

Market Price Monitor

Local Equity Markets

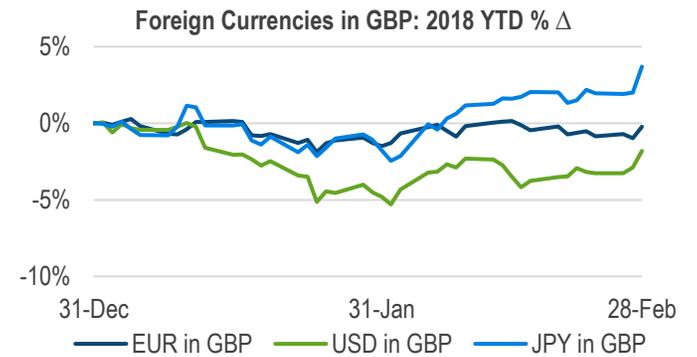
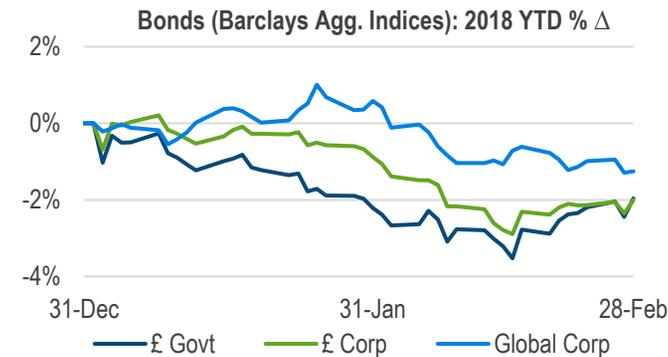
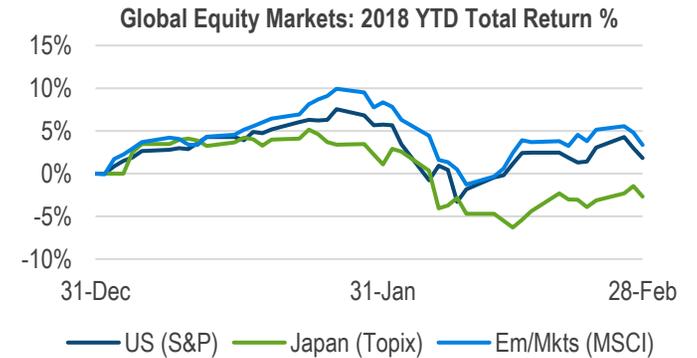
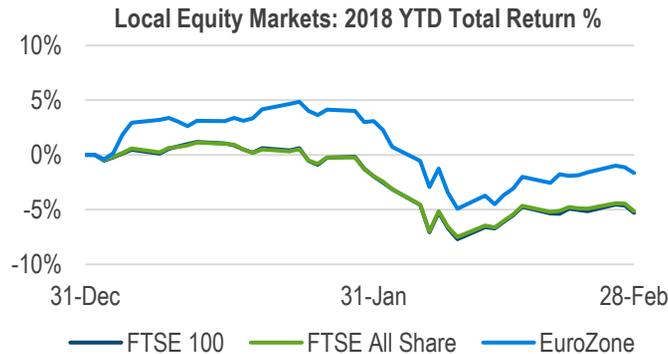
- February was a volatile month for equity markets, as all major equity indices posted losses for the month.
- The main Eurozone benchmark posted one of the heaviest monthly falls, while UK equity markets lost just over 3%.

Global Equity Markets

- International equity markets also posted losses of between 3% and 5% during February. For the S&P 500, this was the first monthly loss since October 2016.
- US and Emerging Markets equity still however remain in positive territory for the year to date, having recovered slightly during the second half of the month.

Bond/FX Markets

- Corporate bond markets also lost ground in February. Whilst the main UK government bond benchmark posted a marginal gain in February, it is still down 2% during 2018.
- On the whole both UK equity and bonds have lost territory in 2018, leading to a breakdown in diversification between these two asset classes.
- The GBP lost ground against all major currencies in February.



