

Market Price Monitor

Local Equity Markets

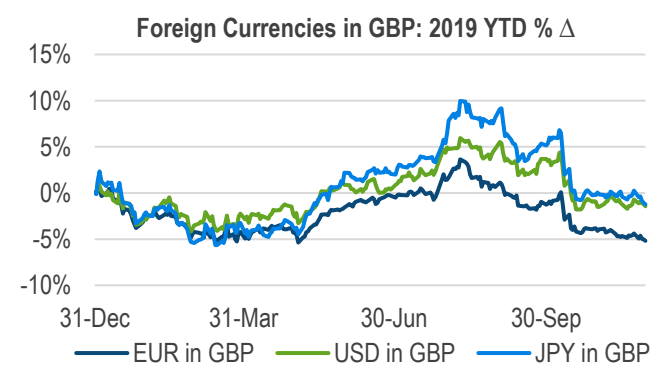
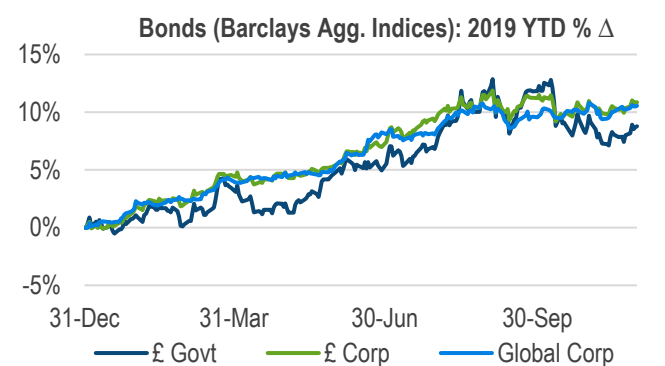
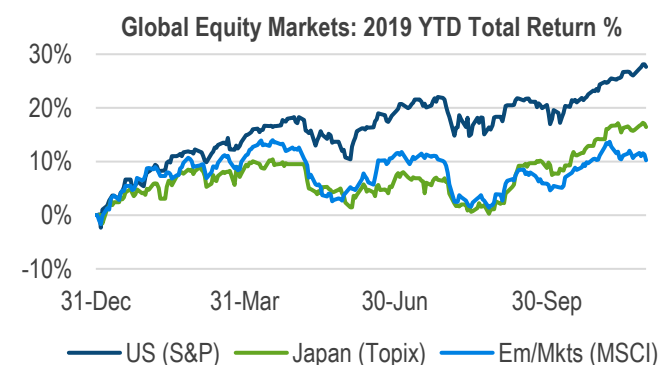
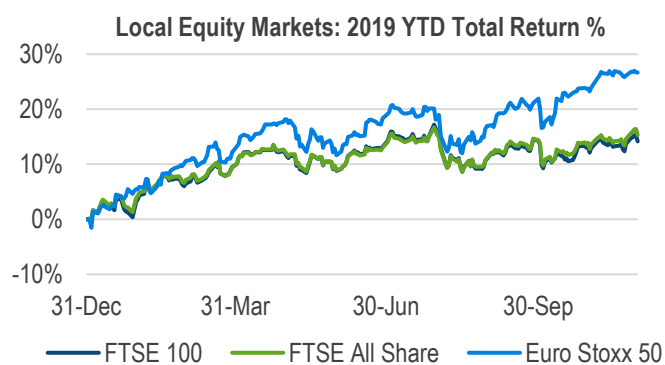
- European equity markets had a solid performance in November, as optimism grew that a “phase one” trade deal agreement may be reached between the US and China.
- The European manufacturing sector also showed signs of recovery as the Eurozone manufacturing PMIs rose compared to their previous reading.
- The FTSE 100 was up 1.8%, as the UK readies itself for the upcoming elections in December.
- The Euro Stoxx 50 gained 2.8% in November.

Global Equity Markets

- Equity markets in developed economies outperformed their emerging markets counterparts in November.
- The S&P 500 and the Japanese index were up 3.6% and 1.9% at month end, respectively.
- Meanwhile the MSCI Emerging Markets index ended the month flat.

Bond/FX Markets

- The British government bond index was down for the third consecutive month, losing 0.9%.
- The British corporate bond index ended the month down 0.1%, while its global counterpart lost 0.2% during the same period.
- The Pound gained 1.1% against the Euro and 1.3% against the Japanese Yen, while remaining flat against the US Dollar.



