

Market Price Monitor

Local Equity Markets

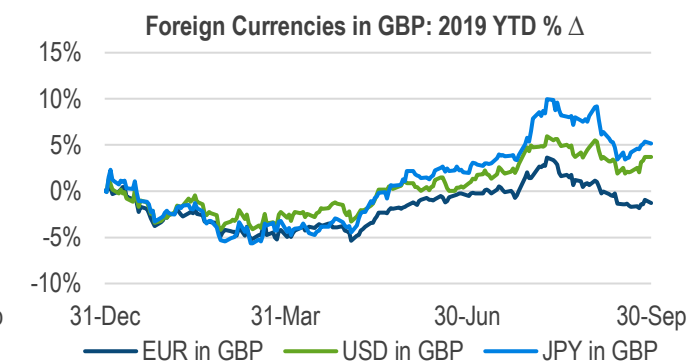
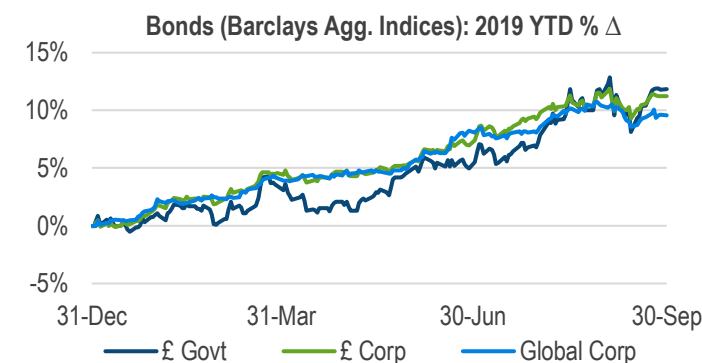
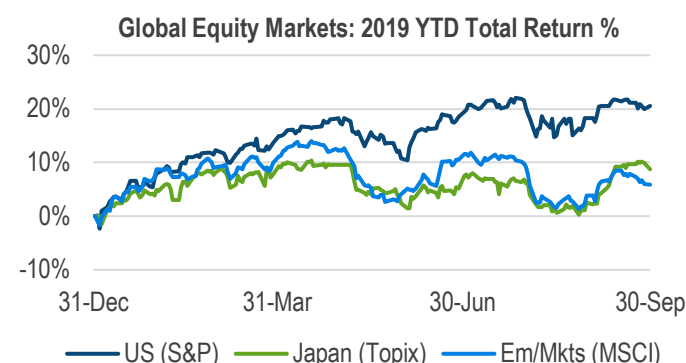
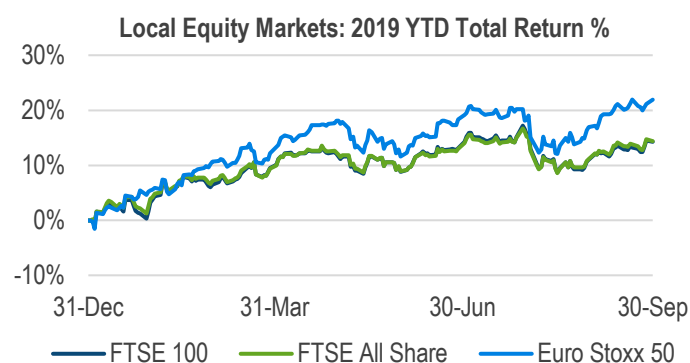
- European equity markets made a strong recovery in September, as the ECB cut the benchmark rate by 10 basis points and restarted its asset purchase programme in response to a weaker economic outlook.
- The FTSE100 gained 3% despite the continued Brexit uncertainty. The Euro Stoxx50 index was up 4.3%.

Global Equity Markets

- Global equity indices also made notable gains in the month, during which the US Federal Reserve also provided monetary stimulus, cutting interest rates by 25 basis points.
- Japanese equity markets were the one of the best performers, up 6%. While the S&P 500 and the emerging markets indices both gained 1.9% by month-end, after gains pared in the second half of the month.

Bond/FX Markets

- UK government and corporate bonds were marginally up in September, gaining 0.5% and 0.1%.
- Pound Sterling had a solid performance in September as it gained 2.7% against the Japanese Yen, 1.9% against the Euro and 1% against the US Dollar.



