

INFLATION VOLATILITY DIGEST

Update: This version corrects a mislabeling in Figure 3.

We have expanded the inflation volatility packet to include EUR and UK. This global inflation volatility report starts with euro and UK articles, followed by the US inflation volatility packet, and then European and UK sections. Please note that the marks in this report are indicative levels only. Liquidity and trading volumes in the non-linear inflation market are typically much lower than in both the cash and linear derivatives inflation markets, and this can be reflected in wider bid/offers and sharper jumps in prices. That said, we believe that these markets can be used to express views in ways that are not available in linear-inflation (or nominal) markets; thus it expands the investment set for strategic investors.

In the US section, we publish marks on deflation floors, deflation probabilities, market-implied distribution of inflation, covered breakevens, zero coupon, and y/y caps floors on a weekly basis. Every two weeks, we publish views/trade idea commentary. We will include US, EUR, and UK commentaries and provide cross-market views when they are relevant.

In the euro area section, we will now provide commentary on the markets, as well as tables on European linkers' floor valuations, Euro HICPx zero-coupon, and Y/Y caps/floors, and skew charts.

In the UK section, we provide an overview of the UK inflation options market. From this edition on, we will produce indicative levels and histories for Limited Price Indexation (LPI) swaps, which are the most frequently traded structure in UK inflation options, as well as indicative levels and charts for y/y RPI caps and floors.

We hope you find this report useful and strongly encourage feedback.

This week's inflation volatility market views

US

- The near-term ex-energy inflation (2y and under) is likely to be above 2% given the significant move up in food inflation since the beginning of June and private rents indicators, which show rent inflation trending well above 2%. In light of this view, we feel comfortable selling 2y CPI floors @ 1%, hedged with crude/gasoline puts.

Europe

- We recommend buying a 5y euro HICPx y/y cap with a 3% strike versus selling a 4% strike cap, with twice the notional on the latter. The structure is positioned for levels of inflation in the medium term that overshoot the ECB's target.

UK

- The UK inflation options market remains dominated by LPI flows, with activity notably lower than US and European markets. A supply/demand imbalance resulting from inflation hedging by the pensions industry leaves 0% strike floors perennially rich

PLEASE SEE ANALYST CERTIFICATIONS AND IMPORTANT DISCLOSURES STARTING AFTER PAGE 24

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EURO INFLATION VOLATILITY

Buy 1x2 euro HICPx y/y cap spread

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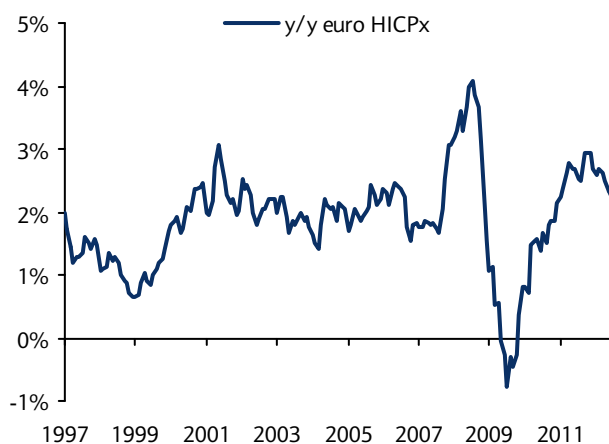
We recommend buying a 5y euro HICPx y/y cap with a 3% strike versus selling a 4% strike cap, with twice the notional on the latter. The structure is positioned for levels of inflation in the medium term which overshoot the ECB's target.

In the *Inflation-Linked Monthly*, July 2012, we highlighted how a period of inflation above the ECB's target could facilitate an adjustment in unit labour costs to help reduce imbalances between different euro area countries. While we see it as unlikely that the ECB will change its definition of price stability, we believe, on the other hand, that it should be "selectively tolerant" towards inflation pressures which go some way toward driving positive macroeconomic adjustments. We turn to the inflation options market to position for this possibility of above-target, albeit not excessive, inflation in the short- to medium term.

We therefore consider euro HICPx Y/Y cap spreads, i.e., buying a cap versus selling one with a higher strike. A 5y maturity is appropriate, in our view, for the horizon over which macro adjustments are likely to be necessary and is, furthermore, a relatively liquid point in the options markets. We look for structures that involve no initial cash outlay, which means that a higher notional would need to be traded on the higher-strike cap than the lower-strike one. This implies that if inflation turns out to be sufficiently high, the structure has a negative pay-off. For that reason, the lower the strike of the cap that is sold, the lower the threshold of y/y euro HICPx at which a positive pay-off occurs but the lower also the y/y level at which the pay-off is negative. Given the type of scenario that the trade positions for, the threshold for a negative pay-off should not be too low. We note that one way to reduce the likelihood of a negative pay-off is to sell a cap with a very high strike, but the notional on the short position would then need to be significantly larger, resulting in very negative delta and vega risks.

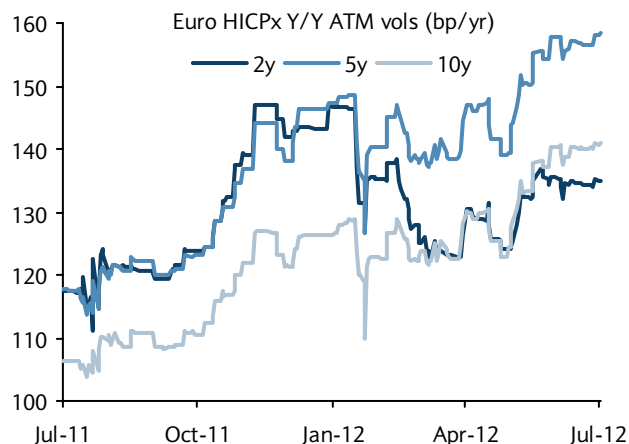
At current market levels, we find a long position in a 3% cap versus a 4% cap as an attractive position. With twice the notional on the higher strike cap (i.e., a 1x2 cap spread), the trade has a small net premium intake. The structure has a negative pay-off for any April y/y euro HICPx rate from 2013 to 2017 which is above 5%. We note that the highest

Figure 1: Highest y/y euro HICPx fixing well below 5%



Source: Barclays Research

Figure 2: Euro HICPx implied vols rising notably recently



Source: Barclays Research

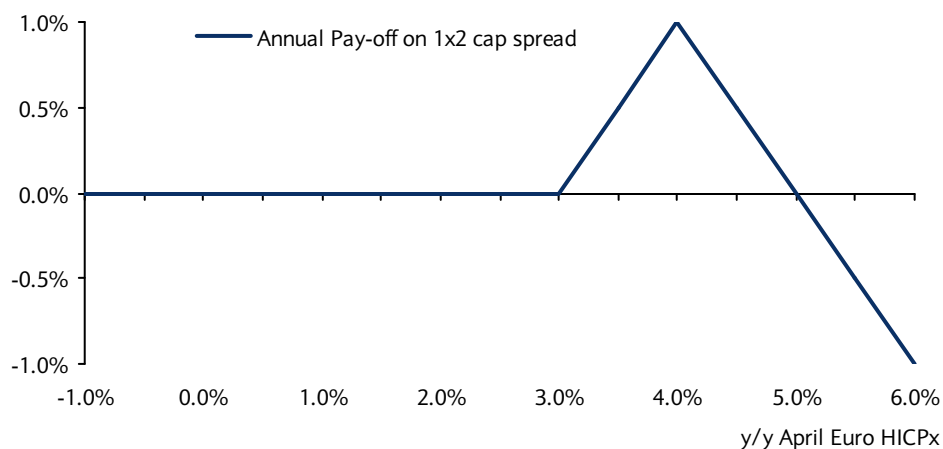
reached by the y/y euro HICPx series to date is 4.1%, in July 2008 when the effect of a sharp rally in commodity prices was extreme. Therefore a 5% threshold appears, in our view, a relatively safe level. Furthermore, we would highlight that although the ECB may show some leniency toward some inflationary pressures, 5% is high enough such that we would expect the ECB to react to such a level.

Figure 3: Indicative trade levels

	Net premium intake	Vega	Delta
Sell 5Y euro HICPx YoY caps, 4% strike. Notional: €30mn	€ 31,460	-€ 2,110	-€405
Buy 5Y euro HICPx YoY caps, 3% strike. Notional €15mn			

Source: Barclays Research

Figure 4: Annual pay-off profile on 1x2 cap spread



Source: Barclays Research

The position has a short vol exposure, which we view as appropriate given the recent richening in euro HICPx implied vols. In addition, it appears that current levels are prompting interest to sell vol, and we would expect such opportunistic interest to intensify if levels richen further.

UK INFLATION VOLATILITY

Limited options

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The UK inflation options market remains dominated by LPI flows, with activity notably lower than that of US and European markets. A supply/demand imbalance resulting from inflation hedging by the pensions industry leaves 0% strike floors perennially rich.

The UK pensions landscape and its interaction with inflation markets

The UK government has been issuing gilts indexed to RPI inflation since 1981, making the UK the longest established among the three major inflation markets and the second-largest by market capitalisation. However, the RPI inflation derivatives market has traditionally been less liquid than comparable markets. One reason is the absence of principal deflation floors in UK linkers, meaning that unlike in the US and Europe, asset swapping of inflation-linked bonds does not provide a supply of floors to the market. However, the primary reason is that the dominant source of demand for RPI derivatives has come from the pensions industry. The latest update to the Pension Protection Fund's PPF7800 index estimated aggregate UK defined-benefit liabilities total £1.3trn as of June 2012. In the most recent edition of the *Purple Book*, the PPF and Pensions Regulator estimate that a 0.1pp increase in the assumed rate of inflation, with nominal interest rates unchanged, increases the £179 liabilities for schemes by approximately 0.9%. This compares with some £350bn of index-linked gilts outstanding by market capitalisation, plus the capacity of the RPI swap and options markets at a given point in time. As such there is, in theory, a significant imbalance between the available stock of RPI-linked assets and potential demand from pension funds. This means that the dynamics of the RPI swap and options markets are highly susceptible to pensions-related flows, and also concentrates market activity at longer tenors.

Figure 1: The changing face of pension indexation

Measure announced	Effective	Change(s)
Social Security Act 1986	6 April 1988	Guaranteed minimum pensions for contracted-out service required to have 3% LPI
Pensions Act 1995	6 April 1997	Statutory indexation introduced, capped at 5% RPI
Pensions Act 2004	6 April 2005	Minimum RPI cap reduced to 2.5%
8 July 2010	January 2011	CPI used for uprating most benefits and public sector as well as for revaluation order under Pensions Act 1993
16 June 2011		Government response to impact of using CPI as measure of price increases on private sector pension schemes rules out overriding scheme rules stipulating specific RPI accrual

Source: HM Government, Barclays Research

UK pension inflation indexation has undergone significant changes in recent years, following the government switching the statutory measure for pension inflation indexation from RPI to CPI effective from 2011. However, UK gilt linkers remain indexed to RPI, with the government ruling out launching CPI-linked gilts in fiscal year 2012-13 although it may consider issuance at a future date. As such, activity in UK inflation markets comprises almost exclusively RPI-linked products, and this is likely to remain the case for the foreseeable future. In addition, there is significant uncertainty at present regarding the status of the formula effect component of the RPI/CPI basis stemming from ongoing investigations by the Office for National Statistics (ONS). Further clarity on this issue should emerge following the September meeting of the Consumer Prices Advisory Committee (CPAC). We see scope for modest revisions to occur to the RPI/CPI basis in early 2013 should a pilot investigation into

clothing price collection be implemented, which we estimate would reduce the RPI/CPI basis by 0.2-0.3pp. We do not expect significant imminent changes to be made to the aggregation of RPI, which would reduce the formula effect significantly, but these cannot be conclusively ruled out in the medium to longer term.

A survey of defined benefit schemes published by the Department of Work and Pensions in 2011 estimated that 72% of schemes reference RPI explicitly for indexation, but for revaluation 61% reference CPI. This means that the majority of schemes will pay out benefits uprated by RPI subject to any caps or floors upon retirement of individuals, but that most benefits will accrue indexed to CPI prior to retirement upon leaving service. This presents something of a conundrum for some schemes in hedging their liabilities, but without a viable CPI inflation market hedging will likely take place with RPI instruments for now. This means that hedgers of CPI-linked liabilities with RPI products do assume a degree of RPI/CPI basis risk. If significant potential methodological changes are implemented, this would reduce a structural element of this, but risks from variations in mortgage interest payments, housing, and differing weightings would nevertheless remain. The uncertainty surrounding the outlook for the RPI/CPI basis may discourage some from hedging liabilities until there is further clarity, even though long-dated linker breakevens and RPI swap rates are at multi-year lows.

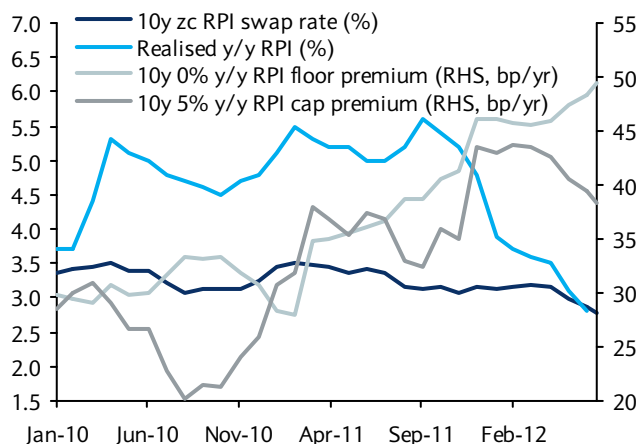
UK inflation options – LPI dominates activity

LPI[0,5] remains the most frequently traded structure in UK inflation options

The RPI swap market has traditionally been more liquid at the longer end of the curve, where demand from pension funds is greatest, with supply of RPI inflation facilitated by asset swapping of gilt linkers. Activity in inflation options tends to be dominated by Limited Price Indexation, or LPI swaps. LPI[0,5] is the most commonly traded structure as the largest number of pension liabilities have the exposure. LPI historically has been the dominant form of pension inflation indexation. It entails paying RPI inflation but with a cap and a floor. Prior to the switch of statutory minimum indexation to CPI, LPI[0,2.5] was the legal minimum indexation but as RPI has tended to be higher than 2.5% y/y, there has been little incentive for schemes to hedge this exposure. To date, we are not aware of any activity in CPI based limited price indexation (LCPI), and nor is there likely to be without an active CPI swap market, but given the legislative change L-CPI[0,2.5] liabilities are now widespread.