Total Returns as of November 29, 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	1.8%	2.2%	2.8%	3.6%	1.9%	-0.1%	-0.9%	-0.1%	-0.2%	-1.1%	0.1%	-1.3%
3 Month	2.9%	3.8%	8.3%	7.9%	13.5%	6.1%	-2.2%	-0.2%	0.2%	-5.8%	-5.9%	-8.7%
1 Year	10.2%	11.0%	20.0%	16.1%	4.5%	7.3%	11.4%	12.3%	11.9%	-4.0%	-1.4%	2.2%
YTD	14.1%	15.3%	26.7%	27.6%	16.4%	10.2%	8.8%	10.9%	10.6%	-5.2%	-1.5%	-1.2%

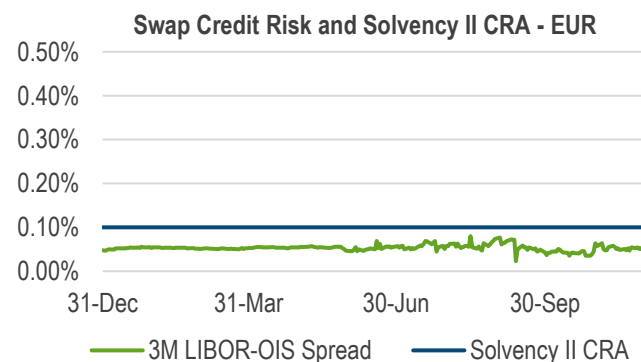
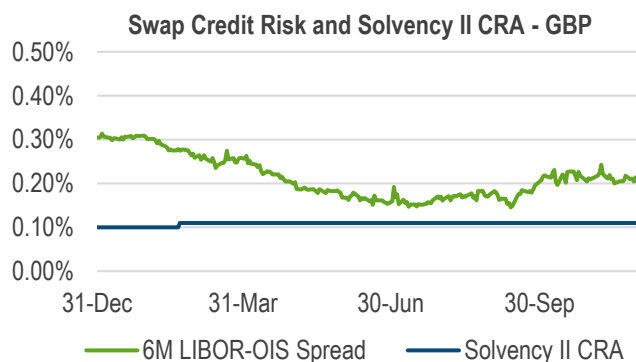
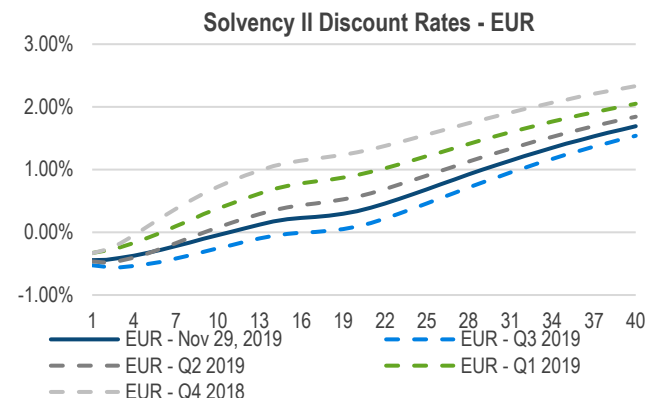
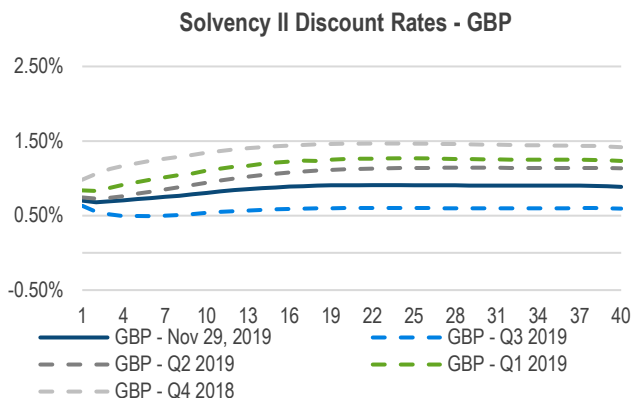
Solvency II Monitor - Rates

Risk Free Rates

- GBP Solvency II risk-free rates increased at all terms in November, apart from the 1-year rate which remained unchanged.
- The 20-year and 30-year GBP Solvency II rates saw the most increase as they climbed 10 basis points higher while the 10-year rate increased by 9 basis points.
- European risk-free rates increased at all terms for the third consecutive month.
- The 20-year and 5-year EUR Solvency II risk-free rates saw the largest increase, as they climbed 4 basis points.
- Both GBP and EUR Solvency II risk-free rate levels, remain materially lower than those seen at the start of the year, but continue to trend above those at Q3 2019.

