

Asset Price Monitor

Local Equity Markets

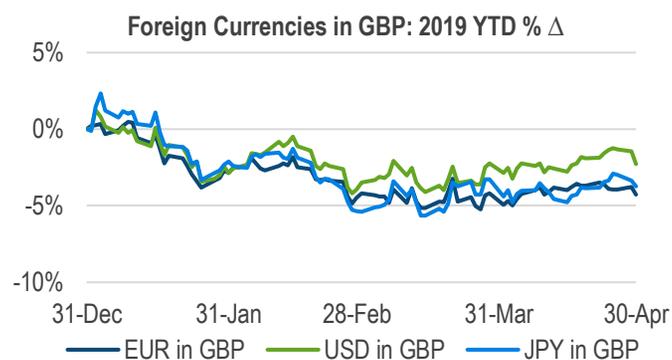
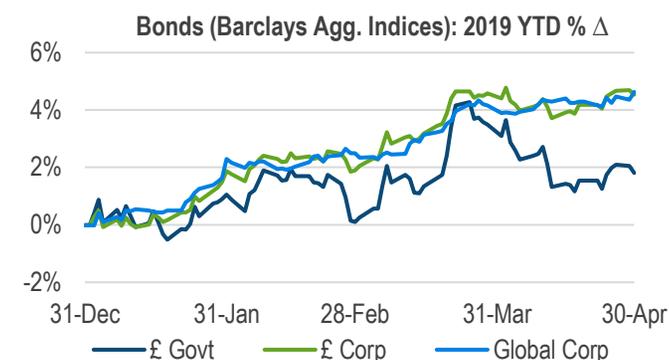
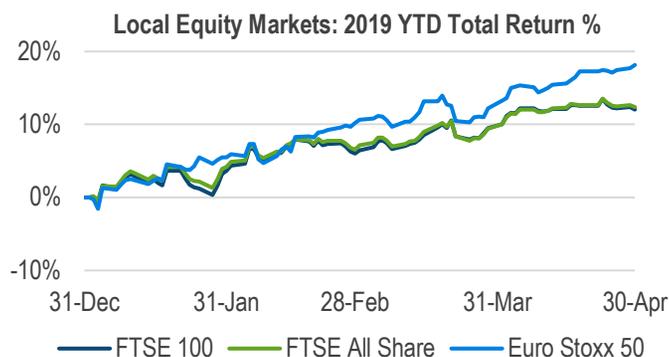
- European equity markets continued to strengthen in April as central banks kept interest rates unchanged. The Euro Stoxx 50 outperformed its European and global counterparts with a surge of over 5% in monthly return.
- The FTSE 100 index also gained more ground in April, posting a return of 2.3%.
- European indices have gained more than 10% year-to-date.

Global Equity Markets

- Global equity markets also posted positive returns in April.
- The rally in global markets was led by the S&P 500, which gained 4% in April.
- Japanese and Emerging markets also strengthened by 1.7% and 2.1% respectively.

Bond/FX Markets

- UK corporate bonds underperformed their global counterparts as they remained flat in April.
- UK government bonds were down by 1.6% by the end of April.
- The British Pound slightly gained marginally against the Japanese Yen and the Euro as a chance of no-deal Brexit has decreased. It remained unchanged against the US Dollar in the month.



Total Returns as of April 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	2.3%	2.7%	5.3%	4.0%	1.7%	2.1%	-1.6%	0.0%	0.5%	-0.1%	0.0%	-0.5%
3 Month	8.1%	7.8%	12.0%	9.5%	4.4%	3.2%	0.7%	2.6%	2.3%	-1.4%	0.6%	-1.7%
1 Year	3.1%	2.6%	2.1%	13.5%	-6.8%	-5.0%	3.3%	3.8%	2.9%	-2.2%	5.6%	3.5%
YTD	12.0%	12.3%	18.1%	18.2%	9.5%	12.2%	1.8%	4.5%	4.6%	-4.3%	-2.3%	-3.7%

