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Market Price Monitor

Local Equity Markets

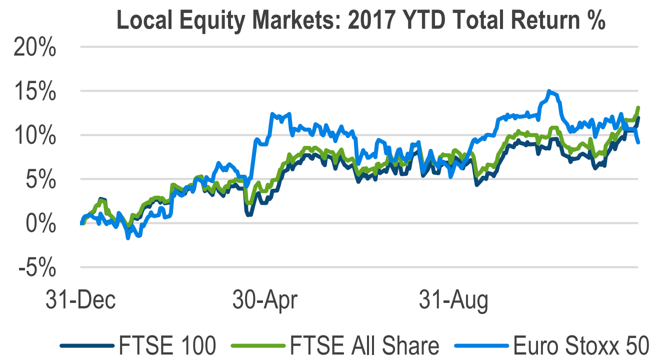
- It has been a positive 2017 for the equity markets, with the FTSE 100 performing strongly in December to end the year returning more than 10%.

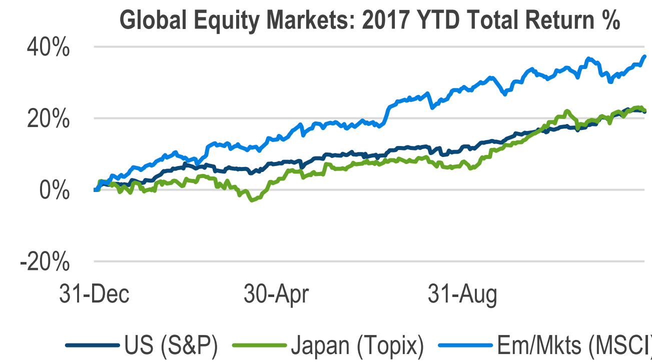
Global Equity Markets

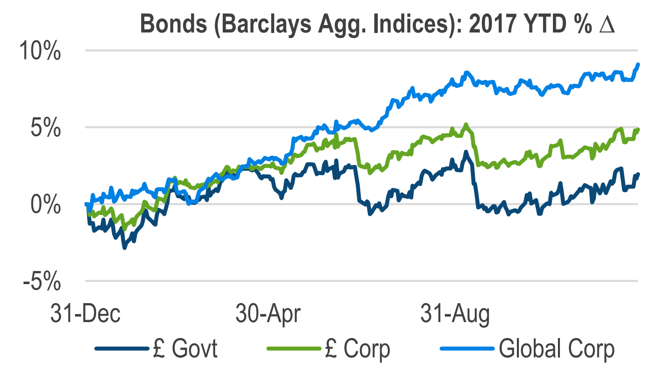
- International equity markets on the whole performed better than European markets in 2017. Emerging market equity was one of the strongest performing asset classes in 2017, with over a 37% return on the year.

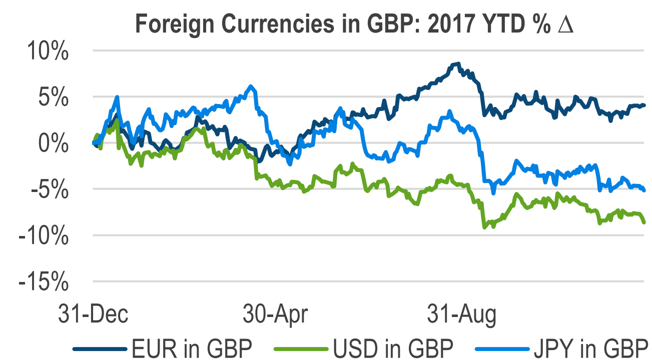
Bond/FX Markets

- Bond markets have not fared as well as equity markets in 2017. As with equity, global corporate bonds have performed better than their £ Sterling counterparts. UK government bonds have underperformed in comparison, with the main benchmark index posting a modest gain during 2017.
- The £ Sterling made gains against the US Dollar and Japanese Yen in 2017, but lost against the Euro. It continued the trend of declining against the Euro in December, but remained flat against the other two currencies.