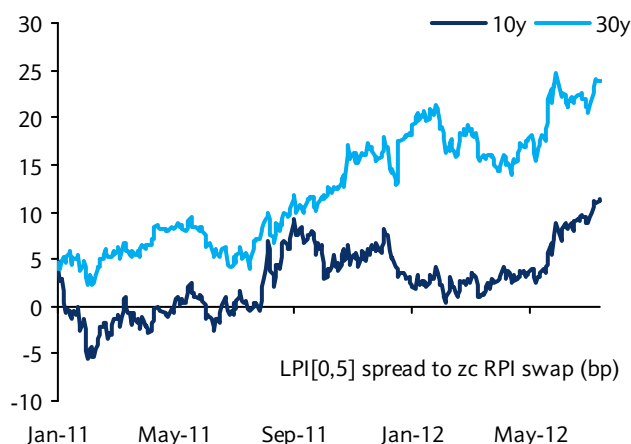
Taking LPI[0,5] as an example, a simplified hedge for this exposure can be thought of as receiving RPI (ie, paying a fixed rate on an RPI swap), coupled with a long position in a 0% floor and a short position in a 5% cap. Valuing LPI is not as straightforward as this, however,

Figure 2: Inflation floors have richened notably



Source: ONS, Barclays Research

Figure 3: LPI at multiyear wides versus RPI



Source: Barclays Research

as LPI is a path-dependent option and thus is constructed as a series of y/y RPI swaps with corresponding floorlet and caplet positions. In an ideal world, pricing of LPI would be undertaken via a full model-based Monte Carlo simulation. In practise, there is no standard inflation term structure model and as such, it is common simply to adjust for inflation convexity in the pricing of LPI, although again there is no agreed convention here.

Imbalance of supply and demand leaves 0% floors perennially rich

LPI swaps tend to trade rich to RPI swaps owing to the skew of the RPI inflation vol surface, on which 0% floors have extremely rich implied vol given the structural demand for this level. On a flat vol surface, LPI swaps should trade through RPI swaps when the zero strike floors are further from the money than the cap level. It is important to note that while a zero coupon RPI swap is relatively simple to unwind, unwinding a seasoned LPI trade is less trivial given the non-linear nature and embedded optionality within the structure. LPI[0,5] now stands at its richest relative to zero coupon RPI swaps in several years, as 0% strike floors have richened alongside the cheapening in RPI swaps, which has also been accompanied by a fall in headline RPI rates. This has the potential to encourage paying of LPI by those able to do so, although our economists forecast RPI falling a further 0.4pp from the June y/y RPI print of 2.8% to reach a local trough of 2.4% y/y in September. This may result in a further richening in LPI[0,5] should RPI swaps cheapen further.

Scope for structured product issuance to encourage activity in y/y RPI options, but activity likely to remain subdued near term

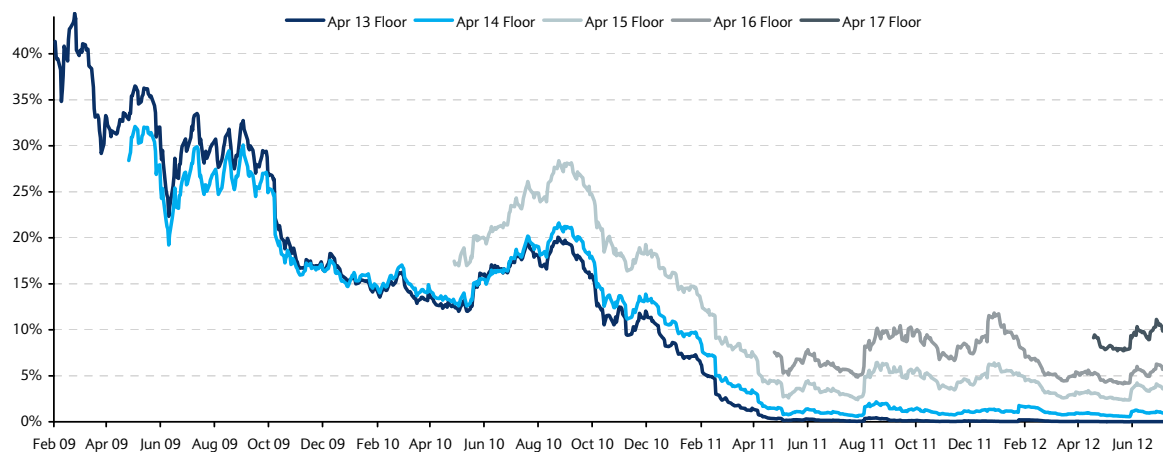
Liquidity in European inflation options has traditionally been facilitated in part by an active market in retail structured products with some form of inflation exposure. However, this area of the UK market has historically been dominated by the government-backed National Savings and Investments (NS&I) index-linked savings certificates, discouraging third-party issuance of similar products. Since the suspension of the National Savings product, the emergence of bank inflation-linked products has resulted in increased periodic activity in 5y RPI swaps. Hedging of such products can also facilitate activity in y/y RPI caps and floors. However, consumer inflation expectations tend to be heavily influenced by recent trends in inflation. Both RPI and CPI inflation having fallen 2.8pp from their local peak in September 2011 and with further moderation likely, this could dampen imminent demand for retail inflation products despite short-dated linker breakevens offering attractive value. As such, LPI is likely to remain the predominant traded structure in UK inflation options, with activity in y/y RPI caps and floors set to remain notably lower. While it is possible to trade zero-coupon RPI caps and floors, activity in this sector is extremely low. Given the complex nature of LPI options, and the heavily flow-driven nature of the UK inflation options market, prevailing market dynamics are unlikely to alter soon. However, the extreme relative richness of LPI has the potential to encourage opportunistic payers with the appropriate risk tolerance.

US Inflation Volatility Packet

Embedded TIPS Floor Premium implied by CPI Options Market

Bond	Real Yield, %	BEI, %	Index Ratio	Annualized Deflation needed for the floor to be ATM	"Max" BEI decline before reaching the floor	Minimum nominal Yield to Maturity *	TIPS Floor Premium, bps				
							7/17/2012	1w Ago	1m Ago	3m Ago	6m Ago
TII Apr 13 0.625%	0.02	0.172	1.088	10.7%	10.9%	-10.7%	0.0	0.0	0.0	0.0	0.0
TII Jul 13 1.875%	-0.88	1.084	1.252	20.3%	21.4%	-21.2%	0.0	0.0	0.0	0.0	0.0
TII Jan 14 2%	-0.77	1.019	1.244	13.6%	14.7%	-14.4%	0.0	0.0	0.0	0.0	0.0
TII Apr 14 1.25%	-0.85	1.102	1.086	4.7%	5.8%	-5.5%	0.7	0.7	0.8	0.6	0.7
TII Jul 14 2%	-1.16	1.412	1.220	9.5%	10.9%	-10.7%	0.0	0.0	0.0	0.0	0.0
TII Jan 15 1.625%	-1.06	1.336	1.204	7.2%	8.5%	-8.2%	0.1	0.1	0.1	0.1	0.1
TII Apr 15 0.5%	-1.07	1.378	1.061	2.1%	3.5%	-3.2%	2.6	2.7	2.5	2.1	3.9
TII Jul 15 1.875%	-1.20	1.554	1.182	5.4%	7.0%	-6.6%	0.2	0.2	0.2	0.2	0.2
TII Jan 16 2%	-1.16	1.581	1.159	4.1%	5.7%	-5.3%	0.4	0.4	0.4	0.4	0.4
TII Apr 16 0.125%	-1.13	1.582	1.042	1.1%	2.7%	-2.2%	4.0	3.9	3.3	3.4	7.1
TII Jul 16 2.5%	-1.21	1.706	1.139	3.2%	4.9%	-4.4%	0.6	0.6	0.6	0.6	0.9
TII Jan 17 2.375%	-1.15	1.723	1.140	2.9%	4.6%	-4.0%	0.8	0.8	0.7	0.7	1.2
TII Apr 17 0.125%	-1.19	1.793	1.012	0.3%	2.1%	-1.4%	7.0	6.7	6.1		
TII Jul 17 2.625%	-1.20	1.854	1.109	2.1%	3.9%	-3.3%	1.3	1.3	1.3	1.3	2.2
TII Jan 18 1.625%	-1.08	1.813	1.098	1.7%	3.5%	-2.8%	1.8	1.8	1.9	2.0	2.9
TII Jul 18 1.375%	-1.10	1.923	1.066	1.1%	3.0%	-2.2%	2.8	2.8	2.9	3.0	4.5
TII Jan 19 2.125%	-0.98	1.883	1.071	1.1%	2.9%	-2.0%	2.8	2.7	2.9	2.9	4.3
TII Jul 19 1.875%	-1.00	1.956	1.077	1.1%	3.0%	-2.1%	2.6	2.5	2.6	2.6	4.0
TII Jan 20 1.375%	-0.88	1.920	1.063	0.8%	2.7%	-1.7%	3.0	2.9	3.0	3.0	4.8
TII Jul 20 1.25%	-0.86	2.016	1.054	0.7%	2.7%	-1.5%	3.1	3.0	3.2	3.1	5.0
TII Jan 21 1.125%	-0.75	1.980	1.051	0.6%	2.6%	-1.3%	3.2	3.2	3.3	3.2	5.1
TII Jul 21 0.625%	-0.75	2.111	1.020	0.2%	2.3%	-1.0%	4.4	4.3	4.4	4.2	6.9
TII Jan 22 0.125%	-0.63	2.082	1.016	0.2%	2.2%	-0.8%	4.7	4.6	4.7	4.5	
TII Jul 22 0.125%	-0.01	2.137	1.000	0.0%	2.1%	0.0%	5.2				
TII Jan 25 2.375%	-0.32	2.066	1.220	1.6%	3.6%	-1.9%	0.6	0.6	0.6	0.6	1.2
TII Jan 26 2%	-0.23	2.115	1.159	1.1%	3.2%	-1.3%	0.9	0.9	1.0	0.9	1.7
TII Jan 27 2.375%	-0.18	2.133	1.140	0.9%	3.0%	-1.1%	0.9	0.9	1.0	0.9	1.8
TII Jan 28 1.75%	-0.10	2.118	1.098	0.6%	2.7%	-0.7%	1.3	1.3	1.4	1.2	2.3
TII Apr 28 3.625%	-0.06	2.131	1.422	2.2%	4.3%	-2.3%	0.1	0.1	0.1	0.1	0.6
TII Jan 29 2.5%	-0.07	2.171	1.071	0.4%	2.6%	-0.5%	1.5	1.5	1.6	1.4	2.4
TII Apr 29 3.875%	-0.05	2.151	1.399	2.0%	4.1%	-2.0%	0.1	0.1	0.2	0.1	0.6
TII Apr 32 3.375%	0.01	2.149	1.295	1.3%	3.5%	-1.3%	0.4	0.4	0.4	0.4	1.1
TII Feb 40 2.125%	0.32	2.164	1.064	0.2%	2.4%	0.1%	1.4	1.5	1.6	1.4	2.1
TII Feb 41 2.125%	0.34	2.164	1.050	0.2%	2.3%	0.2%	1.6	1.6	1.8	1.5	2.1
TII Feb 42 0.75%	0.39	2.198	1.018	0.1%	2.3%	0.3%	2.2	2.2	2.5	2.1	