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 Q3 2019	7	23	27	31	31	0
Since Q2 2019	-5	-7	-14	-22	-24	0
Since Q1 2019	-14	-23	-30	-35	-35	0
Since Q4 2018	-28	-48	-54	-56	-55	1

	Change in EUR Discount and CRA (bps)					
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q3 2019	8	18	21	25	20	0
Since Q2 2019	2	1	-12	-23	-19	0
Since Q1 2019	-11	-24	-42	-57	-46	0
Since Q4 2018	-11	-43	-77	-94	-78	0

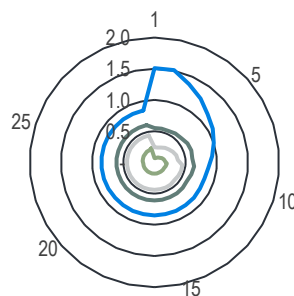
Solvency II Monitor - Spreads

Fundamental Spreads

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

Fundamental Spreads %

GBP - Financial

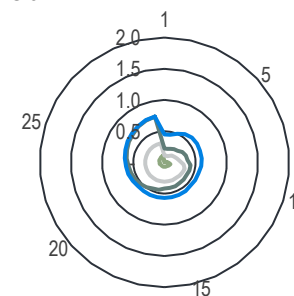


— AAA — AA — A — BBB

GBP Financial Fundamental Spread %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.07	0.11	0.19	0.18	0.23
AA	0.24	0.31	0.45	0.44	0.44
A	0.55	0.58	0.62	0.61	0.61
BBB	1.51	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	0.19	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	0.35	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 29/11/19) 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 31/10/19. **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.

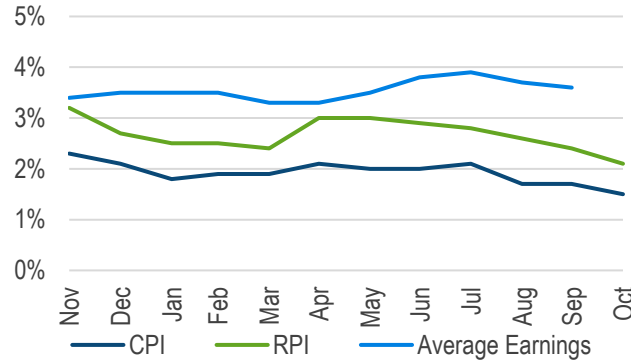
UK Inflation Monitor

- CPI inflation measure decreased by 20 basis points, posting a reading of 1.5% in October.
- RPI inflation measure came in at 2.1% in October, 30 basis points lower from its previous reading.
- According to the ONS: *“The largest downward contribution came from electricity, gas and other fuels. Further downward contributions from furniture, household equipment and maintenance; and recreation and culture, were partially offset by rises in clothing and footwear prices.”*
- UK average earnings for August were revised lower by 10 basis points to 3.7%. The September reading was 10 basis lower at 3.6%
- UK’s third quarter GDP was 1%, a decrease of 30 basis points from the previous quarter.

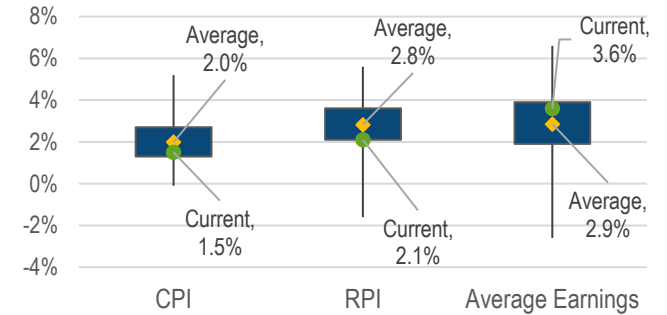
House of Lords’ Report

- Concluded for now – awaiting debate.

UK Inflation Rate: Experience over Past Year



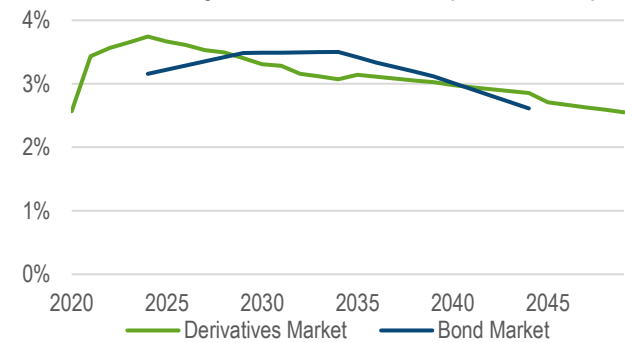
Max, Min and 50% Range: Since BoE Independence



