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Weekly Options Report

Vols die hard

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- Gamma exploded as Treasury yields broke out of their six-month trading range. 3m*10y gained 7.6bp/y while 5y+ expiries were dragged about 2bp/y higher. The price move is due to yields rising to a level not seen since April last year.
- The typically active real money fund managers were largely absent. A few inactive accounts bought intermediate expiry options similar in size to selling from other participants.
- Hedge funds were active too, but in trivial size. Some accounts bought small amount of gamma on mid-tails; there is interest in board versus OTC relative value trading and earning carry via contingent steepener.
- There is decent issuance and vega supply from new callable issuance: $2.5mn log vega was available from zeroes last week. At the same time, the issuance in agency callable notes added $5.8mn vega to the option market.
- In our view, further rise in bond yields is unlikely. 10y Treasuries should settle at about 1.8% in Q1 and rally to 1.6% for Q2-Q4. So we like selling 1y*10y and 2y*10y straddles systematically, and think entry levels are extremely attractive. See the Vol outlook 2013: Vol does not live here anymore, *December 7, 2012*, for more details. Those looking to position for higher rates, we recommend owning *CMS caps funded with payer swaption*.
- Unlike US vol surface, the EUR surface was more or less unchanged over the last week. There was likely pick up in flow: a few fast money accounts bought back the low-strike receivers put on earlier. In addition, there is demand for left-side of the surface relative to the right surface. Finally, long-dated vol saw buying.
- For new trades, we recommend owning *GBP 1y*5y payer ladder*. Entry levels are attractive given the recent rise in GBP swap rates and vol is higher than we believe that it should be given the possibility BoE could be on hold for a while.

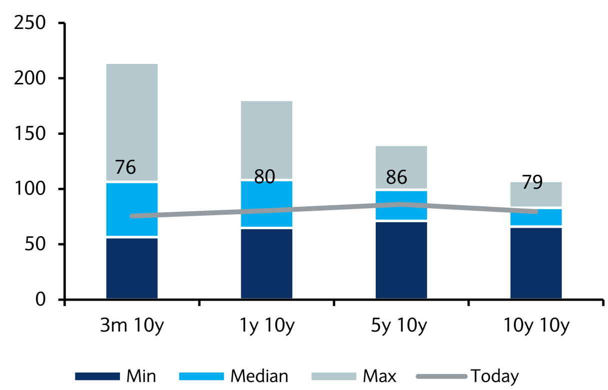
Historical vols

We examine swaptions relative to historical levels and look at benchmarks for short-, intermediate-, and long-dated options.

- Gamma exploded due to the bond market sell-off which caused rates to break-out of previous multiple month range. 3m*10y gained 7.6bp/y (Figure 2) over the week. Long-dated vol was draggled higher in the same time period.
- Barring the bottom-right, vol surface is at significant premium to realized vol (Figure 4).

FIGURE 1

Implied (annualized swaption bp vol)



Note: June 17, 2002-January 25, 2013. The upper end of the bar labeled "median" is the actual median level. Source: Barclays Research

FIGURE 2

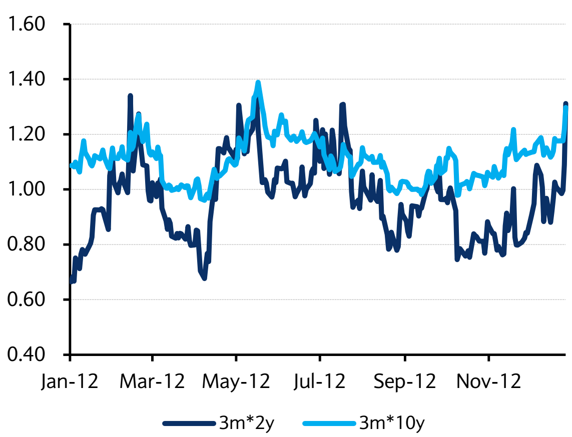
Implied (annualized swaption bp vol)