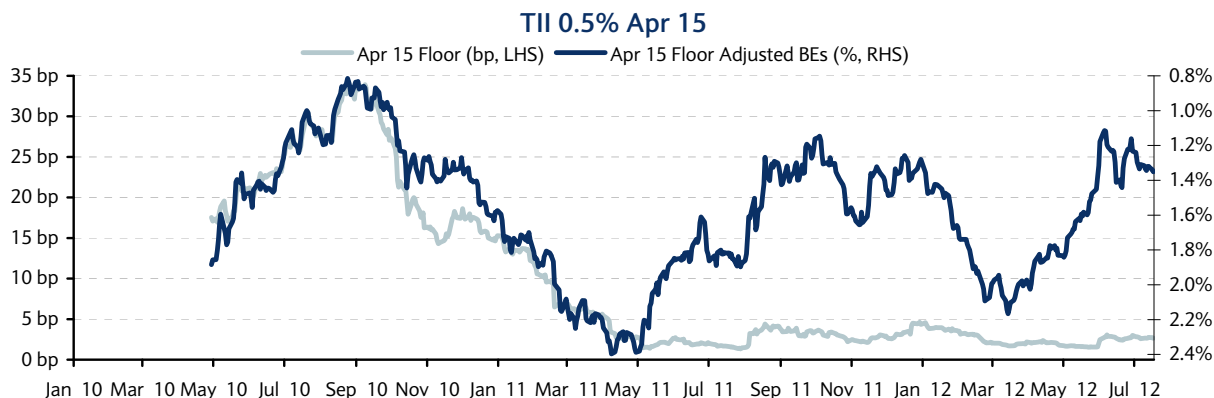
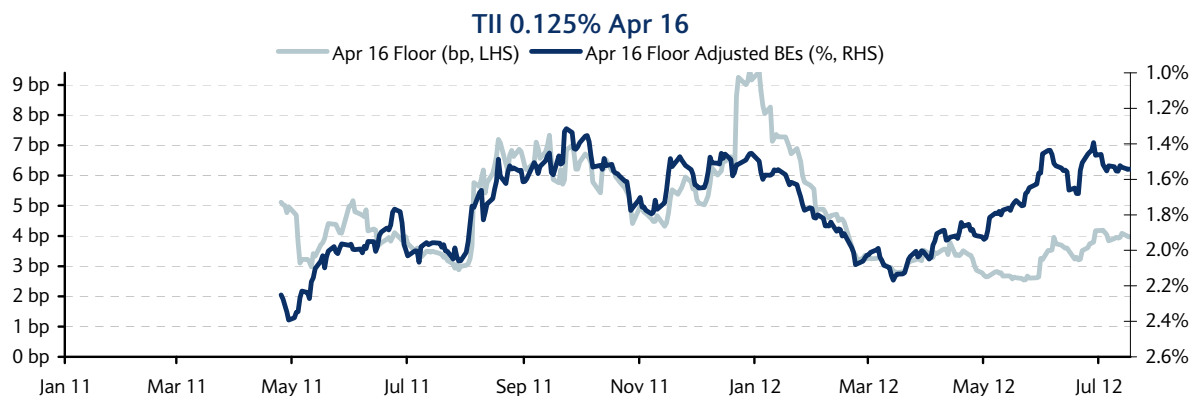
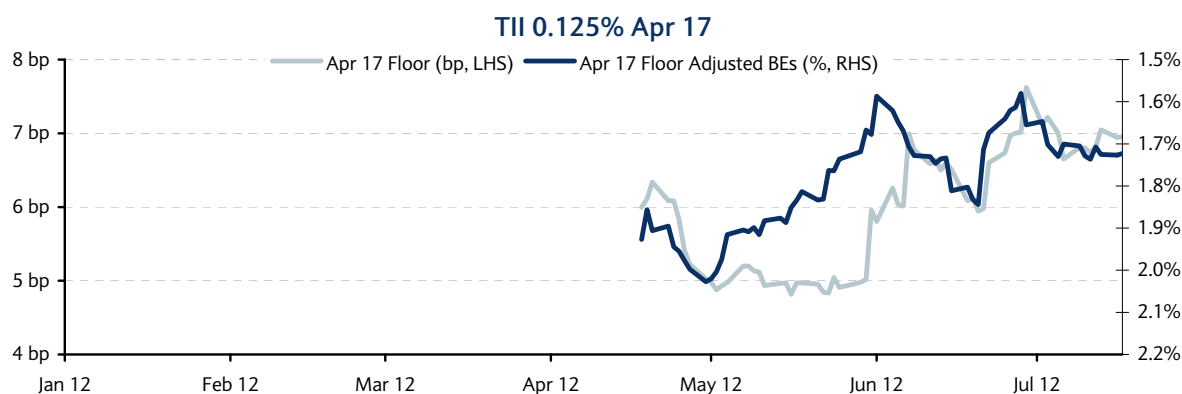
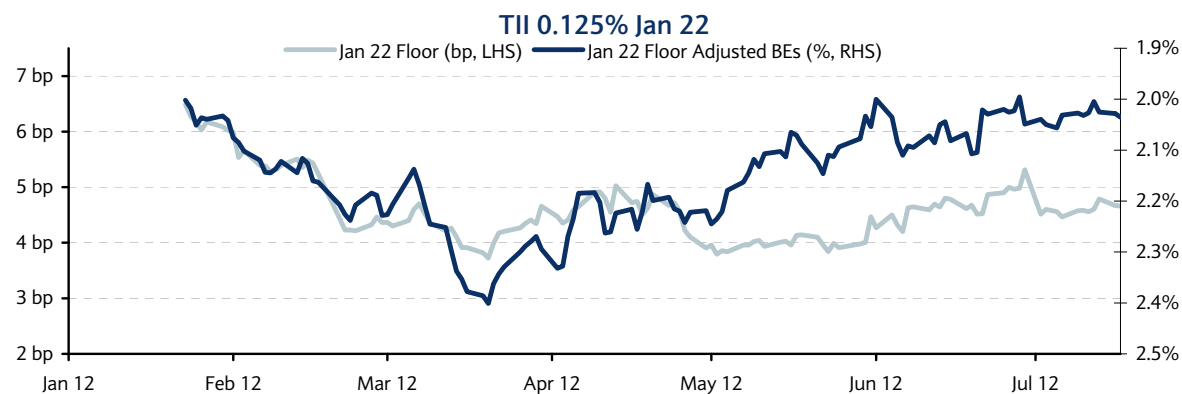
Implied Probability of Floor being Exercised using CPI Options Market



Note: Black-Scholes options framework is used to back out these probabilities.

Source: Barclays Research

Historical 3y-10y Floor Premiums implied by CPI Options Market



Source: Barclays Research

TIPStions Report (1m Receivers and Payers)

Bond	Real Yield, %	1m TIPS Real Yield Payer, bps *			1m TIPS Real Yield Receiver, bps *		
		ATM+20	ATM+10	ATM	ATM	ATM-10	ATM-20
TII Apr 13 0.625%	0.02	1.4	2.7	4.2	24.8	16.7	10.1
TII Jul 13 1.875%	-0.88	1.0	2.2	3.7	23.7	16.1	9.8
TII Jan 14 2%	-0.77	0.9	2.1	4.0	16.6	9.8	4.9
TII Apr 14 1.25%	-0.85	1.0	2.3	4.4	15.5	9.0	4.3
TII Jul 14 2%	-1.16	0.7	1.9	3.8	14.9	8.3	3.7
TII Jan 15 1.625%	-1.06	0.8	2.1	4.3	12.8	6.7	2.7
TII Apr 15 0.5%	-1.07	0.8	2.1	4.4	12.1	6.1	2.4
TII Jul 15 1.875%	-1.20	0.8	2.1	4.4	11.9	6.0	2.3
TII Jan 16 2%	-1.16	0.8	2.3	4.7	11.1	5.5	2.0
TII Apr 16 0.125%	-1.13	0.9	2.5	5.1	10.8	5.3	1.9
TII Jul 16 2.5%	-1.21	0.9	2.4	5.0	10.7	5.2	1.9
TII Jan 17 2.375%	-1.15	0.9	2.5	5.2	10.2	4.8	1.7
TII Apr 17 0.125%	-1.19	1.1	2.9	5.7	10.3	5.0	1.8
TII Jul 17 2.625%	-1.20	0.9	2.5	5.3	9.9	4.6	1.6
TII Jan 18 1.625%	-1.08	0.9	2.5	5.4	9.3	4.2	1.4
TII Jul 18 1.375%	-1.10	1.0	2.7	5.6	9.3	4.2	1.4
TII Jan 19 2.125%	-0.98	1.1	2.9	6.0	9.2	4.2	1.4
TII Jul 19 1.875%	-1.00	1.2	3.0	6.1	9.1	4.2	1.4
TII Jan 20 1.375%	-0.88	1.0	2.8	5.9	8.5	3.7	1.2
TII Jul 20 1.25%	-0.86	1.1	2.9	6.1	8.5	3.7	1.2
TII Jan 21 1.125%	-0.75	1.3	3.3	6.5	8.7	4.0	1.3
TII Jul 21 0.625%	-0.75	1.4	3.4	6.7	8.7	4.0	1.3
TII Jan 22 0.125%	-0.63	1.9	4.2	7.5	9.3	4.5	1.7
TII Jul 22 0.125%	-0.01	1.9	4.2	7.5	9.3	4.5	1.7
TII Jan 25 2.375%	-0.32	2.1	4.5	8.0	9.3	4.6	1.7
TII Jan 26 2%	-0.23	2.4	4.8	8.4	9.5	4.8	1.9
TII Jan 27 2.375%	-0.18	2.5	5.0	8.5	9.6	4.8	1.9
TII Jan 28 1.75%	-0.10	2.5	5.1	8.6	9.5	4.8	1.9
TII Apr 28 3.625%	-0.06	2.5	5.1	8.6	9.6	4.9	2.0
TII Jan 29 2.5%	-0.07	2.5	5.0	8.6	9.5	4.8	1.9
TII Apr 29 3.875%	-0.05	2.5	5.0	8.6	9.5	4.8	1.9
TII Apr 32 3.375%	0.01	2.6	5.2	8.8	9.5	4.8	1.9
TII Feb 40 2.125%	0.32	2.7	5.4	9.1	9.5	4.8	2.0
TII Feb 41 2.125%	0.34	2.8	5.4	9.1	9.5	4.8	2.0
TII Feb 42 0.75%	0.39	3.1	5.9	9.6	9.9	5.2	2.2

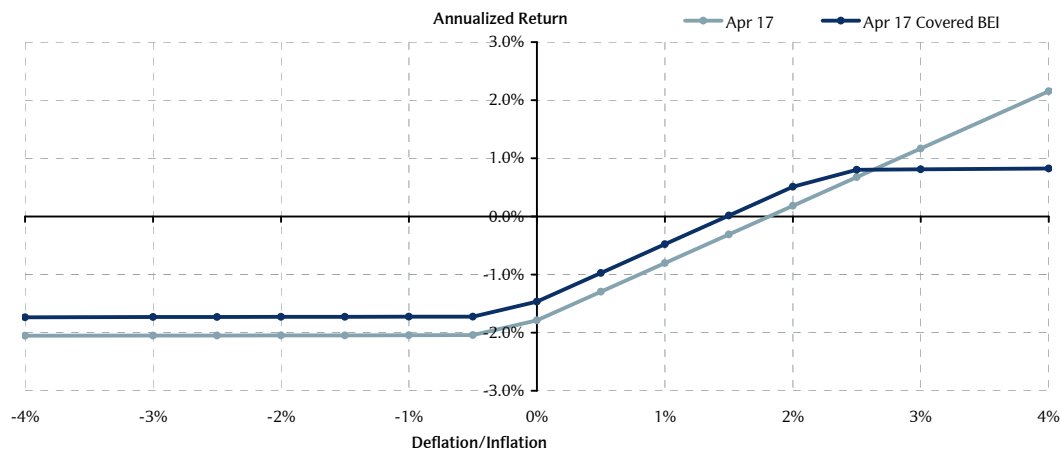
* ATM yield is defined as the current spot real yields for the respective issue

Source: Barclays Research

Covered Breakevens implied by CPI Options Market

Bond	BEI, %	CPI Caps					
		BEI + 50bps		BEI + 100bps		BEI + 150bps	
		Premium, bps	Effective BEI, %	Premium, bps	Effective BEI, %	Premium, bps	Effective BEI, %
TII Apr 13 0.625%	0.172	41	(0.24)	26	(0.09)	16	0.01
TII Jul 13 1.875%	1.084	40	0.68	26	0.83	16	0.93
TII Jan 14 2%	1.019	43	0.59	27	0.75	17	0.85
TII Apr 14 1.25%	1.102	38	0.72	24	0.86	15	0.95
TII Jul 14 2%	1.412	39	1.02	24	1.17	15	1.26
TII Jan 15 1.625%	1.336	42	0.91	27	1.07	16	1.17
TII Apr 15 0.5%	1.378	40	0.98	25	1.13	15	1.22
TII Jul 15 1.875%	1.554	41	1.15	26	1.30	16	1.39
TII Jan 16 2%	1.581	41	1.17	26	1.32	16	1.42
TII Apr 16 0.125%	1.582	42	1.17	26	1.32	17	1.42
TII Jul 16 2.5%	1.706	41	1.29	26	1.44	17	1.54
TII Jan 17 2.375%	1.723	42	1.30	27	1.45	17	1.55
TII Apr 17 0.125%	1.793	41	1.38	27	1.53	17	1.62
TII Jul 17 2.625%	1.854	42	1.44	27	1.58	18	1.68
TII Jan 18 1.625%	1.813	46	1.35	31	1.50	21	1.61
TII Jul 18 1.375%	1.923	46	1.46	31	1.61	21	1.71
TII Jan 19 2.125%	1.883	48	1.40	33	1.56	22	1.66
TII Jul 19 1.875%	1.956	48	1.48	33	1.63	22	1.73
TII Jan 20 1.375%	1.920	50	1.42	34	1.58	23	1.69
TII Jul 20 1.25%	2.016	49	1.52	34	1.68	23	1.79
TII Jan 21 1.125%	1.980	52	1.46	35	1.63	24	1.74
TII Jul 21 0.625%	2.111	50	1.61	34	1.77	23	1.88
TII Jan 22 0.125%	2.082	52	1.56	36	1.72	25	1.83
TII Jul 22 0.125%	2.137	52	1.62	36	1.78	25	1.89
TII Jan 25 2.375%	2.066	52	1.54	37	1.70	25	1.81
TII Jan 26 2%	2.115	52	1.59	37	1.75	26	1.86
TII Jan 27 2.375%	2.133	51	1.63	36	1.78	25	1.89
TII Jan 28 1.75%	2.118	54	1.58	38	1.74	26	1.85
TII Apr 28 3.625%	2.131	47	1.66	33	1.80	23	1.90
TII Jan 29 2.5%	2.171	50	1.68	35	1.82	24	1.93
TII Apr 29 3.875%	2.151	45	1.70	32	1.83	22	1.93
TII Apr 32 3.375%	2.149	47	1.68	34	1.81	24	1.91
TII Feb 40 2.125%	2.164	50	1.66	36	1.80	26	1.90
TII Feb 41 2.125%	2.164	50	1.66	37	1.80	26	1.90
TII Feb 42 0.75%	2.198	60	1.60	44	1.76	31	1.89