Total Returns as of September 30, 2019

	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	3.0%	3.0%	4.3%	1.9%	6.0%	1.9%	0.5%	0.1%	-0.8%	-1.9%	-1.0%	-2.7%
3 Month	1.0%	1.3%	3.0%	1.7%	3.4%	-4.2%	6.5%	4.0%	1.2%	-1.0%	3.3%	3.0%
1 Year	3.2%	2.7%	7.9%	4.3%	-10.4%	-2.0%	14.2%	11.1%	8.7%	-0.4%	6.0%	11.5%
YTD	14.3%	14.4%	21.9%	20.6%	8.8%	5.9%	11.8%	11.2%	9.6%	-1.3%	3.7%	5.2%

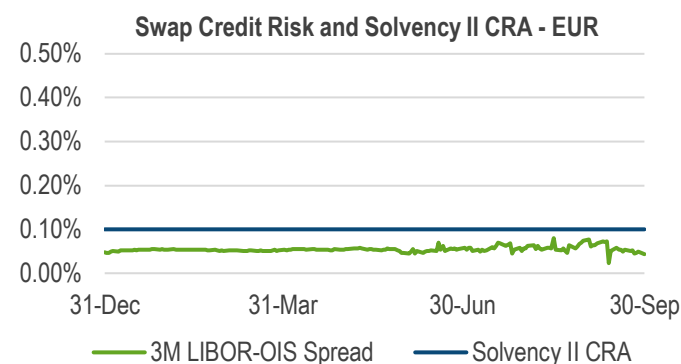
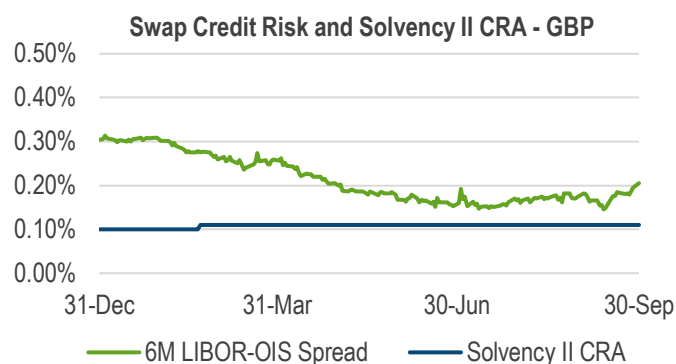
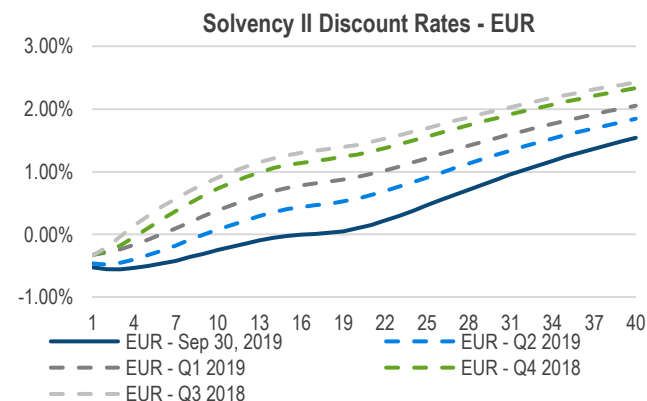
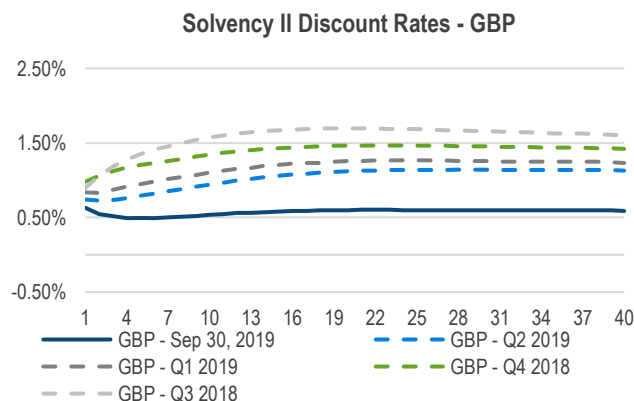
Solvency II Monitor - Rates

Risk Free Rates

- GBP solvency II risk-free rates increased at all terms except for the 5-year rate which declined by 1 basis point.
- The 20-year rates increased by 4 basis points, while the 1 year risk-free rates increased by 3 basis points.
- European risk-free rates increased at all terms following four months of consecutive declines.
- The EUR Solvency II risk-free rates saw the biggest increase at the 10 and 20-year terms, with a magnitude of 13 basis points, while the 5-year rates increased by 12 basis points.

Credit Risk Adjustment

- GBP and EUR CRAs remained unchanged at 11 and 10 basis points, respectively.



	Change in GBP Discount and CRA (bps)					
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q2 2019	-11	-30	-41	-52	-55	0
Since Q1 2019	-21	-46	-57	-66	-66	0
Since Q4 2018	-35	-71	-81	-86	-86	1
Since Q3 2018	-27	-86	-104	-110	-106	1

	Change in EUR Discount and CRA (bps)					
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q2 2019	-6	-17	-33	-48	-39	0
Since Q1 2019	-20	-42	-63	-82	-66	0
Since Q4 2018	-19	-60	-98	-118	-98	0
Since Q3 2018	-18	-80	-116	-134	-110	0

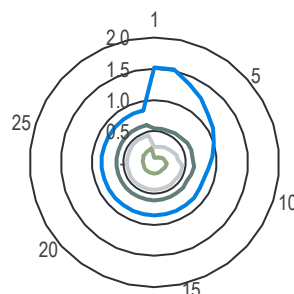
Solvency II Monitor - Spreads

Fundamental Spreads

- The fundamental spread data shown is for the end of August.
- There were no material changes since the last report.

