1	8.0	10.1	2.8	4.9
5y	2.6	5.2	2.7	3.3	3.7	0.6	1.1

Note: Shows the difference in implied vols of longer versus shorter tails. Positive difference: Bull-steepeners/bear-flatteners are attractive. Negative difference: Bull-flatteners/bear-steepeners are attractive

From a vol perspective:

- Bull-steepeners/bear-flatteners offer value across the surface

From a roll-down perspective:

- Steepeners are likely to carry better for most pairs

	<u>1y curve roll-down (bp)</u>						
<u>Expiry</u>	2y-5y	2y-10y	5y-10y	5y-20y	5y-30y	10y-20y	10y-30y
1y	-4.4	-4.5	-0.1	2.4	3.3	2.5	3.4
2y	0.4	2.2	1.8	4.8	5.8	3.0	4.0
3y	0.8	3.1	2.2	5.0	5.8	2.7	3.6
5y	0.8	3.6	2.7	4.7	5.4	2.0	2.7

Note: Shows the difference between the forward rate curve and the 1y rolled-down rate curve. Positive roll-down: Steepeners likely to carry well. Negative roll-down: Flatteners likely to carry well

	<u>1y Beta of slope versus average rate level</u>						
<u>Expiry</u>	2y-5y	2y-10y	5y-10y	5y-20y	5y-30y	10y-20y	10y-30y
6m	-5.0	-4.4	0.8	13.1	21.3	12.2	20.3
1y	-5.7	-3.7	2.1	14.2	22.3	12.0	19.9
2y	-3.6	1.4	4.9	16.8	24.8	11.7	19.6
3y	-0.2	7.2	7.3	18.7	26.6	11.2	18.9
5y	4.6	13.7	9.0	18.4	25.7	9.2	16.5

Note: Shows the 1y beta of the rate slope (in bp) versus the average of the two rates (in %). Positive beta: Curve tends to bear-steepen/bull-flatten. Negative beta: Curve tends to bull-steepen/bear-flatten

Note: As of 15 July 2020. Source for all tables: Barclays Research

From a slope vs. rate beta perspective:

- Bull-steepeners/bear-flatteners in short tenors offer value on this metric
- Bear-steepeners/bull-flatteners are generally better for with longer tenors

Some positive carry conditional curve strategies in GBP

GBP bear-flatteners

Expiry	Curve	Spot Spread (bp)	Fwd spread(bp)	Zero cost curve (bp)	Carry in 6m (in bp)	1y Beta of slope versus rate level	Steepest spot curve level over the past yr (bp)
6m	2y-5y	7	10	18	1.6	-5	16
6m	2y-10y	21	25	46	1.6	-4	37
6m	5y-10y	15	15	24	0.0	1	21
1y	2y-5y	7	12	20	0.1	-6	16
1y	2y-10y	21	26	45	-0.5	-4	37
1y	5y-10y	15	15	24	-0.7	2	21
2y	2y-5y	7	11	19	-0.7	-4	16

- Short expiry GBP bear-flatteners offer small positive carry

Note: Strike of longer tenor option has been adjusted to make the structure zero cost

- Short expiry GBP 5y-30y and 10y-30y bull steepeners carry the best

Note: As of 15 July 2020. Source for all tables: Barclays Research

GBP bull-steepeners

Expiry	Curve	Spot Spread (bp)	Fwd spread(bp)	Zero cost curve (bp)	Carry in 6m (in bp)	1y Beta of slope versus rate level	Flattest spot curve level over the past yr (bp)
6m	5y-30y	25	24	6	2	38	-12
6m	10y-30y	11	9	2	2	27	-16
1y	2y-10y	21	26	8	-1	13	-8
1y	5y-30y	25	22	4	1	37	-12
1y	10y-30y	11	7	0	1	26	-16
2y	2y-10y	21	24	8	1	17	-8
2y	5y-30y	25	16	1	0	36	-12
3y	2y-10y	21	20	7	0	20	-8
3y	5y-30y	25	10	-1	0	33	-12

Note: Strike of longer tenor option has been adjusted to make the structure zero cost

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