Annualized Returns on a long ATM BEI+50bp Covered Breakeven Positions

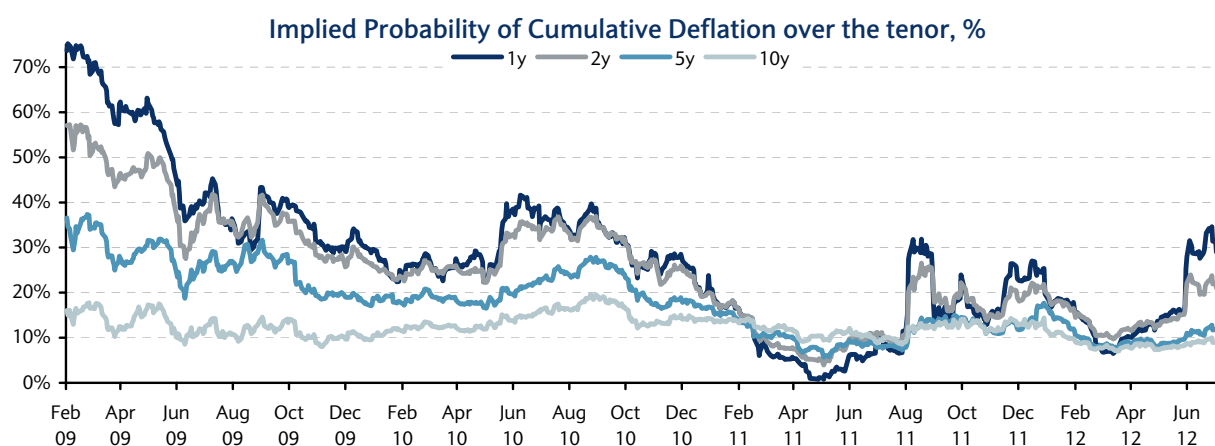
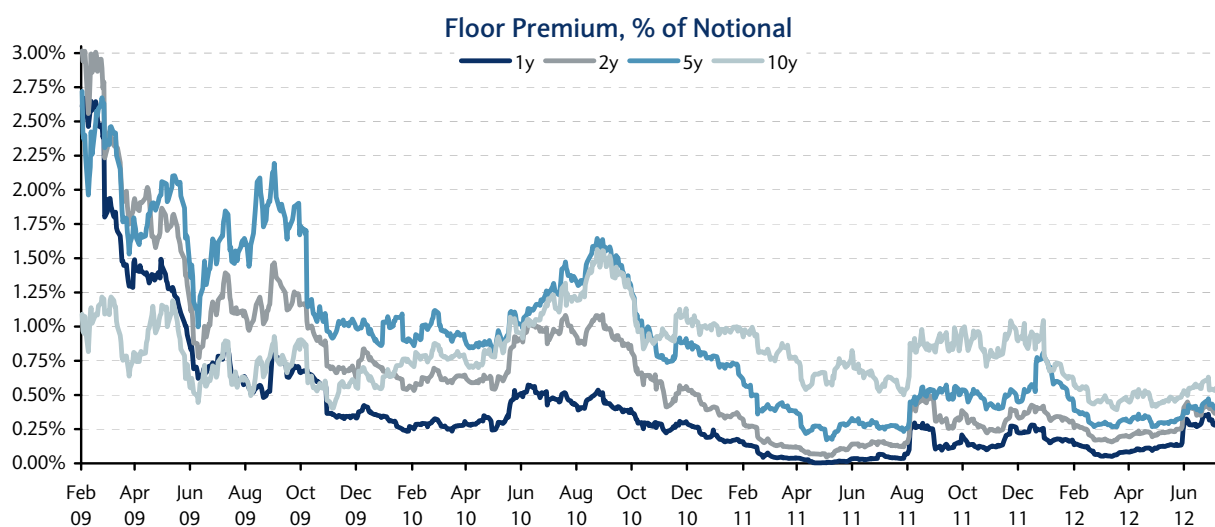


Source: Barclays Research

Historical Cumulative Deflation Probabilities implied by CPI Options Market

Tenor	Option Value, % of Notional	CPI Swap Rate, % (mean, mu) *	Implied Probability of Deflation through the option expiry					
			7/17/2012	1w ago	1m ago	3m ago	6m ago	12m ago
1	0.26%	1.01%	27%	29%	29%	13%	13%	8%
2	0.37%	1.40%	20%	21%	20%	13%	14%	9%
3	0.38%	1.67%	16%	16%	15%	12%	13%	9%
4	0.38%	1.87%	13%	13%	12%	10%	11%	8%
5	0.42%	2.02%	12%	11%	11%	9%	11%	8%
7	0.52%	2.21%	11%	10%	10%	10%	11%	10%
10	0.56%	2.37%	9%	9%	9%	8%	11%	10%
15	0.51%	2.50%	7%	7%	8%	7%	9%	8%
20	0.60%	2.56%	8%	8%	8%	7%	10%	8%
25	0.61%	2.57%	7%	8%	8%	7%	10%	8%
30	0.70%	2.58%	8%	8%	9%	8%	11%	9%

* Zero Coupon CPI Swap Rates are calculated using stepwise interpolation, option prices are based on the stepwise interpolated rate

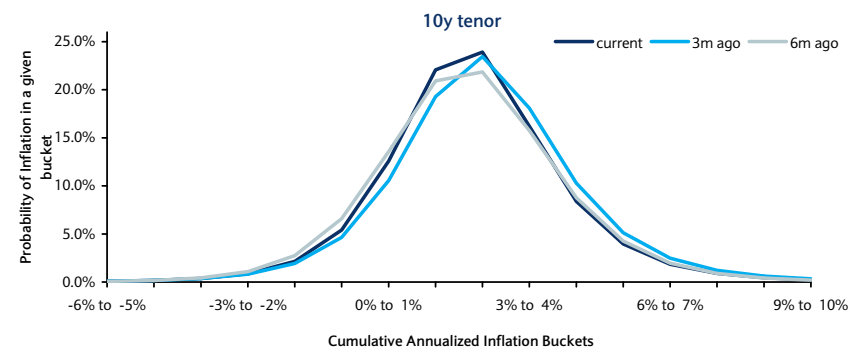
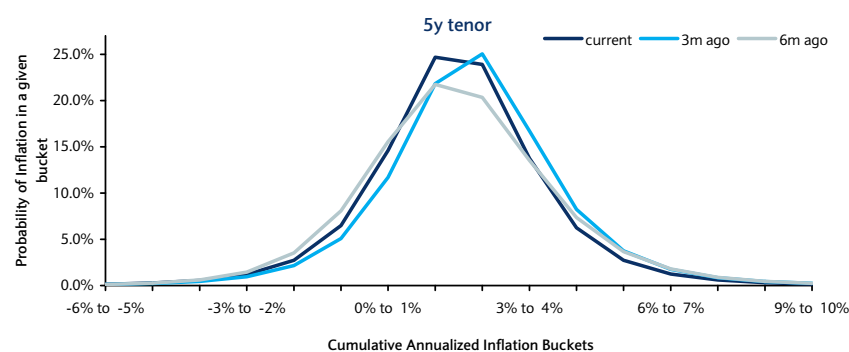
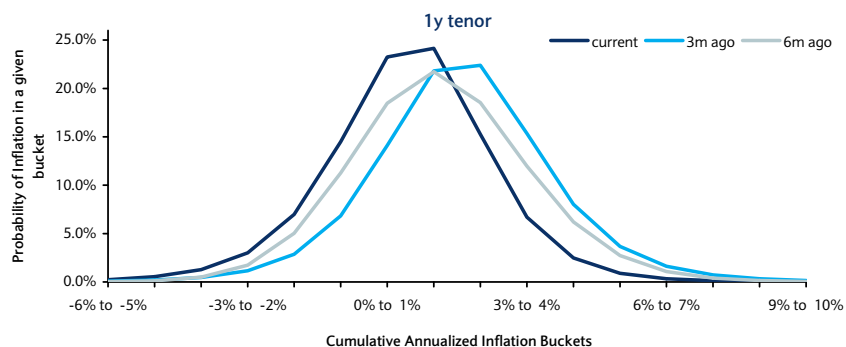


Source: Barclays Research

Probability of Cumulative Inflation within Inflation bucket implied by CPI Options Market

Inflation Bucket	Implied Probability of Inflation through the option expiry								
	7/17/2012			3m ago			6m ago		
	1y	5y	10y	1y	5y	10y	1y	5y	10y
-6% to -5%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%	0.1%
-5% to -4%	0.5%	0.3%	0.2%	0.2%	0.2%	0.2%	0.1%	0.3%	0.2%
-4% to -3%	1.3%	0.6%	0.4%	0.5%	0.4%	0.4%	0.5%	0.6%	0.4%
-3% to -2%	3.0%	1.2%	0.9%	1.2%	1.0%	0.8%	1.7%	1.5%	1.1%
-2% to -1%	7.0%	2.7%	2.2%	2.9%	2.2%	1.9%	5.0%	3.5%	2.7%
-1% to 0%	14.5%	6.5%	5.4%	6.8%	5.1%	4.6%	11.3%	8.1%	6.6%
0% to 1%	23.3%	14.6%	12.6%	14.1%	11.7%	10.5%	18.5%	15.6%	13.6%
1% to 2%	24.1%	24.7%	22.1%	21.8%	21.8%	19.3%	21.7%	21.7%	20.9%
2% to 3%	15.3%	23.9%	23.9%	22.4%	25.0%	23.4%	18.5%	20.3%	21.9%
3% to 4%	6.7%	13.7%	16.2%	15.4%	16.7%	18.1%	12.0%	13.5%	15.8%
4% to 5%	2.5%	6.2%	8.4%	8.0%	8.2%	10.3%	6.2%	7.3%	8.8%
5% to 6%	0.9%	2.7%	4.0%	3.7%	3.8%	5.1%	2.7%	3.7%	4.3%
6% to 7%	0.3%	1.2%	1.9%	1.6%	1.7%	2.5%	1.1%	1.8%	2.0%
7% to 8%	0.1%	0.6%	0.9%	0.7%	0.8%	1.2%	0.4%	0.9%	0.9%
8% to 9%	0.1%	0.3%	0.4%	0.3%	0.4%	0.6%	0.1%	0.5%	0.4%
9% to 10%	0.0%	0.2%	0.2%	0.2%	0.2%	0.3%	0.0%	0.2%	0.2%

Current Probability of Cumulative Inflation occurring by Inflation buckets

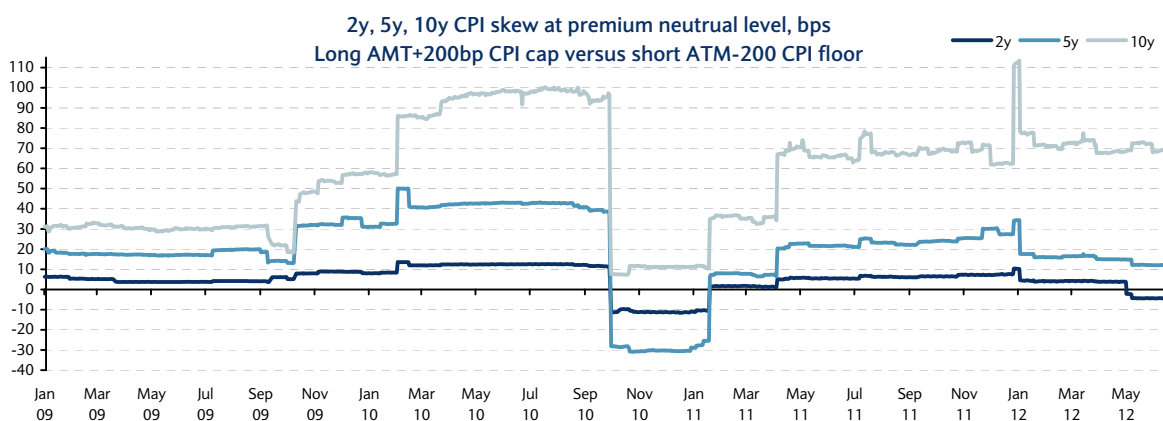


Source: Barclays Research

Current Levels: CPI Swaps, Cumulative Caps, Floors, Straddles implied by CPI Options Market

Tenor	CPI Swap Rate, % *	Caps, % of Notional				Floors, % of Notional			
		ATM	ATM +50bps	ATM +100bps	ATM +150bps	ATM	ATM-50bps	ATM-100bps	ATM-150bps
1y	1.01%	0.6%	0.4%	0.2%	0.1%	0.6%	0.4%	0.3%	0.3%
2y	1.40%	1.2%	0.8%	0.5%	0.3%	1.2%	0.8%	0.5%	0.4%
3y	1.67%	1.8%	1.1%	0.7%	0.4%	1.8%	1.1%	0.7%	0.5%
4y	1.87%	2.4%	1.5%	1.0%	0.6%	2.4%	1.5%	0.9%	0.6%
5y	2.02%	3.1%	2.0%	1.3%	0.8%	3.1%	1.9%	1.2%	0.7%
7y	2.21%	4.6%	3.1%	2.1%	1.4%	4.6%	2.9%	1.8%	1.1%
10y	2.37%	6.7%	4.7%	3.2%	2.2%	6.7%	4.2%	2.5%	1.5%
15y	2.50%	10.0%	7.1%	5.0%	3.4%	10.0%	6.3%	3.6%	2.0%
20y	2.56%	13.5%	9.8%	6.9%	4.7%	13.5%	8.4%	4.9%	2.7%
25y	2.57%	16.2%	11.8%	8.3%	5.8%	16.2%	9.8%	5.5%	2.9%
30y	2.58%	19.2%	14.1%	10.2%	7.2%	19.2%	11.5%	6.4%	3.3%

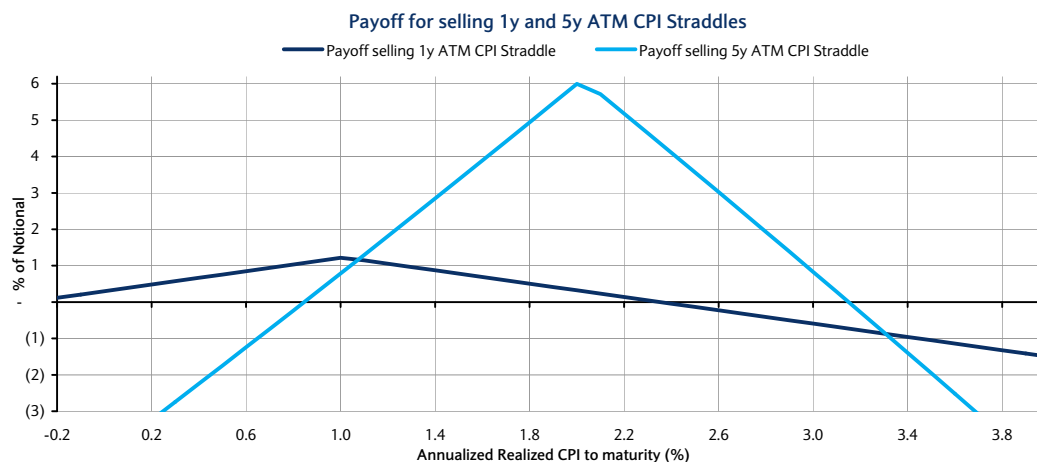
* Zero Coupon CPI Swap Rates are calculated using stepwise interpolation, option prices are based on the stepwise interpolated rate