	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
Total Returns as of February 28, 2018												
1 Month	-3.4%	-3.3%	-4.6%	-3.7%	-3.7%	-4.6%	0.3%	-1.1%	-1.8%	1.3%	3.2%	5.6%
3 Month	-0.5%	-0.6%	-3.4%	3.0%	-1.2%	7.0%	-0.4%	-0.4%	-0.5%	0.7%	-1.7%	3.7%
1 Year	3.4%	4.4%	6.2%	17.1%	17.6%	30.5%	-1.2%	1.0%	6.0%	3.7%	-10.0%	-4.9%
YTD	-5.3%	-5.1%	-1.7%	1.8%	-2.7%	3.3%	-2.0%	-2.0%	-1.3%	-0.2%	-1.8%	3.7%

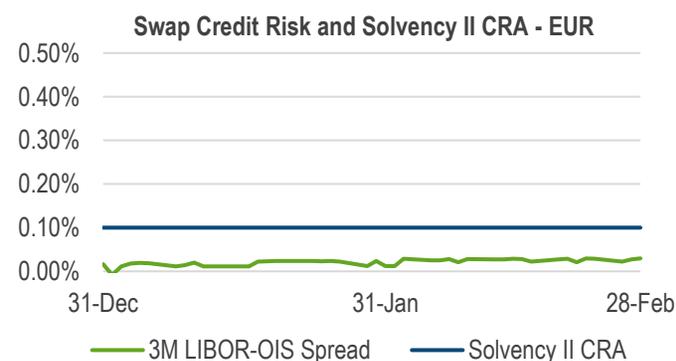
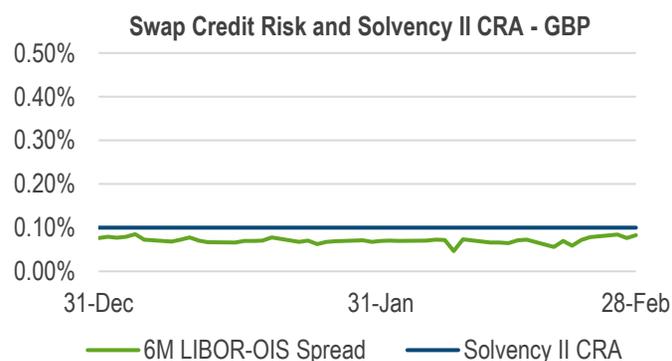
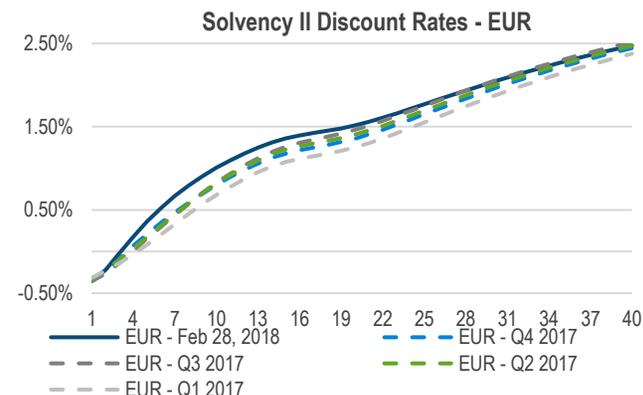
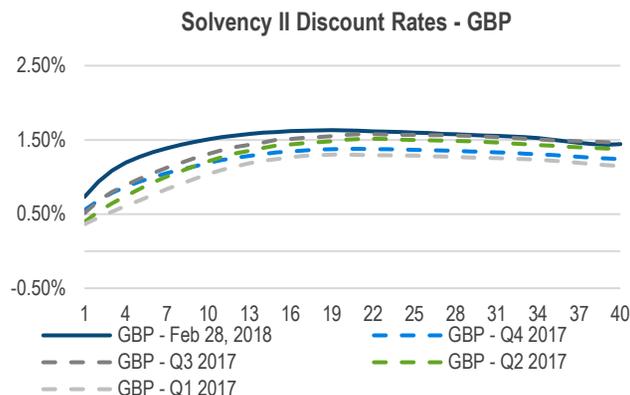
Solvency II Monitor - Rates

Risk Free Rates

- The GBP Solvency II discount curve continues to be significantly higher than the 2017 year-end curve. Shorter terms have increased marginally in February, and longer terms decreased marginally.
- The EUR Solvency II discount curve also remains higher than the 2017 year-end curve. There is less of a difference at the longer end of the curve, due to the impact of a 0.15% reduction in the UFR on 1st January (and the shorter last liquid point for EUR).