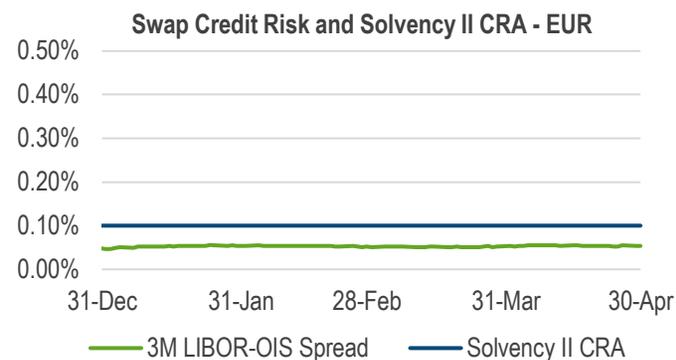
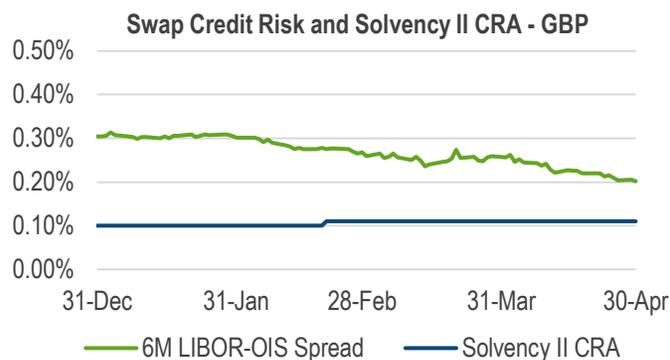
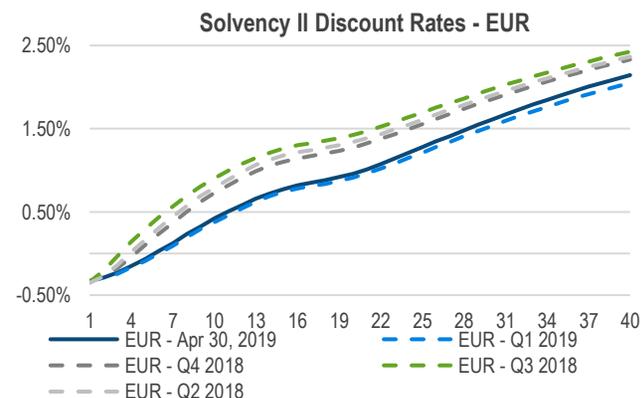
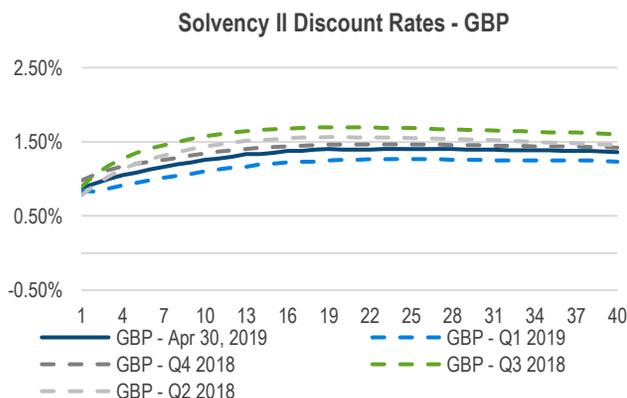
Solvency II Monitor - Rates

Risk Free Rates

- Solvency II GBP risk free rates increased in April across all terms. With the 5 to 30 year terms seeing an increase of 14 to 15 basis points.
- The EUR discount rates also increased for the 5 to the 30 year terms but by less than their GBP counterparts.

Credit Risk Adjustment

- Both GBP and EUR CRAs remained the same as March, at 11 and 10 basis points respectively.



Change in GBP Discount and CRA (bps)						
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q1 2019	4	14	15	14	14	0
Since Q4 2018	-10	-11	-9	-6	-6	1
Since Q3 2018	-2	-26	-32	-30	-26	1
Since Q2 2018	10	-12	-18	-17	-13	1

Change in EUR Discount and CRA (bps)						
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q1 2019	0	2	4	5	7	0
Since Q4 2018	0	-17	-31	-32	-24	0
Since Q3 2018	1	-36	-49	-47	-37	0
Since Q2 2018	2	-23	-37	-38	-29	0

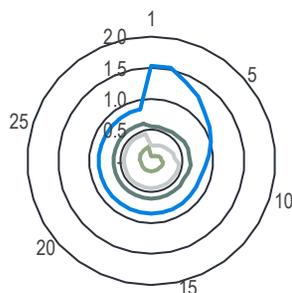
Solvency II Monitor - Spreads

Fundamental Spreads

- The fundamental spread data shown is for end of March.
- There were no material changes compared to the end of February.