Breakeven points for selling ATM CPI straddles

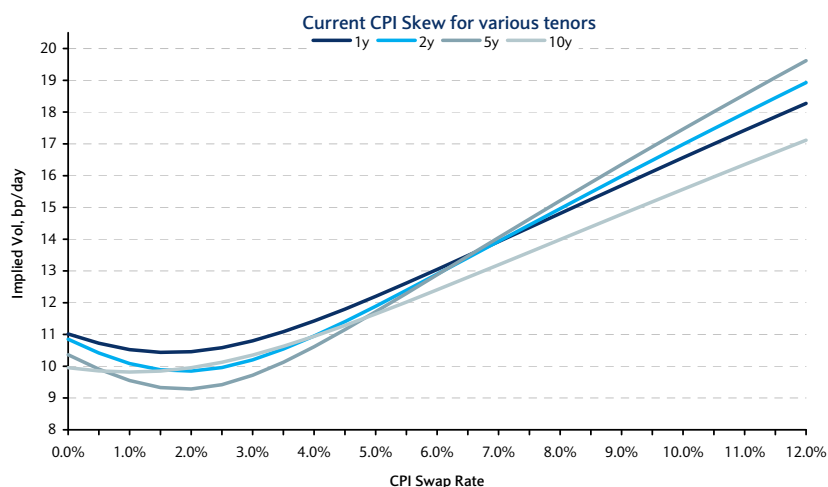
Tenor	CPI Swap Rate, % *	Expiry	ATM Strike, %	Cap, % of Notional	Floor, % of Notional	Straddle, % of Notional	Lower CPI breakeven point	Higher CPI breakeven point
1y	1.01%	7/19/2013	1.01%	0.6%	0.6%	1.2%	-0.33%	2.35%
2y	1.40%	7/21/2014	1.40%	1.2%	1.2%	2.5%	0.13%	2.66%
3y	1.67%	7/20/2015	1.67%	1.8%	1.8%	3.6%	0.46%	2.84%
4y	1.87%	7/19/2016	1.87%	2.4%	2.4%	4.8%	0.70%	3.01%
5y	2.02%	7/19/2017	2.02%	3.1%	3.1%	6.1%	0.85%	3.15%
7y	2.21%	7/19/2019	2.21%	4.6%	4.6%	9.1%	1.01%	3.33%
10y	2.37%	7/19/2022	2.37%	6.7%	6.7%	13.3%	1.22%	3.41%
15y	2.50%	7/19/2027	2.50%	10.0%	10.0%	20.1%	1.48%	3.40%
20y	2.56%	7/19/2032	2.56%	13.5%	13.5%	27.0%	1.65%	3.34%
25y	2.57%	7/20/2037	2.57%	16.2%	16.2%	32.4%	1.80%	3.23%
30y	2.58%	7/21/2042	2.58%	19.2%	19.2%	38.4%	1.90%	3.15%

* Zero Coupon CPI Swap Rates are calculated using stepwise interpolation, option prices are based on the stepwise interpolated rate

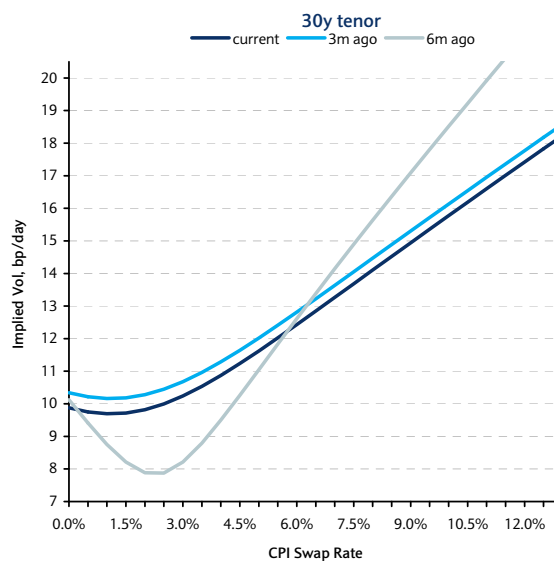
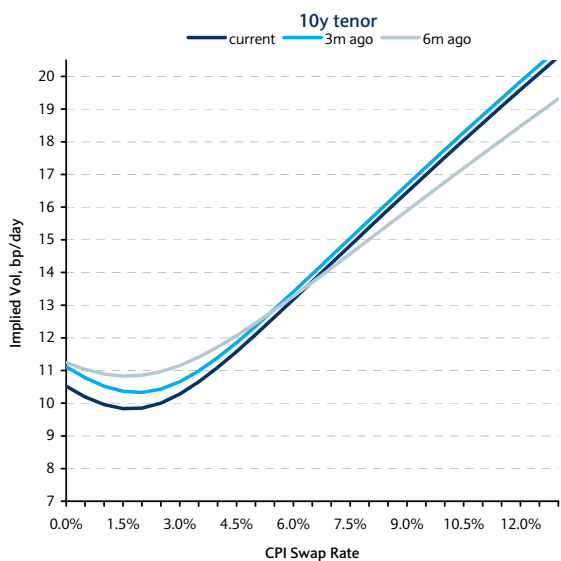
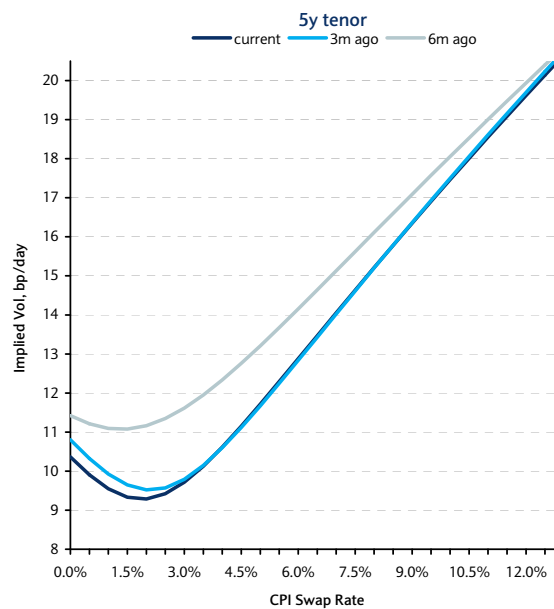
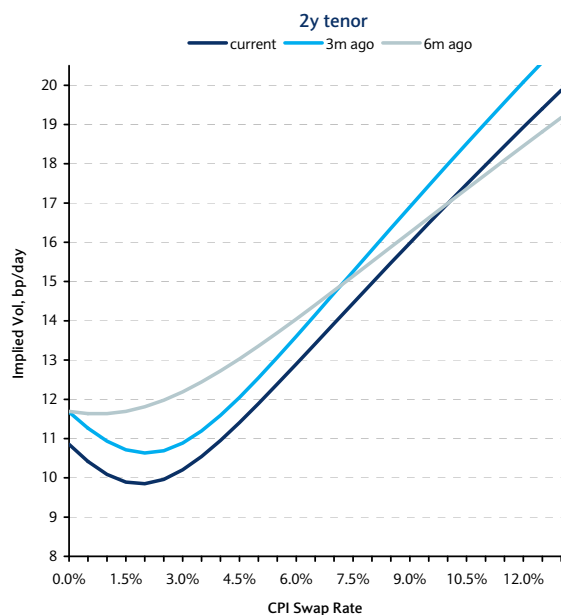


Source: Barclays Research

CPI Skew for various tenors



CPI Skew by tenor: current, 3m ago and 6m ago

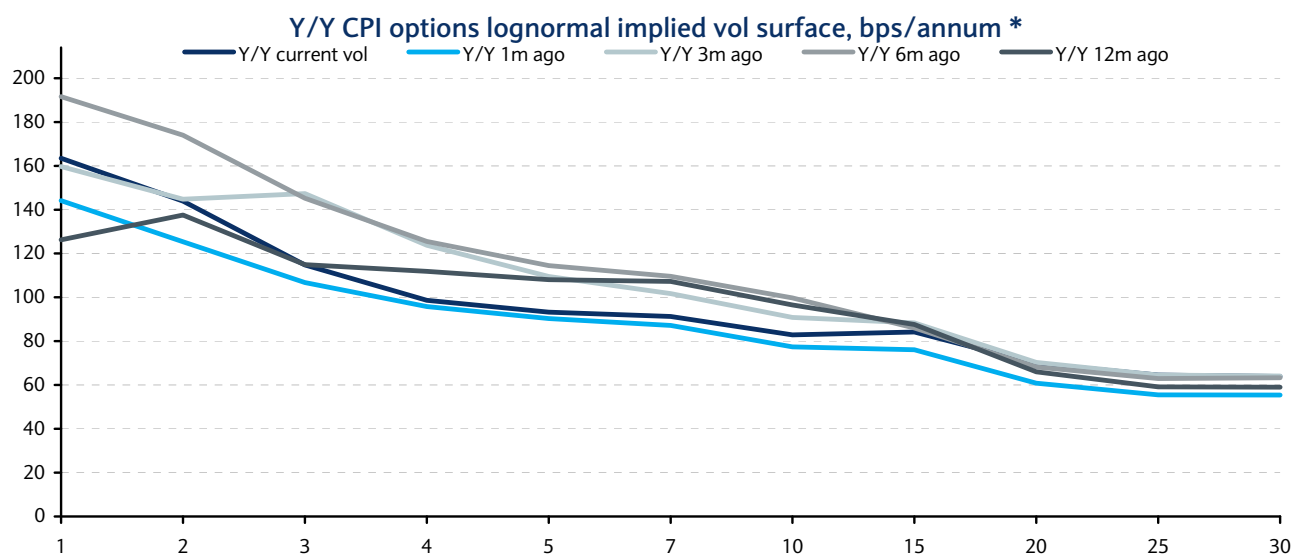


Source: Barclays Research

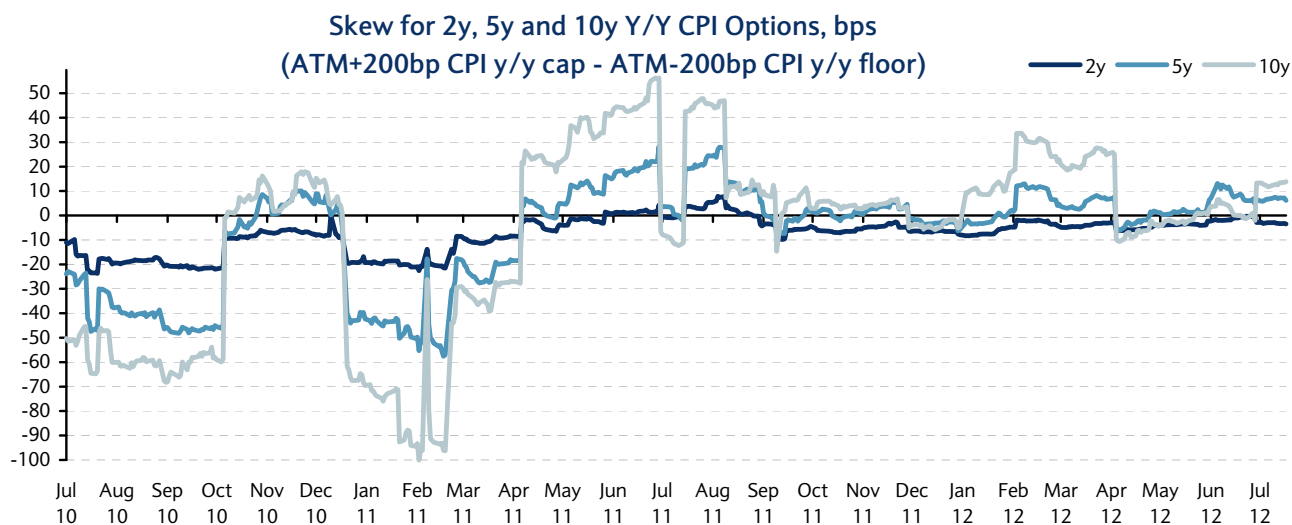
Y/Y CPI Caps/Floors implied by CPI Options Market

Tenor	Y/Y CPI Swap Rate *	Y/Y CPI Caps, % of Notional				Y/Y CPI Floors, % of Notional			
		ATM	ATM+50bp	ATM+100bp	ATM+150bp	ATM	ATM-50bp	ATM-100bp	ATM-150bp
1	1.01%	0.6%	0.4%	0.2%	0.1%	0.6%	0.4%	0.3%	0.3%
2	1.40%	1.4%	1.0%	0.7%	0.5%	1.4%	1.0%	0.7%	0.5%
3	1.67%	2.5%	1.8%	1.4%	1.0%	2.5%	1.9%	1.4%	1.0%
4	1.88%	3.5%	2.7%	2.0%	1.6%	3.6%	2.7%	2.0%	1.6%
5	2.03%	4.6%	3.5%	2.7%	2.1%	4.6%	3.5%	2.7%	2.1%
7	2.21%	6.7%	5.3%	4.1%	3.3%	6.8%	5.3%	4.1%	3.3%
10	2.37%	9.9%	7.9%	6.3%	5.1%	10.1%	8.0%	6.3%	5.1%
15	2.51%	15.0%	12.1%	9.9%	8.2%	15.4%	12.4%	10.0%	8.1%
20	2.56%	19.6%	16.0%	13.2%	11.0%	20.2%	16.4%	13.4%	11.0%
25	2.58%	23.4%	19.1%	15.8%	13.2%	24.1%	19.6%	16.0%	13.2%
30	2.58%	26.8%	22.0%	18.2%	15.3%	27.5%	22.4%	18.4%	15.3%