	3m 10y	1y 10y	5 y 10y	10 y 10 y
Min	57	65	71	66
Max	214	181	140	107
25-Jan-13	76	80	86	79
Average	109	108	100	84
Change on Week	7.6	4.0	2.0	1.7
Change on Month	7.6	4.8	0.5	-1.6

Note: June 17, 2002-January 25, 2013. Source: Barclays Research

FIGURE 3

Ratio of implied to 60-day realized vol



Note: January 2012-January 2013. Source: Barclays Research

FIGURE 4

Ratio of implied to realized vol

Imp Vol	2y	5y	10y	30y
3m	30	57	76	79
1y	38	65	80	82
3y	76	84	86	81
5y	90	90	86	77
10y	88	85	79	69

60d rlzd vol	2y	5y	10y	30y
3m	23	46	58	61
1y	36	56	63	64
3y	70	74	73	70
5y	80	79	76	72
10y	77	76	74	72

Imp/rlzd	2y	5y	10y	30y
3m	1.31	1.25	1.30	1.28
1y	1.07	1.16	1.27	1.27
3y	1.08	1.13	1.18	1.15
5y	1.13	1.14	1.14	1.06
10y	1.15	1.13	1.08	0.96

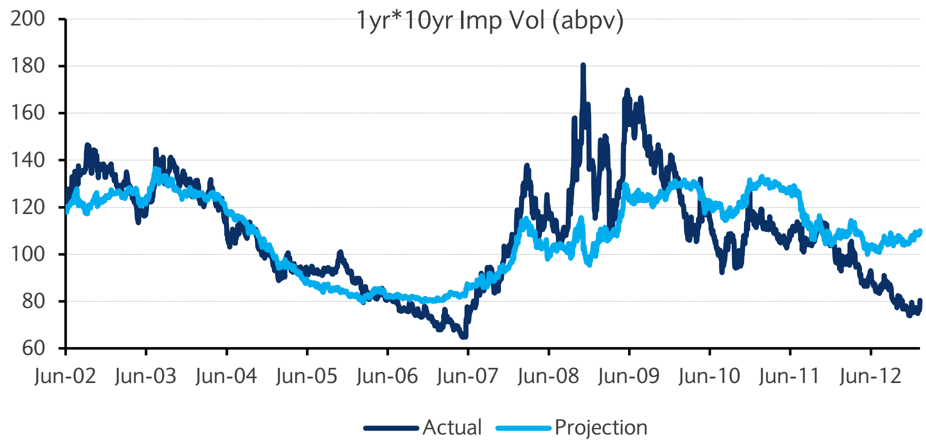
Note: As of January 25, 2013. Source: Barclays Research

Regression of vol versus curve slope

Using a range of regressions, we find that the main factor affecting vols is yield curve steepness.

FIGURE 5

Vol is notably cheap to the curve



Note: June 17, 2002-January 25, 2013. Source: Barclays Research

- We think the shape of the yield curve is important because it reflects several factors (eg, the level of rates, refinancing potential, and rates uncertainty). We approximate the yield curve steepness using the spread between 10y and 2y swaps and regress this against 1y*10y swaption volatility. Figure 6 shows the results and calculates vol based on current levels.
- Given the level of the yield curve, 1y*10y vol looks very cheap now. Moreover, the relationship between curve and vol has been strong for the past couple of years.

FIGURE 6

Summary output

Regression Statistics	Past 10 Years	Past Two Years
Multiple R squared	73%	71%
R squared	54%	51%
Adjusted R squared	54%	51%
Standard error	15	9
Observations	2,759	519
Coefficients		
Intercept	80	67
X Variable – 2s10s steepness	0.19	0.17
Regression Implied 1 yr 10 yr annual bp vol	110	95
Today's 1y 10y annual bp vol	80	80
Today's 2s10s steepness	158	158
Steepness that implies today's 1y 10y vol	0	76