Fundamental Spreads %

GBP - Financial



— AAA — AA — A — BBB

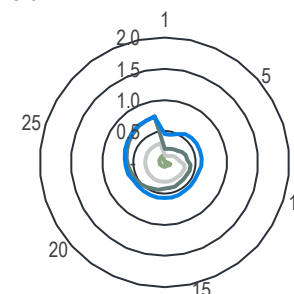
GBP Financial Fundamental Spread %

	1Y	Y5	Y10	Y20	Y30
AAA	0.07	0.11	0.19	0.18	0.23
AA	0.25	0.31	0.45	0.44	0.44
A	0.55	0.58	0.62	0.61	0.61
BBB	1.52	1.15	0.84	0.85	0.85

GBP Financial 'Before Floor' %

	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.04	0.08	0.16	0.23
AA	0.04	0.06	0.11	0.18	0.27
A	0.06	0.13	0.21	0.34	0.47
BBB	0.16	0.27	0.37	0.53	0.65

GBP - Non-Financial



— AAA — AA — A — BBB

GBP Non-Financial Fundamental Spread %

	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.01	0.10	0.07	0.11
AA	0.11	0.16	0.34	0.31	0.31
A	0.22	0.28	0.42	0.52	0.75
BBB	0.45	0.59	0.57	0.57	0.75

GBP Non-Financial 'Before Floor' %

	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.01	0.04	0.07	0.11
AA	0.00	0.04	0.08	0.17	0.25
A	0.04	0.15	0.27	0.52	0.75
BBB	0.11	0.22	0.34	0.56	0.75

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 30/09/19) 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 31/08/19. **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.

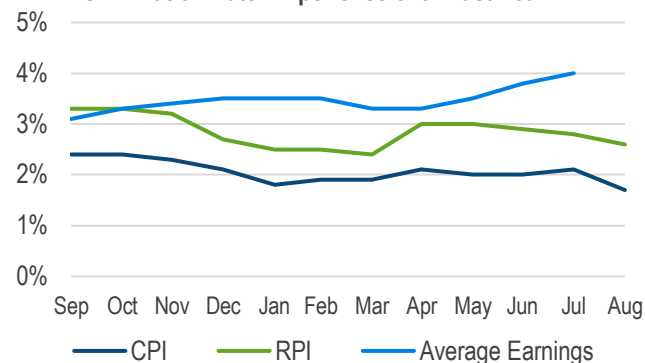
UK Inflation Monitor

- The CPI reading was 1.7% in August, a decline of 40 basis points from the previous month.
- The RPI inflation also dropped by 20 basis points to 2.6%.
- According to the ONS “*The largest downward contribution came from a range of recreational and cultural goods and services, clothing and sea fares. Rise in air fares resulted in the largest, offsetting, upward contribution to change.*”
- Average earnings index was revised up by 10 basis points in June. It increased by 20 basis points to 4% in July.
- The second quarter GDP figure was revised higher by 10 basis points to 1.3%.

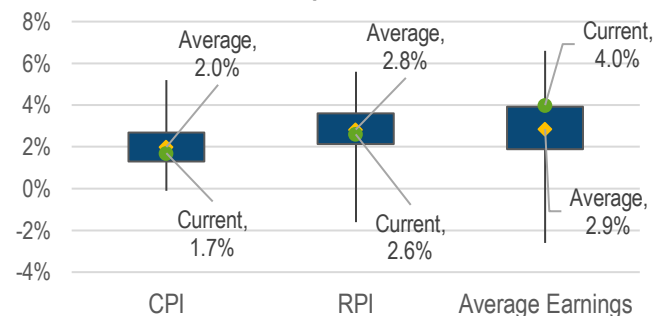
House of Lords’ Report

- There are no updates since the last report.