Credit Risk Adjustment

- LIBOR-OIS spread levels continue to remain below the 10 basis point floor for both GBP and EUR.



Change in GBP Discount and CRA (bps)						
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q4 2017	18	34	32	25	22	0
Since Q3 2017	22	30	20	6	1	-3
Since Q2 2017	34	43	30	13	9	-6
Since Q1 2017	37	59	47	33	30	-7

Change in EUR Discount and CRA (bps)						
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q4 2017	1	15	21	16	8	0
Since Q3 2017	0	20	18	5	-1	0
Since Q2 2017	-2	19	19	11	5	0
Since Q1 2017	-3	28	33	26	17	0

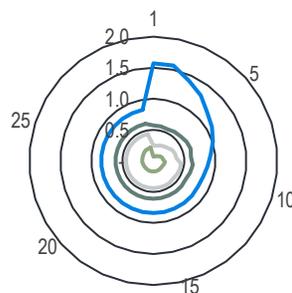
Solvency II Monitor - Spreads

Fundamental Spreads

- The fundamental spread data shown is for end of January.
- There were some marginal changes compared to the end of December.

Fundamental Spreads %

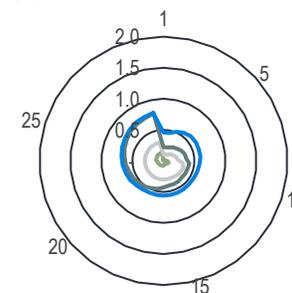
GBP - Financial



— AAA — AA — A — BBB

GBP Financial Fundamental Spread %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.07	0.11	0.18	0.17	0.22
AA	0.25	0.31	0.45	0.44	0.44
A	0.57	0.59	0.62	0.61	0.61
BBB	1.57	1.17	0.84	0.84	0.84
GBP Financial 'Before Floor' %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.04	0.08	0.15	0.22
AA	0.04	0.07	0.11	0.19	0.27
A	0.07	0.14	0.22	0.36	0.49
BBB	0.17	0.28	0.39	0.57	0.69

GBP - Non-Financial



— AAA — AA — A — BBB

GBP Non-Financial Fundamental Spread %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.02	0.09	0.09	0.14
AA	0.11	0.16	0.34	0.30	0.30
A	0.22	0.29	0.41	0.53	0.78
BBB	0.46	0.59	0.57	0.59	0.79
GBP Non-Financial 'Before Floor' %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.02	0.04	0.09	0.14
AA	0.00	0.04	0.09	0.19	0.27
A	0.04	0.15	0.28	0.53	0.78
BBB	0.11	0.23	0.36	0.59	0.79