Total Returns as of December 31, 2017

	FTSE 100	FTSE All Share	Euro Stoxx 50	US (S&P)	Japan (Topix)	Em/Mkts (MSCI)	£ Govt	£ Corp	Global Corp	EUR in GBP	USD in GBP	JPY in GBP
1 Month	5.0%	4.8%	-1.7%	1.1%	1.6%	3.6%	1.6%	1.7%	0.8%	0.9%	0.1%	0.0%
3 Month	5.0%	5.0%	-2.3%	6.6%	8.7%	7.4%	2.2%	2.2%	1.4%	0.7%	-0.8%	-1.0%
1 Year	11.9%	13.1%	9.2%	21.8%	22.2%	37.3%	2.0%	4.9%	9.1%	4.1%	-8.6%	-5.2%
YTD	11.9%	13.1%	9.2%	21.8%	22.2%	37.3%	2.0%	4.9%	9.1%	4.1%	-8.6%	-5.2%

Data sources: Bloomberg; Barclays; EIOPA; Oxford-Man Institute; ONS; Milliman FRM

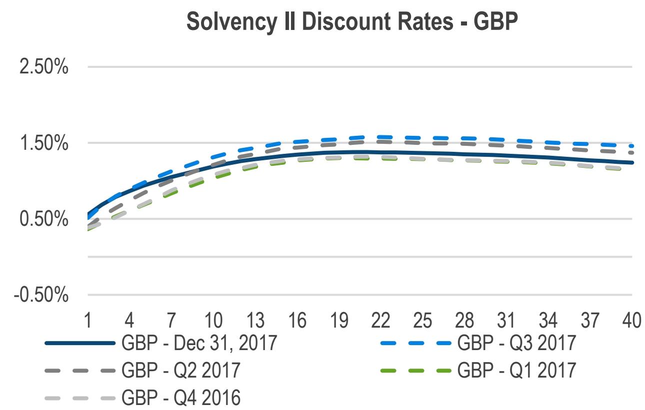
Solvency II Monitor - Rates

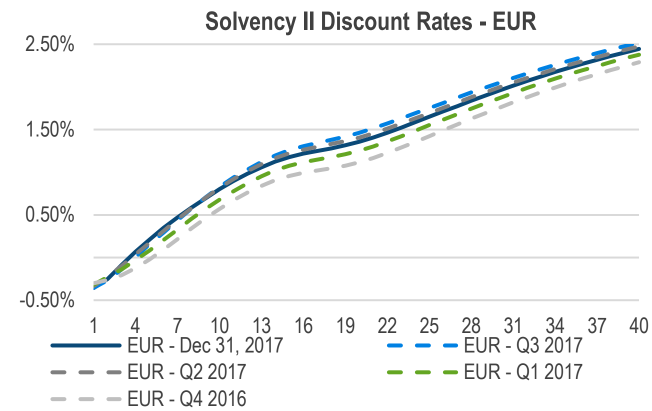
Risk Free Rates

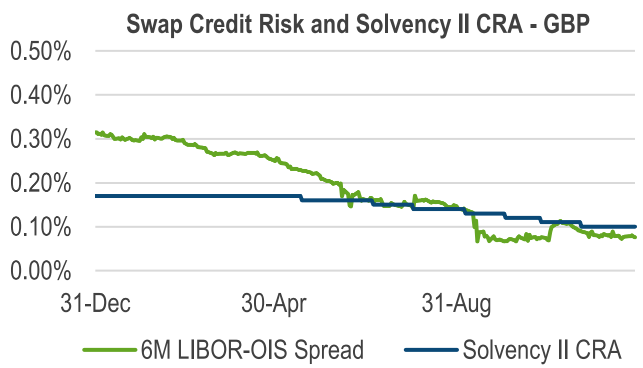
- The GBP Solvency II discount rates decreased at all but the short term in December. The rate drop was as much as 21 basis points in the long term. However, the curve level remains above those observed at year-end 2016.
- Similarly, the EUR Solvency II discount rates decreased in December in the median and long term. However, the rates increased by as much as 24 basis points during 2017.

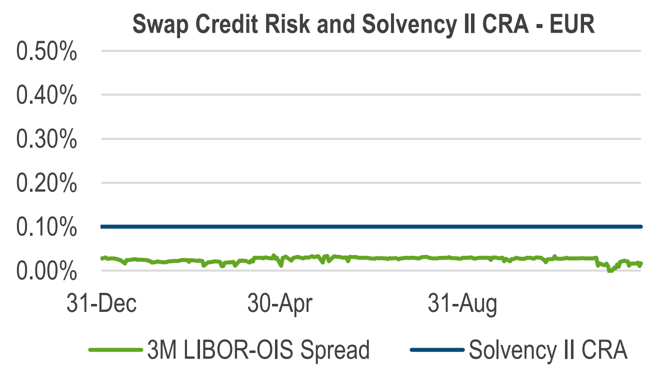
Credit Risk Adjustment

- Starting from May, the GBP CRA fell steadily to end up 7 basis points lower than year-end 2016. The actual LIBOR-OIS spread fell by more than 20 basis points during the year, ending lower than the CRA level.
- The EUR CRA remained at the 10 basis points floor throughout 2017, with the actual LIBOR-OIS spread hovering close to 0%.