* Y/Y CPI Swap Rates are calculated using stepwise interpolation, and option prices are based on the stepwise interpolated rate

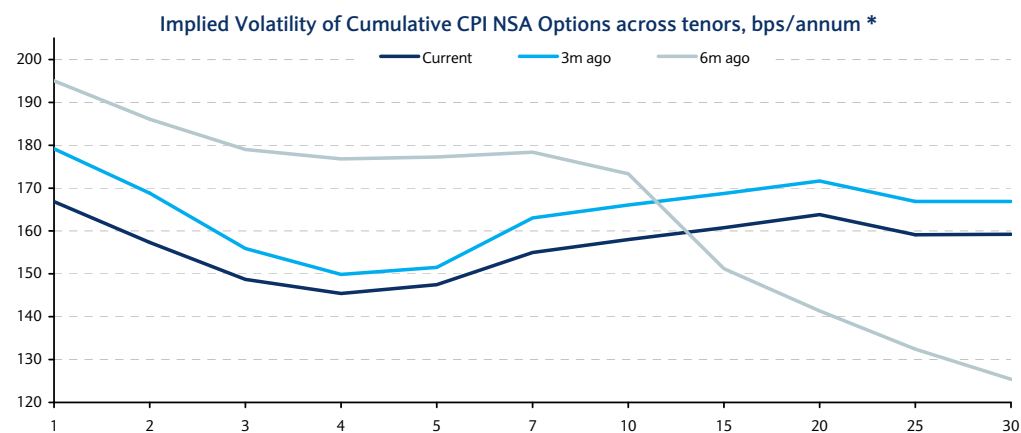


* Note: This is lognormal volatility of Y/Y CPI ATM Options extracted from Inflation SSABR Volatility Surface

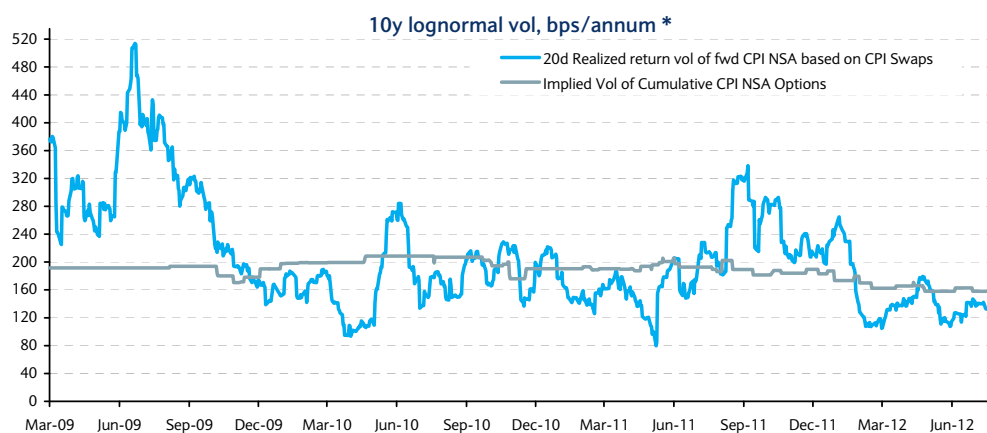
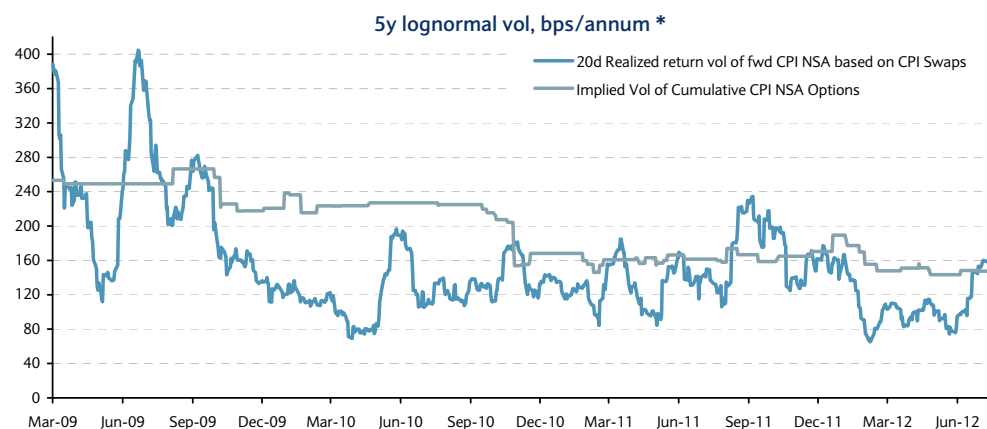
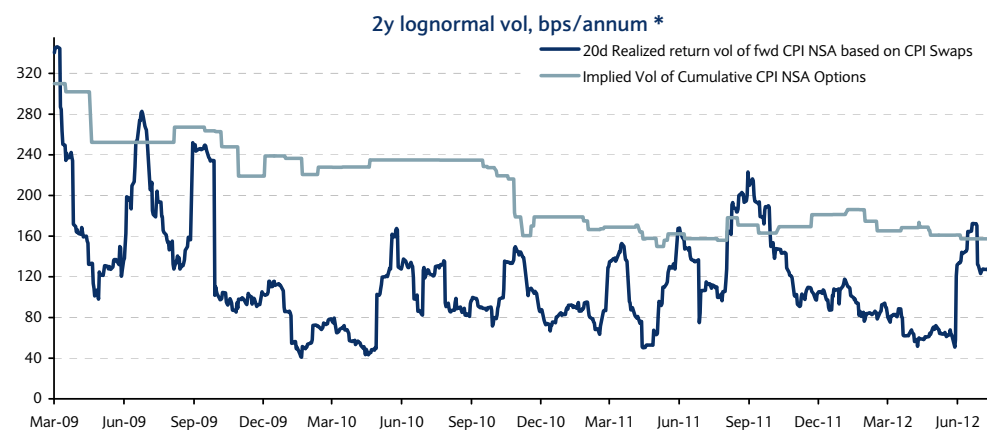


Source: Barclays Research

Implied Volatility of Cumulative Inflation Options vs Realized Volatility for CPI Swaps



* Note: This is lognormal volatility of CPI ATM Options extracted from Inflation SSABR Volatility Surface

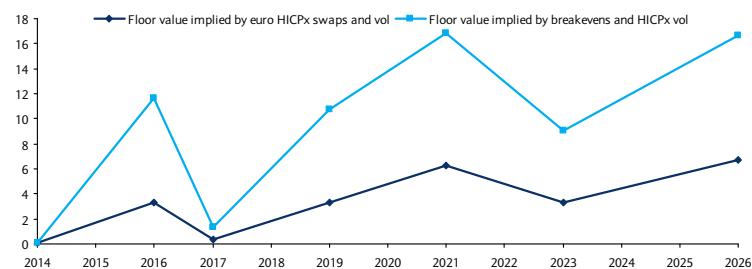


Source: Barclays Research

Embedded European Linker Floor Premium implied by inflation swaps levels and implied vol

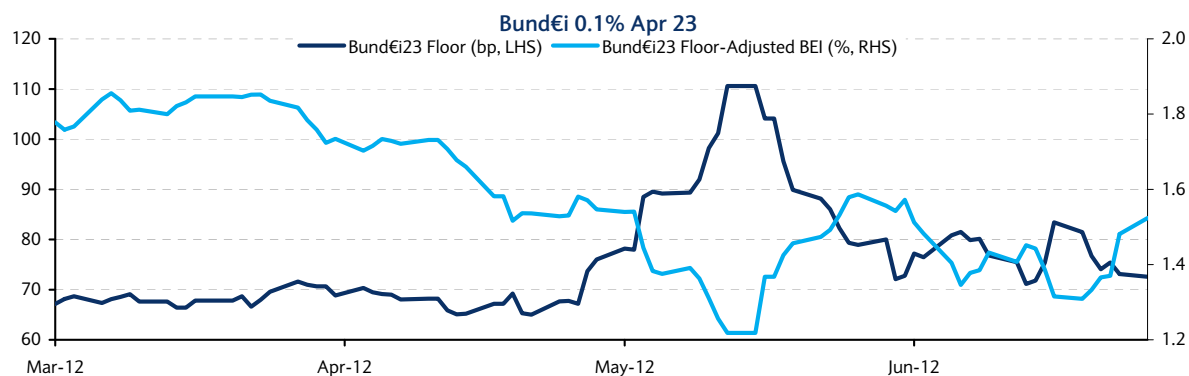
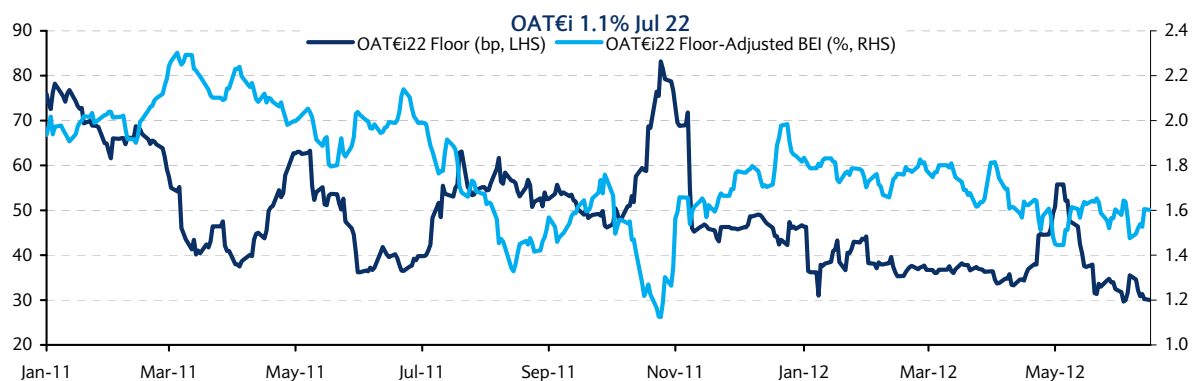
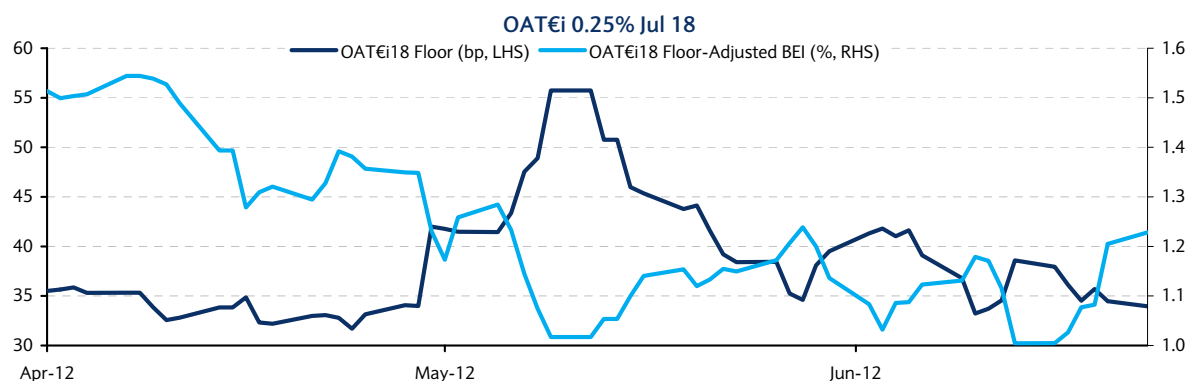
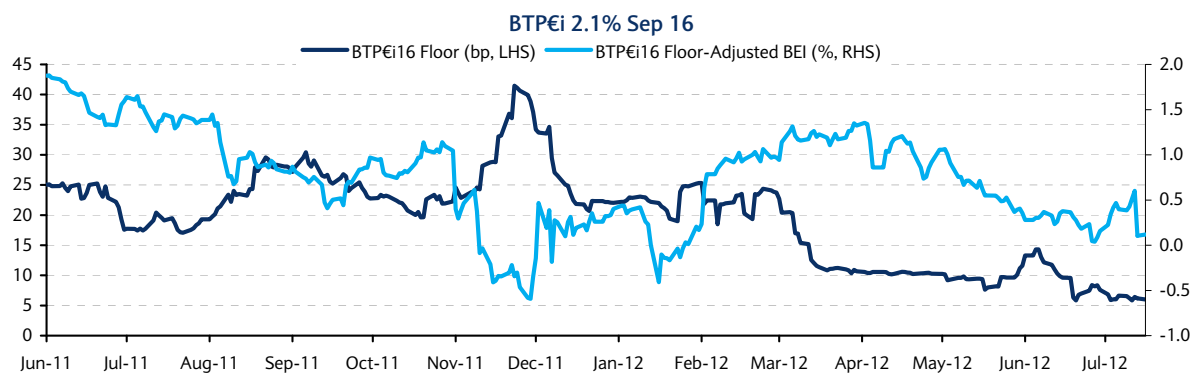
Bond	Real Yield, %	BEI, %	Index Ratio	Annualized Deflation needed for the floor to be ATM	"Max" BEI decline before reaching the floor	Minimum nominal Yield to Maturity *	European linker Floor Premium, bps				
							17-Jul-2012	1w Ago	1m Ago	3m Ago	6m Ago
OBL 2.250% Apr 13	0.08	-0.17	1.12602	14.9%	14.7%	-14.8%	0.0	0.0	0.0	0.0	0.2
BTPS 2.150% Sep 14	3.36	0.59	1.20170	8.2%	8.8%	-4.8%	0.0	0.0	0.1	0.2	0.9
FRTR 1.600% Jul 15	-0.97	1.19	1.17738	5.3%	6.5%	-6.2%	0.0	0.0	0.1	0.4	2.4
DBRI 1.500% Apr 16	-0.98	1.00	1.14439	3.5%	4.5%	-4.5%	0.1	0.1	0.7	1.2	5.8
BTPS 2.100% Sep 16	4.72	0.16	1.05412	1.3%	1.4%	3.5%	6.0	6.6	9.6	10.6	22.0
BTPS 2.100% Sep 17	4.98	0.27	1.14439	2.6%	2.8%	2.4%	0.3	0.4	1.1	3.2	6.6
OBLI 0.750% Apr 18	-0.83	1.20	1.04645	0.8%	2.0%	-1.6%	23.6	26.8	28.7	28.9	39.1
FRTR 0.250% Jul 18	-0.21	1.34	1.02401	0.4%	1.7%	-0.6%	33.8	37.9	38.4	36.4	46.9
BTPS 2.350% Sep 19	5.20	0.40	1.09000	1.2%	1.6%	4.0%	11.5	13.1	14.7	18.2	25.1
DBRI 1.750% Apr 20	-0.71	1.46	1.07871	1.0%	2.4%	-1.7%	21.6	24.6	25.3	27.8	35.0
FRTR 2.250% Jul 20	0.20	1.50	1.20153	2.3%	3.8%	-2.1%	1.7	2.0	3.6	6.8	10.5
BTPS 2.100% Sep 21	5.30	0.53	1.06679	0.7%	1.2%	4.6%	31.0	35.5	35.9	37.4	45.2
FRTR 1.100% Jul 22	0.45	1.65	1.06812	0.7%	2.3%	-0.2%	29.7	34.6	37.4	38.2	46.1
DBRI 0.100% Apr 23	-0.52	1.64	1.01955	0.2%	1.8%	-0.7%	72.0	81.5	78.9	71.6	77.7
BTPS 2.600% Sep 23	5.45	0.57	1.12417	1.0%	1.6%	4.4%	13.7	16.3	21.2	24.0	31.8
BTPS 3.100% Sep 26	5.52	0.73	1.04423	0.3%	1.0%	5.2%	45.9	52.3	55.9	51.7	58.8
FRTR 1.850% Jul 27	0.75	1.80	1.05260	0.3%	2.1%	0.4%	40.8	46.5	52.0	46.9	53.6
FRTR 3.150% Jul 32	0.94	1.95	1.21740	1.0%	2.9%	0.0%	9.9	11.5	18.6	17.8	20.7
BTPS 2.350% Sep 35	5.35	1.16	1.17710	0.7%	1.9%	4.6%	16.6	19.0	27.2	26.1	27.6
FRTR 1.800% Jul 40	0.96	2.11	1.12769	0.4%	2.5%	0.5%	24.4	27.7	38.6	39.8	39.9
BTPS 2.550% Sep 41	5.17	1.33	1.06982	0.23%	1.6%	4.9%	36.2	40.6	52.0	54.9	54.4
FRTR 2.500% Jul 13	-1.23	1.21	1.18192	15.2%	16.4%	-16.4%	0.0	0.0	0.0	0.0	0.1
BTNS 0.450% Jul 16	-0.78	1.29	1.03957	1.0%	2.3%	-1.7%	3.4	3.7	6.4	7.1	20.2
FRTR 1.000% Jul 17	-0.59	1.41	1.12214	2.3%	3.7%	-2.9%	0.1	0.1	0.3	1.3	6.1
FRTR 1.300% Jul 19	-0.09	1.52	1.05602	0.8%	2.3%	-0.9%	8.5	10.0	9.2	13.5	27.3
FRTR 2.100% Jul 23	0.42	1.86	1.08783	0.8%	2.6%	-0.3%	9.1	11.3	14.1	18.7	33.5
FRTR 3.400% Jul 29	0.84	1.91	1.24013	1.3%	3.2%	-0.4%	2.0	2.6	7.1	7.5	15.3