Note: The regression is not meant to suggest that options are valued correctly or incorrectly. It is just one metric that we employ to track the level of vols in the market. June 17, 2002, to January 25, 2013. Source: Barclays Research

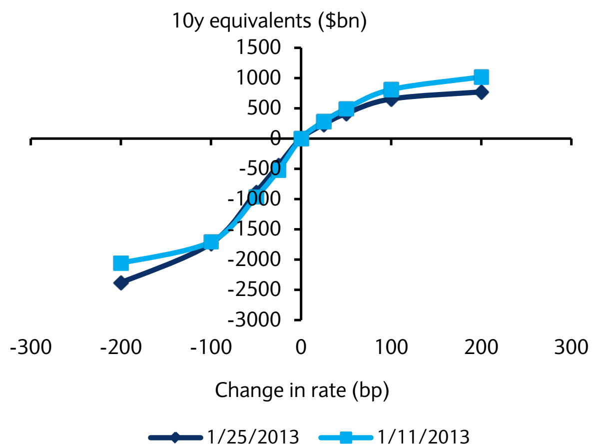
Mortgage convexity risk

Much of the demand for short-dated options (such as 3m*10y, 6m*5y) arises from mortgage convexity hedgers. Figures 7 and 8 show the change in model duration for the mortgage index and the mortgage servicing index for changes in the mortgage rate. Larger changes in duration suggest higher (negative) convexity.

- The convexity of the MSR universe has been more or less unchanged over the past week, mostly owing to unchanged mortgage rates (Figure 8). Given hedgers' belief that prepay speeds are no longer as sensitive to interest rates, we think there may be selling from mortgage hedgers in the near term.
- Moreover, the Fed owns 20.4% of outstanding fixed-rate mortgages, mostly in the form of 3s, 3.5s, and 4.5s (Figure 9). This accounts for 22.7% of total mortgage index convexity.

FIGURE 7

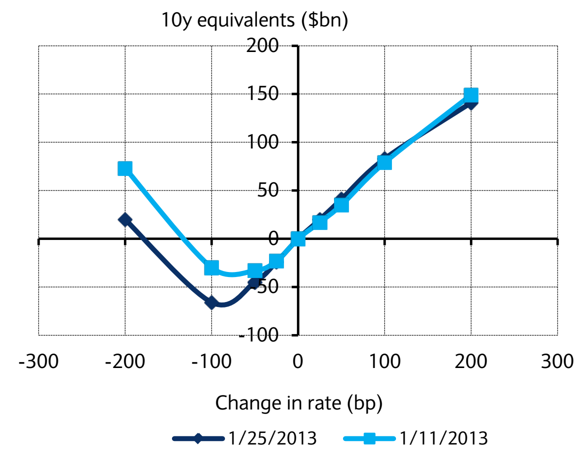
The MBS index is as convex as was two weeks ago…



Note: As of January 11, 2013. Source: Barclays Research

FIGURE 8

….as is the MSR index



Note: As of January 11, 2013. Source: Barclays Research

FIGURE 9

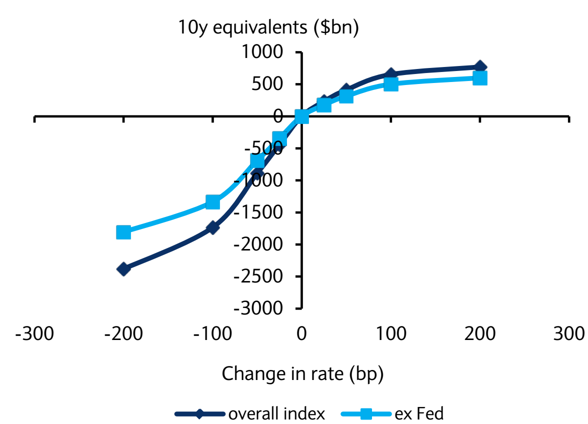
The Fed owns 20.4% of outstanding MBS…

Cpn	Outstanding	Outstanding (%)	Fed Holdings	Fed Holdings (%)
2.5	153	3%	36	23%
3.0	512	11%	154	30%
3.5	800	18%	172	22%
4.0	800	18%	136	17%
4.5	892	20%	261	29%
5.0	613	13%	122	20%
5.5	401	9%	38	10%
6.0	259	6%	5	2%
6.5	89	2%	1	1%
7.0	26	1%	-	0%
Total ($bn)	4,545		925	20.4%