Change in GBP Discount and CRA (bps)

	1Y	Y5	Y10	Y20	Y30	CRA
Since Q3 2017	4	-4	-12	-19	-21	-3
Since Q2 2017	16	10	-2	-12	-13	-6
Since Q1 2017	19	25	15	8	8	-7
Since Q4 2016	17	24	11	6	8	-7

Change in EUR Discount and CRA (bps)

	1Y	Y5	Y10	Y20	Y30	CRA
Since Q3 2017	0	5	-3	-11	-9	0
Since Q2 2017	-2	4	-2	-5	-4	0
Since Q1 2017	-4	13	13	11	9	0
Since Q4 2016	-6	23	23	24	20	0

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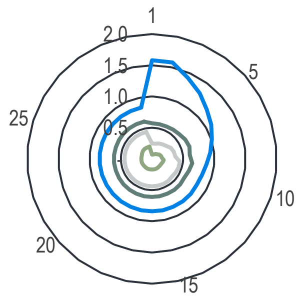
Solvency II Monitor - Spreads

Fundamental Spreads

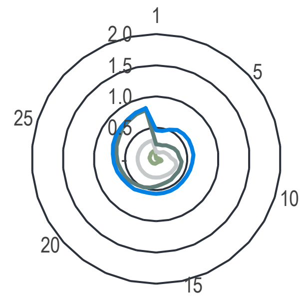
- The fundamental spread data shown is for end November.
- There were no material changes compared to end October.

Fundamental Spreads %

GBP - Financial



GBP - Non-Financial



GBP Financial Fundamental Spread %

	1Y	Y5	Y10	Y20	Y30
AAA	0.07	0.11	0.18	0.17	0.2
AA	0.25	0.31	0.45	0.44	0.44
A	0.57	0.59	0.62	0.61	0.61
BBB	1.58	1.18	0.84	0.84	0.84

GBP Financial 'Before Floor' %

	1Y	*Y5*	*Y10*	*Y20*	*Y30*
AAA	*0*	*0.04*	*0.07*	*0.14*	*0.2*
AA	*0.04*	*0.07*	*0.11*	*0.19*	*0.28*
A	*0.07*	*0.14*	*0.22*	*0.37*	*0.51*
BBB	*0.18*	*0.29*	*0.4*	*0.57*	*0.7*

GBP Non-Financial Fundamental Spread %

	1Y	Y5	Y10	Y20	Y30
AAA	0	0.02	0.09	0.09	0.13
AA	0.11	0.16	0.34	0.3	0.3
A	0.23	0.29	0.41	0.55	0.8
BBB	0.46	0.59	0.57	0.61	0.83

GBP Non-Financial 'Before Floor' %

	1Y	*Y5*	*Y10*	*Y20*	*Y30*
AAA	*0*	*0.02*	*0.04*	*0.09*	*0.13*
AA	*0*	*0.04*	*0.08*	*0.17*	*0.26*
A	*0.04*	*0.15*	*0.29*	*0.55*	*0.8*
BBB	*0.12*	*0.24*	*0.38*	*0.61*	*0.83*

The **Solvency II risk-free discount rates** are based on applying the Smith-Wilson Extrapolation to LIBOR swap rates sourced from Bloomberg (current curve is for 31/12/17) and applying the Credit Risk Adjustment as defined in the Technical Specs.

The **Credit Risk Adjustment** is a component of the risk-free discount curve defined by EIOPA. It is calculated from actual experience in the 'LIBOR-OIS' spread (3 months for EUR, 6 months for GBP), and is bounded between 0.10 and 0.35. We show actual LIBOR-OIS spread levels and the defined CRA, for both GBP and EUR.