BTP€i Floor value implied by bond breakevens and euro HICPx swaps



Source: Barclays Research

Historical euro HICPx linker floor premiums implied by euro HICPx options market



Source: Barclays Research

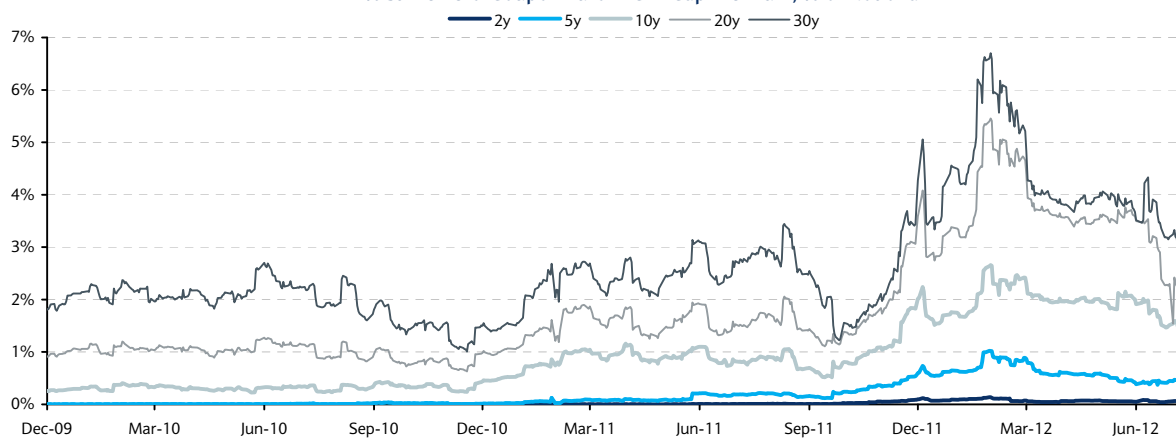
Euro HICPx Zero-Coupon Floor and Cap Prices

Tenor	HICPx Swap Rate, %	ATM	Floors, % of Notional				Caps, % of Notional			
			-1%	-0.5%	0%	0.5%	2.5%	3%	3.5%	4%
2y	1.42%	0.9%	0.0%	0.1%	0.1%	0.2%	0.3%	0.2%	0.1%	0.1%
5y	1.49%	3.2%	0.1%	0.2%	0.5%	1.0%	1.5%	1.0%	0.7%	0.5%
7y	1.61%	4.7%	0.1%	0.3%	0.7%	1.4%	2.6%	1.8%	1.3%	0.9%
10y	1.84%	6.9%	0.1%	0.4%	0.8%	1.7%	4.5%	3.1%	2.2%	1.5%
15y	2.01%	9.7%	0.1%	0.3%	0.7%	1.6%	7.0%	4.9%	3.4%	2.3%
20y	2.06%	11.7%	0.1%	0.2%	0.7%	1.6%	8.4%	5.6%	3.6%	2.2%
30y	2.19%	16.8%	0.0%	0.2%	0.5%	1.5%	13.2%	8.6%	5.3%	3.1%

0% strike Zero-Coupon Euro HICPx Floor Premium, % of Notional

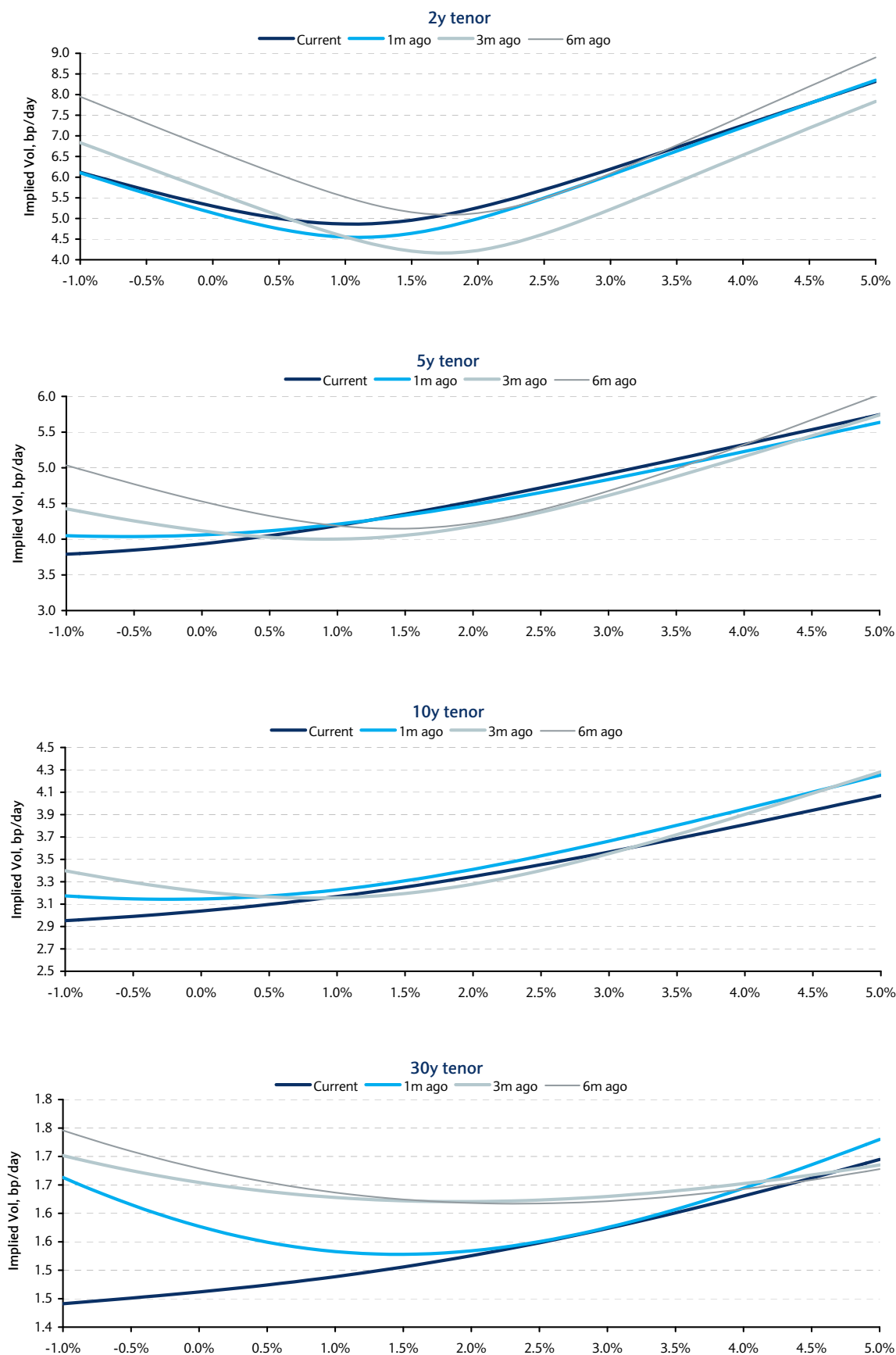


4% strike Zero-Coupon Euro HICPx Cap Premium, % of Notional



Source: Barclays Research

Euro HICPx Zero Coupon Vol Smile for various tenors

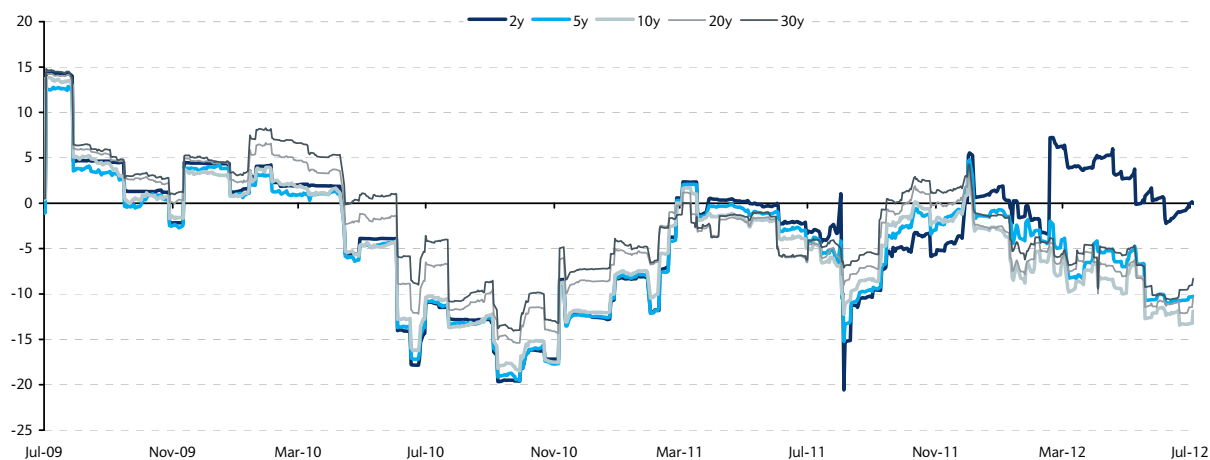


Source: Barclays Research

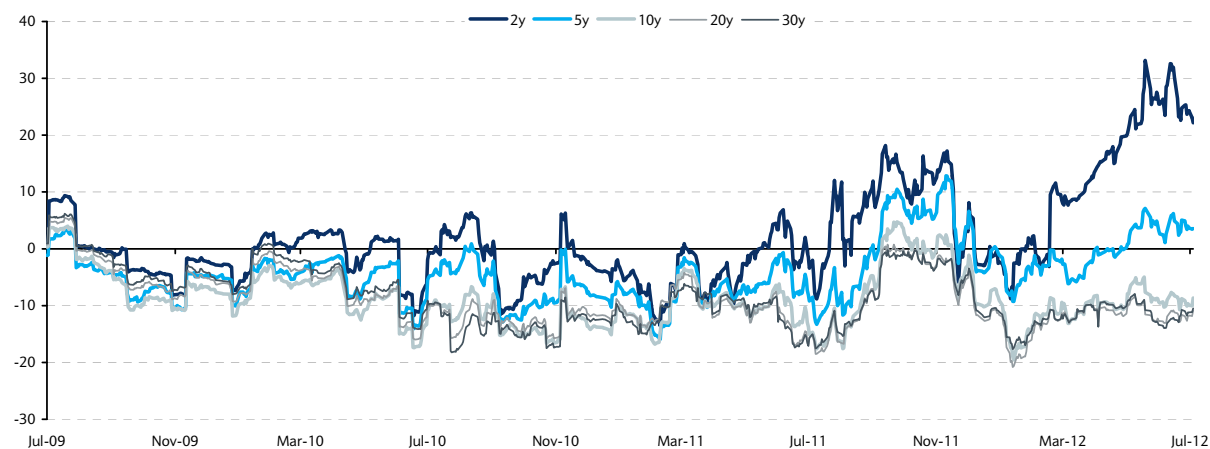
Euro Y/Y HICPx Cap/Floor running premium