Note: As of January 14, 2013. Source: Barclays Research

FIGURE 10

…which corresponds to 23% of MBS index convexity



Note: As of January 11, 2013. Source: Barclays Research

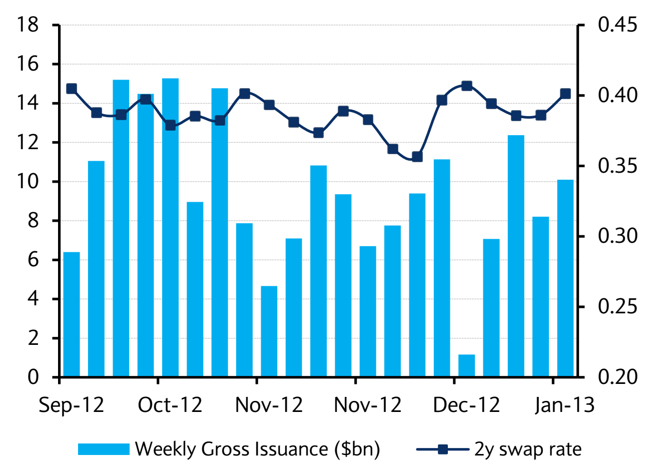
Callable and zero-coupon note issuance

We also track the issuance of agency callable notes and zero-coupon callable notes, which are important for option investors because they typically accompany options supply.

- Issuance in both callable zeroes and agency callable notes remain strong well into the new year.
- Roughly $350mn initial notional of zeroes delivered a decent $2.5mn log vega to the options market (Figure 12). This is high in the recent context, and will likely remain so going into the first few months of 2013.
- Agency callable note issuance remains robust. Last week, roughly $10bn in notes were issued (Figure 11). Thus, related option supply was decent at about $5.8mn black vega.

FIGURE 11

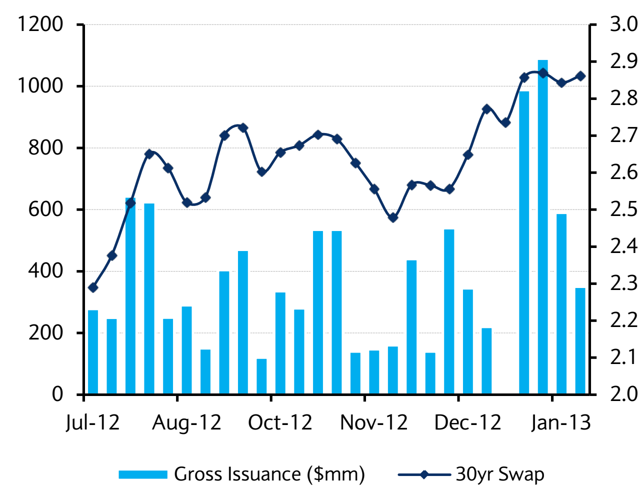
Agency callable gross issuance ($bn)



Source: Barclays Research

FIGURE 12

Zero-coupon callable gross issuance ($mn)