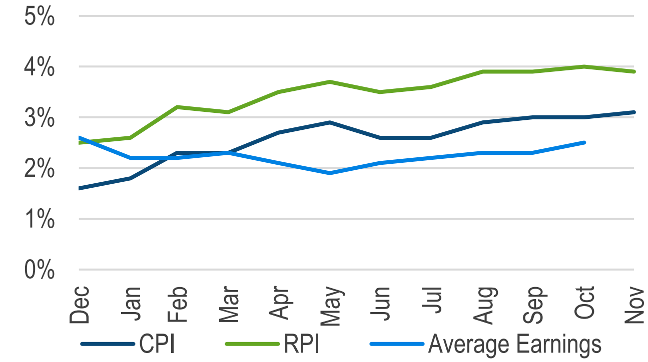
EIOPA fundamental spreads show the credit spread corresponding to the risk of default or downgrading of an asset. This is shown here across financial and non-financial assets, credit quality steps 0-3 and durations of 1-30 years. The data is provided by EIOPA and as of 30/11/17. **Fundamental spread** = maximum (probability of default + cost of downgrade; 35% of long-term average spread). In the tables we show the '**before floor**' measure = probability of default + cost of downgrade.

Data sources: Bloomberg; Barclays; EIOPA; Oxford-Man Institute; ONS; Milliman FRM

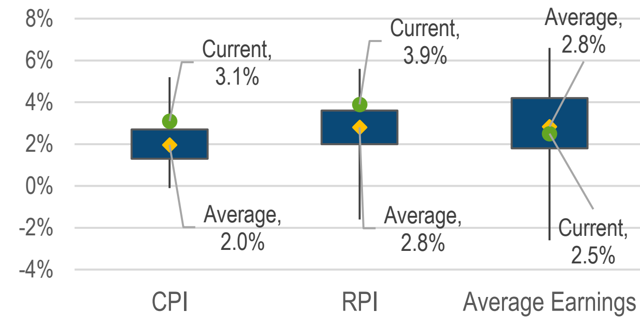
UK Inflation Monitor

- UK CPI price inflation rate ticked up to 3.1% in November. This was last higher in March 2012.
- According to ONS: *The largest upward contribution to change in CPI rates came from air fares which fell between October and November but by less than a year ago .Rising prices for a range of recreational and cultural goods and services, most notably computer games, also had an upward effect. Falling prices in the miscellaneous goods and services category (covering products such as travel goods and financial services) provided the largest offsetting downward contribution.*
- The annual earnings inflation increased by 20 basis points, to 2.5% in October.
- The RPI price inflation slipped back down to 3.9% in November. The market implied view shows expectation that RPI will remain in the range of 3% and 4% for some years to come. This is broadly consistent with the view at the start of 2017.

UK Inflation Rate: Experience over Past Year

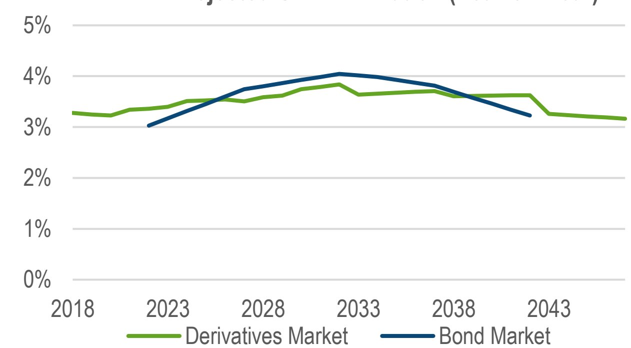


Max, Min and 50% Range: Since BoE Independence



Historical UK GDP Growth (Year-on-Year)

Projected UK RPI Inflation (Year-on-Year)