Tenor	Y/Y Euro HICPx swap rate	ATM Cap/Floor running premium	Y/Y euro HICPx Floor running premium, bps							Y/Y euro HICPx Cap, running premium, bps						
			-1.0%	-0.5%	0.0%	0.5%	1.0%	1.5%	2.0%	2.0%	2.5%	3.0%	3.5%	4.0%	4.5%	5.0%
2y	1.41%	37	11	15	21	30	45	66	96	37	25	17	13	10	8	6
5y	1.49%	79	37	45	54	67	82	103	130	79	62	49	40	33	29	25
7y	1.61%	99	45	54	64	76	92	112	138	99	79	64	53	45	39	34
10y	1.82%	116	46	55	64	76	91	110	134	116	94	77	64	53	46	40
15y	1.98%	122	43	51	60	71	85	102	124	122	98	79	65	54	46	39
20y	2.03%	120	41	48	57	67	80	97	117	120	96	77	77	77	44	38
30y	2.14%	123	39	46	54	63	75	90	110	123	98	79	64	54	46	40

Euro HICPx Y/Y Vol skew: ATM+200bp minus ATM-200bp strike, bp/yr

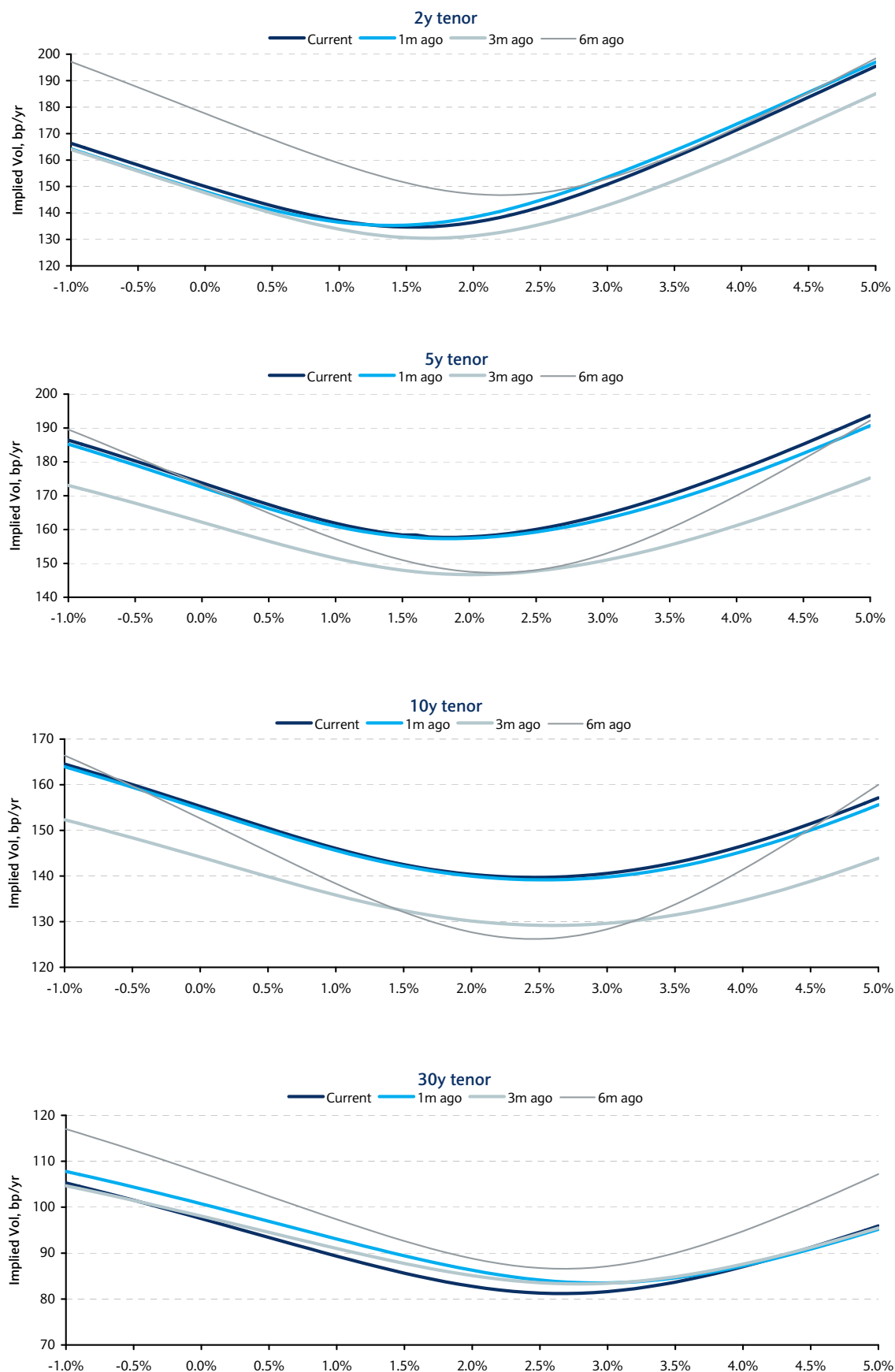


Euro HICPx Y/Y Vol skew: 4% minus 0% strike, bp/yr



Source: Barclays Research

Euro HICP_x Y/Y Vol Smile for various tenors

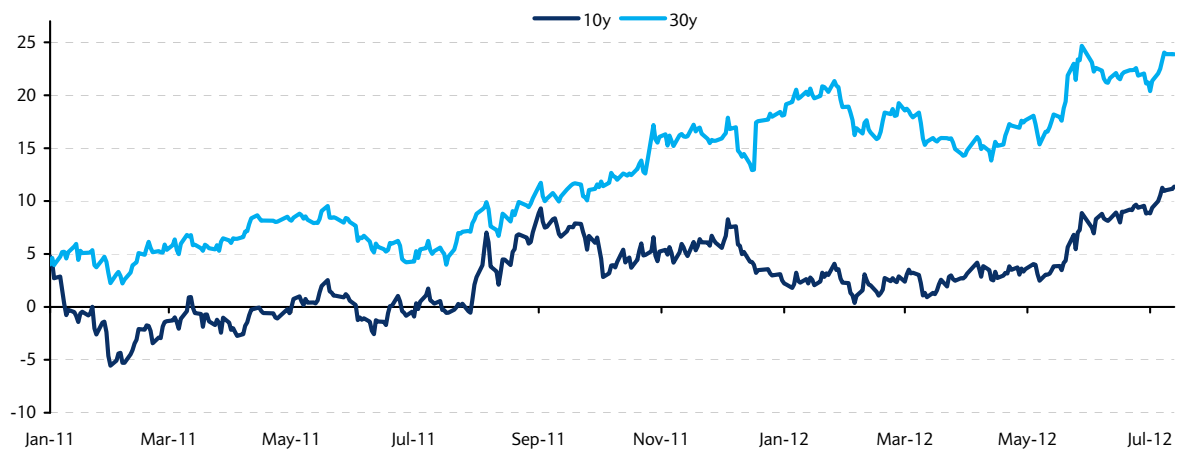


Source: Barclays Research

UK Inflation Volatility Market Summary

LPI [0.5] y/y						LPI premium versus zero-cpn RPI swap (bp)				
	17-Jul-12	-1m	-3m	-6m	-12m	17-Jul-12	-1m	-3m	-6m	-12m
10y	2.89%	2.99%	3.22%	3.21%	3.37%	11	8	13	19	32
15y	3.12%	3.21%	3.43%	3.37%	3.56%	15	12	12	18	21
20y	3.30%	3.37%	3.60%	3.50%	3.71%	18	16	13	20	17
30y	3.53%	3.58%	3.78%	3.65%	3.83%	24	22	17	26	16
LPI [0.3] y/y						LPI premium versus zero-cpn RPI swap (bp)				
	17-Jul-12	-1m	-3m	-6m	-12m	17-Jul-12	-1m	-3m	-6m	-12m
10y	2.33%	2.38%	2.48%	2.47%	2.54%	-45	-52	-60	-54	-52
15y	2.43%	2.47%	2.56%	2.54%	2.62%	-54	-62	-75	-65	-73
20y	2.50%	2.53%	2.61%	2.58%	2.67%	-61	-68	-86	-71	-86
30y	2.59%	2.61%	2.67%	2.64%	2.74%	-70	-75	-93	-75	-93
LPI [3.5] y/y						LPI premium versus zero-cpn RPI swap (bp)				
	17-Jul-12	-1m	-3m	-6m	-12m	17-Jul-12	-1m	-3m	-6m	-12m
10y	3.56%	3.61%	3.73%	3.73%	3.84%	78	71	65	72	78
15y	3.69%	3.74%	3.87%	3.83%	3.95%	72	65	57	65	60
20y	3.80%	3.84%	3.99%	3.92%	4.03%	68	63	52	62	50
30y	3.94%	3.97%	4.11%	4.01%	4.09%	65	61	51	61	42
LPI [0.infty] y/y						LPI premium versus zero-cpn RPI swap (bp)				
	17-Jul-12	-1m	-3m	-6m	-12m	17-Jul-12	-1m	-3m	-6m	-12m
10y	3.29%	3.39%	3.66%	3.66%	3.75%	51	49	58	64	69
15y	3.55%	3.66%	3.93%	3.85%	3.98%	58	56	62	66	63
20y	3.73%	3.82%	4.12%	3.98%	4.15%	62	61	65	69	62
30y	3.98%	4.04%	4.30%	4.13%	4.31%	69	68	70	73	64

LPI[0,5] spread to zero-coupon RPI swap rate (bp)



Note: LPI levels are indicative, reflecting Research calculations and no convexity adjustment

Source: Barclays Research

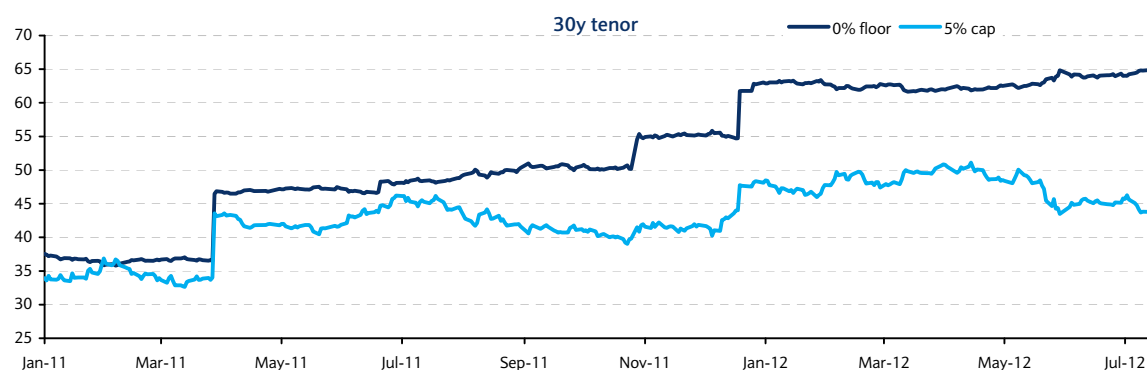
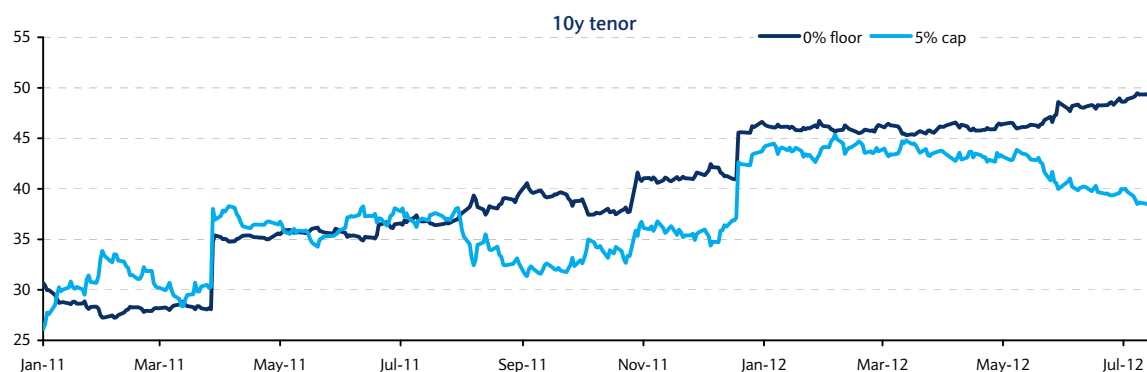
RPI y/y floor and cap running premia (bp per annum)

	RPI y/y	Floors				Caps			
		ATM	0.0%	2.5%	3.0%	ATM	2.5%	3.0%	5.0%
5y	2.70%	91	35	90	115	91	94	70	26
10y	3.12%	105	49	96	117	105	122	94	38
15y	3.46%	109	56	96	115	109	139	108	42
20y	3.57%	110	60	96	113	110	151	118	43
25y	3.66%	111	63	97	112	111	160	125	43
30y	3.57%	112	65	97	111	112	166	130	44

Implied Black Normal y/y RPI vol skew, tenor versus strikes (5y ATM vol = 100)

	y/y RPI	ATM	0%	2.50%	3%	5%
5y	2.70%	100	131	100	99	113
10y	3.12%	86	121	89	86	93
15y	3.46%	76	112	81	77	78
20y	3.57%	69	105	76	71	68
25y	3.66%	64	100	72	67	62
30y	3.57%	60	96	68	64	57

RPI y/y running premium (bp per annum)



Source: Barclays Research

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