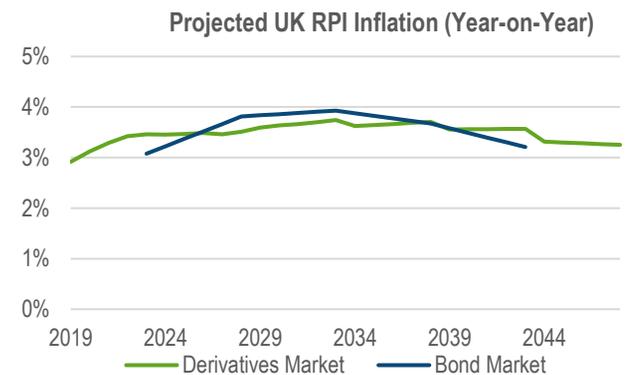
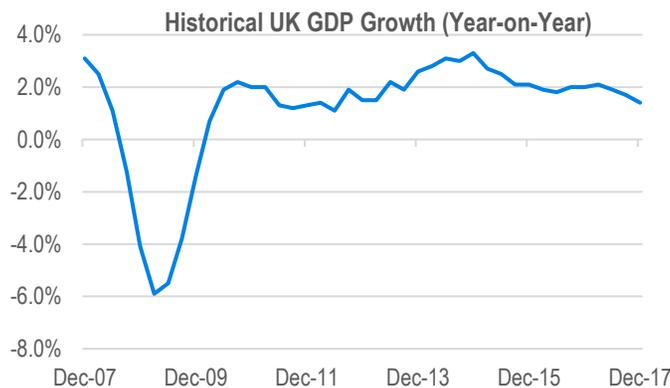
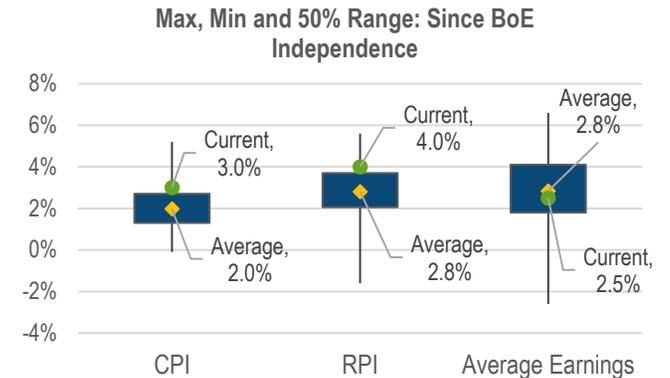
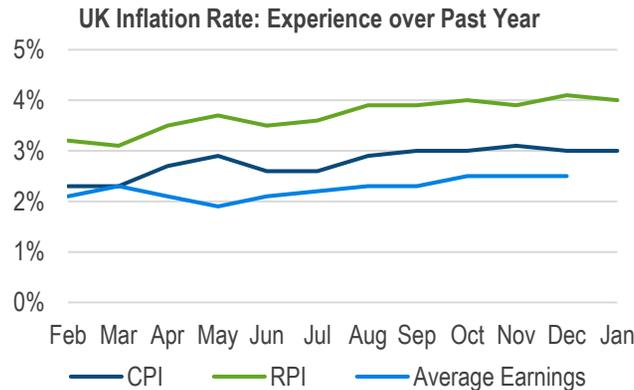
The **Solvency II risk-free discount rates** are based on applying the Smith-Wilson Extrapolation to LIBOR swap rates sourced from Bloomberg (current curve is for 28/02/18) and applying the Credit Risk Adjustment as defined in the Technical Specs.

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 31/01/18. **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.

UK Inflation Monitor

- UK inflation remained relatively steady in January. CPI price inflation stayed at 3.0%, RPI price inflation dropped slightly to 4.0% and earnings inflation remained at 2.5%.
- According to ONS: *The largest downward contribution to change in the rate came from prices for motor fuels, which rose by less than they did a year ago. The main upward effect came from prices for a range of recreational and cultural goods and services, in particular, admissions to attractions such as zoos and gardens, for which prices fell by less than they did a year ago.*
- The market implied view of future inflation shows a marginal decline since January. With the derivatives market implying an RPI inflation rate of just less than 3% for very short terms.



Historical year-on-year inflation rate is assessed by the % change on:

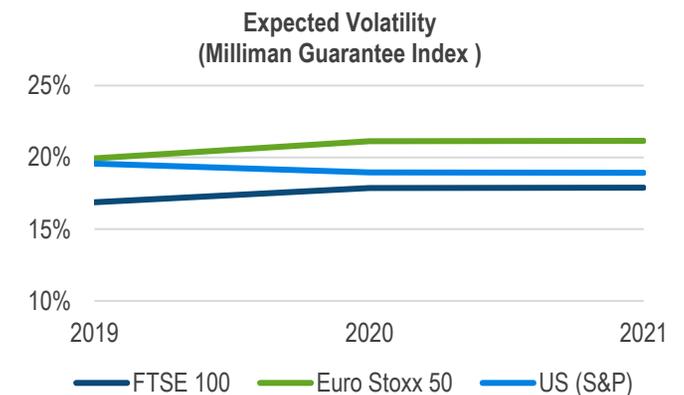
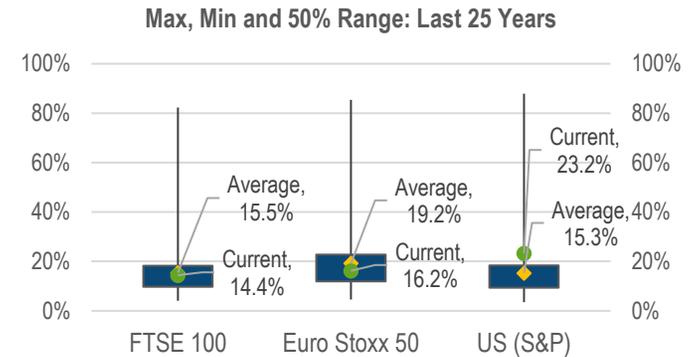
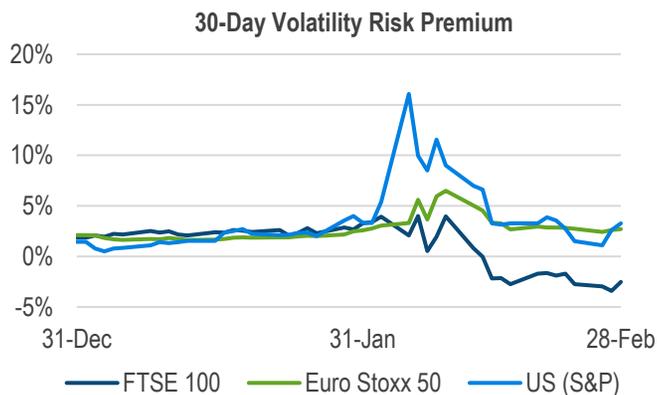
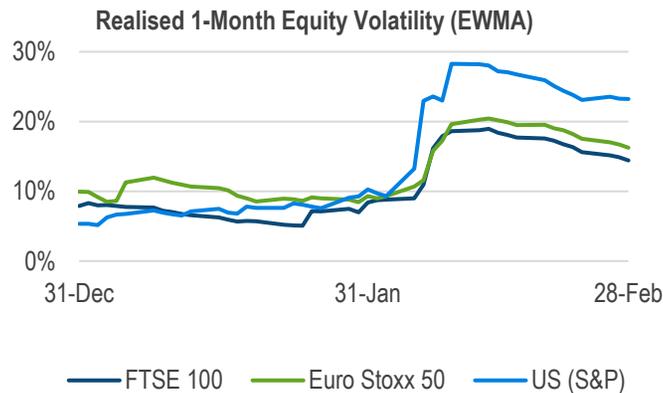
- **Consumer Price Index (CPI)** – measuring the monthly price of a basket of consumer goods and services
- **Retail Price Index (RPI)** – similar to CPI, but the main difference due the addition of mortgage payments, council tax and other housing costs
- **Average Earnings** – measuring the average 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

- After months of historically very low realised volatility levels, February saw a sharp rise in the volatility of equity markets.
- The biggest rise was for the S&P which saw realised volatility more than double from 10% in January to 23% in February – putting it at a high level compared to its historical average.
- Volatility in the FTSE and Euro Stoxx did also increase markedly. However, they end February below their long-term historical average levels.
- The volatility risk premium increased sharply for the S&P in February, as the VIX spiked to its highest level since August 2015. This spike was exacerbated by the trading activity of some short-VIX products (some of which experienced price falls of 95%)
- The spikes in the implied FTSE and STOXX were slightly later, and coincided with the rise in realised volatility, and so volatility risk premiums were less impacted. In the case of the FTSE we see the volatility risk premium turn negative in February, as projected realised volatility falls less than implied volatility.
- Expected realised volatility has increased since last month. For the S&P projected short-term realised volatility is higher than for longer terms, given the severity of the recent market volatility.



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.