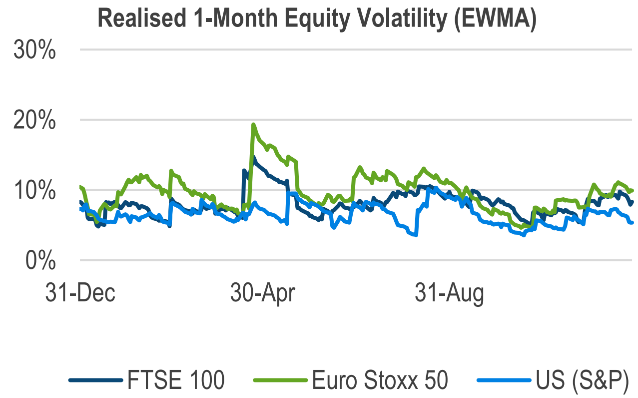


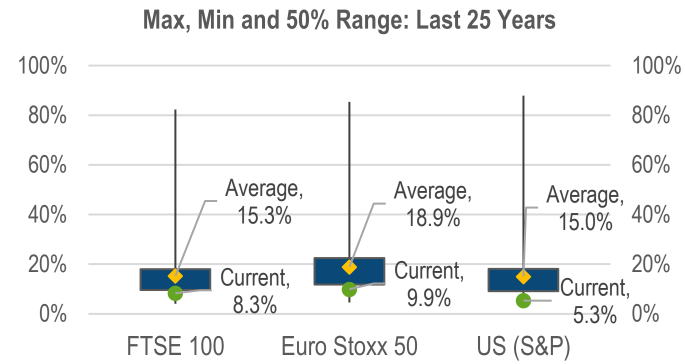
Historical year-on-year inflation rate is assessed by the % change on:
- **Consumer Price Index (CPI)** – measuring the monthly price of a basket of consumer goods and services
- **Retail Price Index (RPI)** – similar to CPI, but the main difference due the addition of mortgage payments, council tax and other housing costs
- **Average Earnings** – measuring the average total weekly employee remuneration over the previous 3 months.

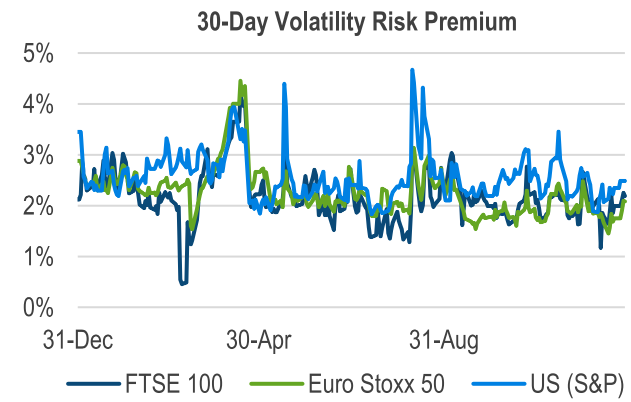
Projection year-on-year inflation rate is the forward rate calculated from market data:
- **Derivatives Market View** – constructed from zero coupon inflation par swap rates against the RPI index at various tenors
- **Bond Market View** – constructed from the difference between the nominal rates implied by the conventional gilts and the real rates implied by the index-linked (RPI) gilts.

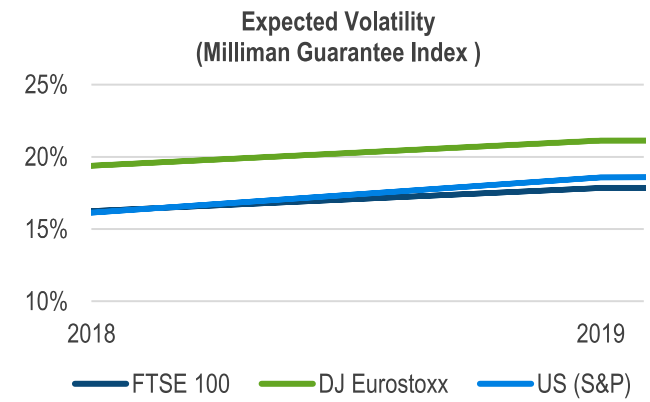
Volatility and Hedging Cost Monitor

- 2017 has been a year of historically low realised volatility on the major equity indices, with all indices ending 2017 well below their historical average levels. The main US equity benchmark in particular sees a realised volatility of only 5.3% at the end of 2017.
- Implied volatility has also been low by historical levels in 2017. For the FTSE 100, Euro Stoxx 50 and S&P 500 implied volatility has remained persistently above realised volatility during the year, with an average risk premium close to 2%.









Actual realised equity volatility is measured by the weighted standard deviation of 1 month daily index change. The Exponentially Weighted Moving Average (EWMA) methodology places more importance to the recent returns in the calculation of the volatility.

Volatility Risk Premium is estimated as the difference between 30-day implied volatility and projected realised volatility (on data from the Oxford-Man Institute). This reflects the additional cost of hedging from purchasing a basket of options, in comparison to managing a dynamic delta hedge with futures (ignoring rolling transaction costs).

Expected realised volatility is an intermediate result from the Milliman Guarantee Index™ (MGI), which provides volatility parameters for variable annuity guarantee (VA) valuation and risk management. The levels shown are on an expected basis, and do not reflect any risk adjustment.