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:

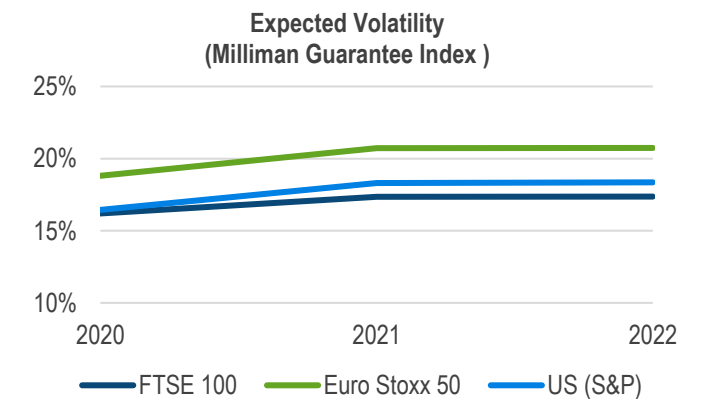
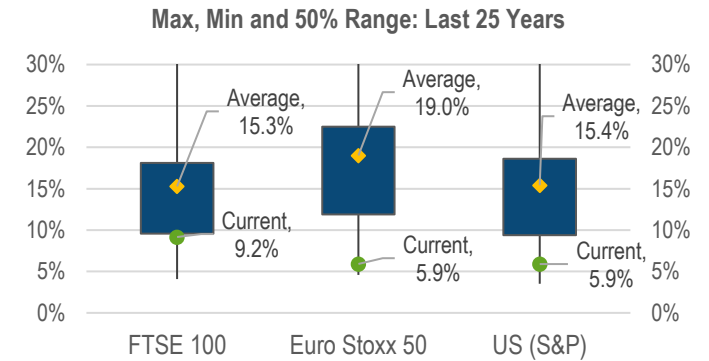
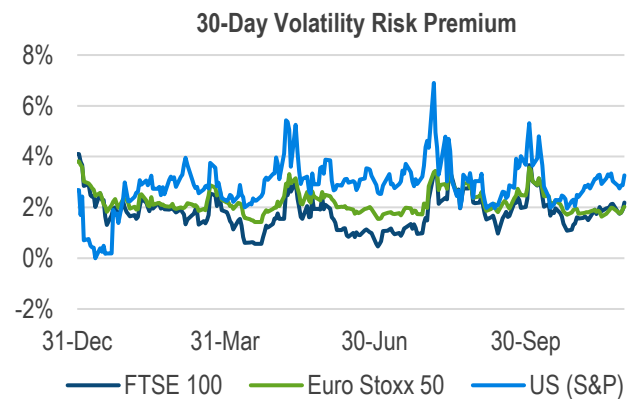
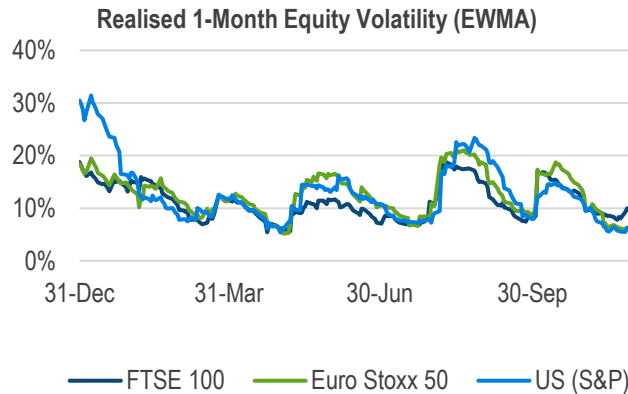
- **Consumer Price Index (CPI)** – measuring the monthly price of a basket of consumer goods and services
- **Retail Price Index (RPI)** – similar to CPI, but the main difference due the addition of mortgage payments, council tax and other housing costs
- **Average Earnings** – measuring the average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

- Realised volatility decreased significantly in November, with all major indices ending the month with a realised volatility of below 10%.
- The Euro Stoxx 50 and the S&P 500 realised volatilities stood at 5.9% by month end, while the FTSE 100 had a realised volatility of 9.2%.
- In contrast, volatility risk premiums increased in November as realised volatilities declined and implied volatilities remained almost unchanged.
- The volatility risk premium for the European and US indices was 2% and 3.3% respectively. The FTSE 100 had a volatility risk premium of 2.2% at month-end.



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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