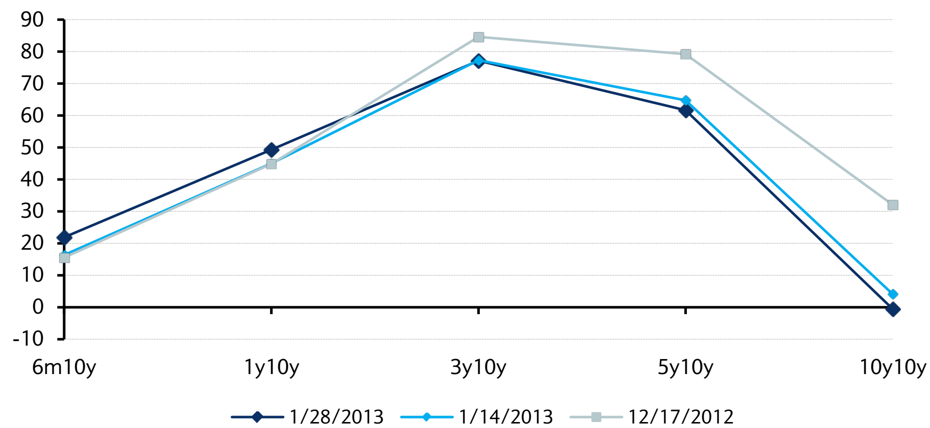
Source: Barclays Research

Skew

We examine skew for some benchmark options. This helps us identify whether investors are more concerned about higher or lower rates. We show the difference in premium for high-strike (100bp above the at-the-money forward) payer swaptions and low-strike receiver swaptions (100bp below the at-the-money forward).

FIGURE 13:

Current and historical payer-receiver premium differences (cts)



Source: Barclays Research

FIGURE 14

The payer skew remains elevated (abpv)

Source: Barclays Research

- The skew for long-dated options has cheapened a little over the past month (Figure 13). This suggests that while the market is a little less concerned about the longer term rate sell-off.
- However, in a historical context, the skew is still quite stretched (Figure 14). This suggests the market is still worried about the risk of a marked sell-off.

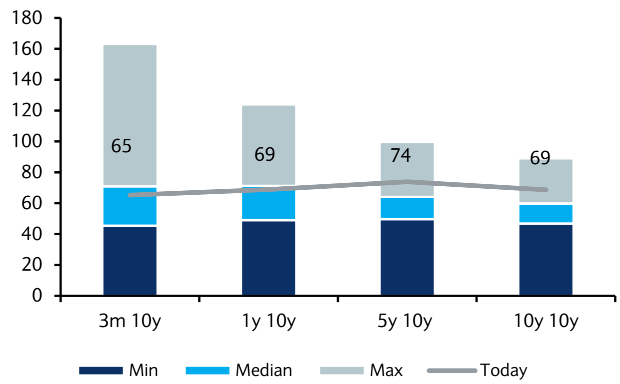
EUR vols

We examine EUR swaptions relative to historical levels and US swaptions. We look at benchmarks for short-, intermediate-, and long-dated options.

- EUR vol surface was more or less unchanged over the past week (Figure 16).
- The long-dated vol, in a longer historical context, is still high (Figure 15). We believe that the relative richness of long-dated vol stems from the absence of supply from new issuance of CMS capped floating-rate notes. We expect long-dated vol to hold on to lofty levels.
- On a relative basis, EUR gamma is carrying about as much premium to US gamma (Figure 18). We think EUR gamma should be at a higher premium given the event risk in the region.

FIGURE 15

EUR implied (annualized swaption bp vol)



Note: November 21, 2002-January 25, 2013. The upper end of the bar labeled "median" is the actual median level. Source: Barclays Research

FIGURE 16

EUR implied (annualized swaption bp vol)

	3m 10y	1y 10y	5 y 10y	10 y 10 y
Min	46	49	50	47
Max	163	124	100	89
25-Jan-13	65	69	74	69
Average	76	75	70	64
Change on Week	0.6	0.1	0.4	1.4
Change on Month	5.3	0.7	-0.5	-0.3

Note: November 21, 2002-January 25, 2013. Source: Barclays Research

FIGURE 17

Ratio of implied to 60-day realized vol

Note: January 2012 – January 2013. Source: Barclays Research

FIGURE 18

EUR vs. US (3m*10y to 60d realized vol ratio)

Note: As of January 25, 2013. Source: Barclays Research

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