UK Inflation Rate: Experience over Past Year



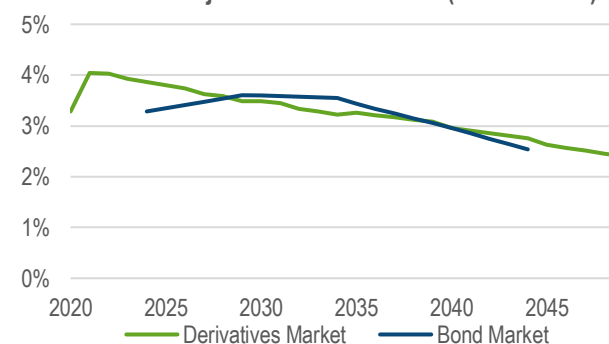
Max, Min and 50% Range: Since BoE Independence



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:

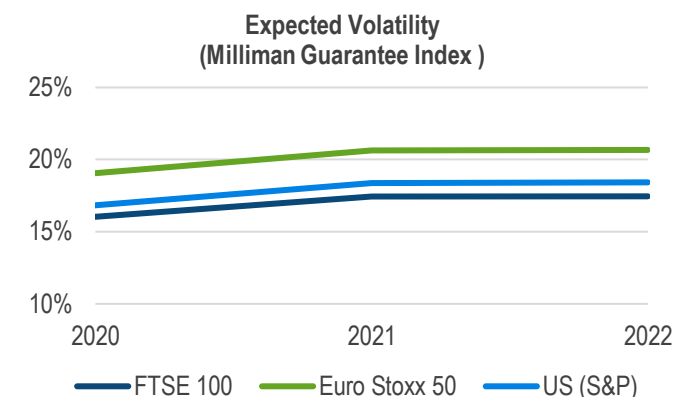
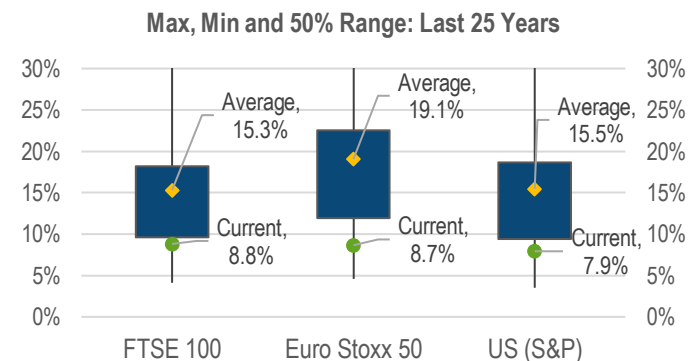
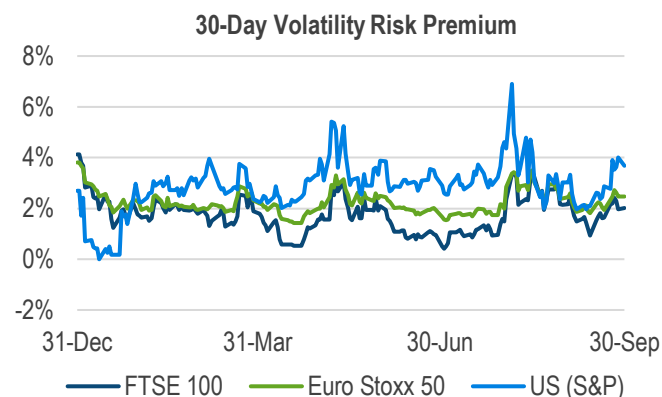
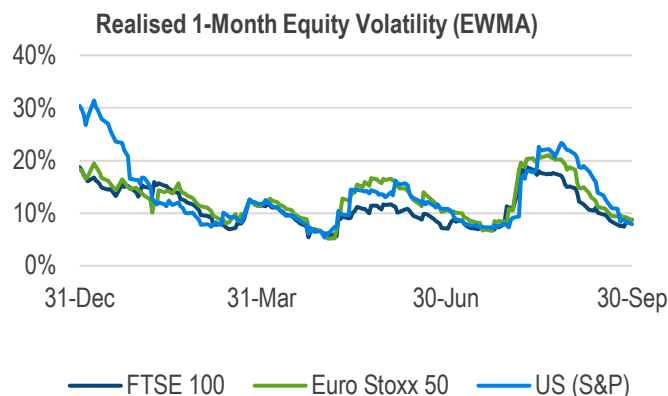
- **Consumer Price Index (CPI)** – measuring the monthly price of a basket of consumer goods and services
- **Retail Price Index (RPI)** – similar to CPI, but the main difference due the addition of mortgage payments, council tax and other housing costs
- **Average Earnings** – measuring the average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

- Following the rise in equity markets, volatility eased significantly during September. Realised volatility for the major indices were all below 10% by the end of the month, and remain significantly lower than historical average levels.
- The FTSE 100 index had a realised volatility of 8.8 % by month-end while the Euro Stoxx 50 and the S&P 500 realised volatilities were 8.7% and 7.9% respectively.
- Volatility risk premiums declined initially, but soon increased for the remainder of the month. The increase is due to the realised volatility declining more than the implied volatility in the month.
- The risk premium for the FTSE 100 index ended the month at 2%. The S&P 500 and the Euro Stoxx 50 volatility risk premiums were 3.7% and 2.5% by month-end, respectively.



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.



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