Fundamental Spreads %

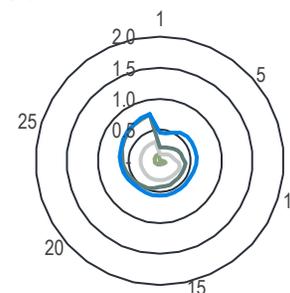
GBP - Financial



— AAA — AA — A — BBB

GBP Financial Fundamental Spread %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.07	0.11	0.19	0.17	0.23
AA	0.25	0.31	0.45	0.44	0.44
A	0.56	0.58	0.62	0.61	0.61
BBB	1.53	1.16	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	0.54	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	0.29	0.41	0.52	0.76
BBB	0.45	0.59	0.57	0.56	0.77
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	0.76
BBB	0.11	0.22	0.35	0.56	0.77

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 30/04/19) 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.

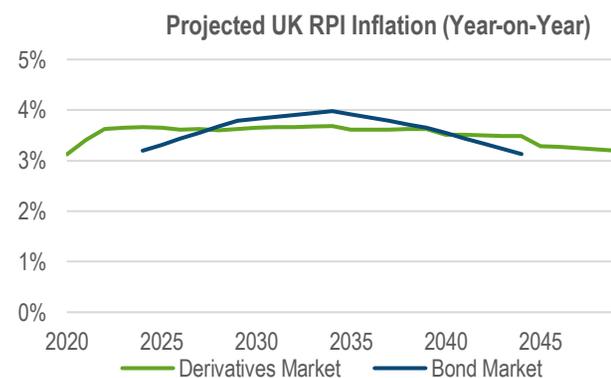
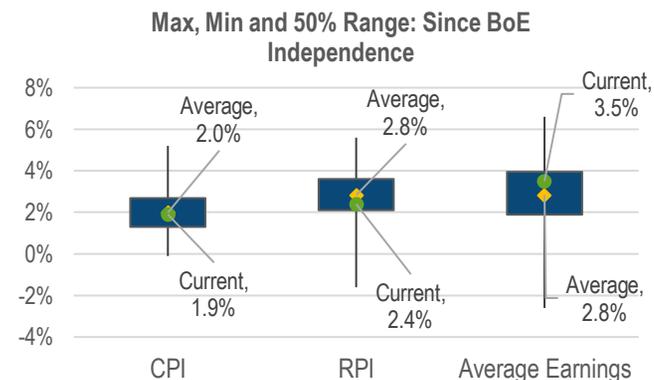
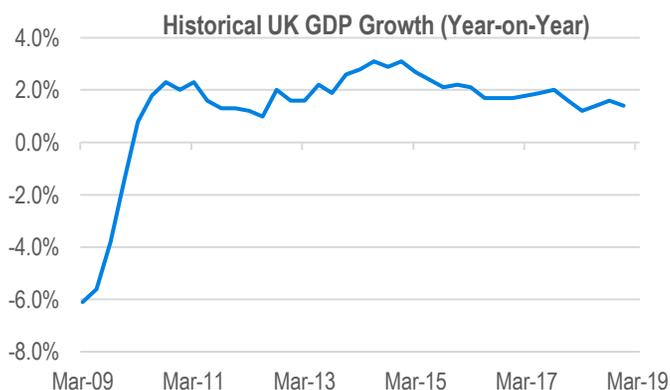
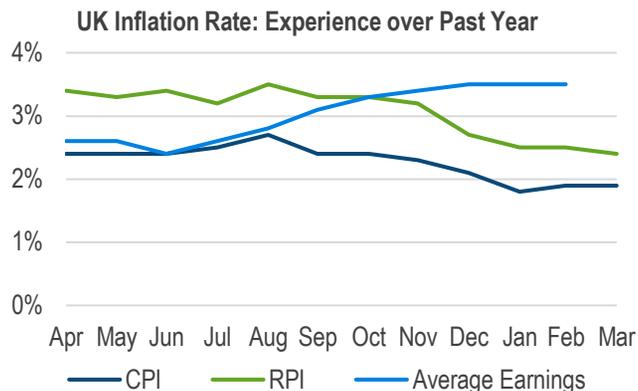
EIOPA fundamental spreads show the credit spread corresponding to the risk of default or downgrading of an asset. This is shown here across financial and non-financial assets, credit quality steps 0-3 and durations of 1-30 years. The data is provided by EIOPA and as of 31/03/19. **Fundamental spread** = 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 did not change in March and remained at 1.9%. There was a decrease in RPI by 10 basis points to 2.4%.
- Average earnings inflation increased in February by 10 basis points to 3.5%.
- According to the ONS: “Rising prices for motor fuels and clothing produced the largest upward contributions... The largest, offsetting, downward contributions came from across a range of recreational and cultural goods, food and motor vehicles.”
- The market implied projected RPI remains largely unchanged.
- There were no updates to the GDP figure.

House of Lords’ Report

- The House of Lords published a report on 17/01/19 on “Measuring Inflation”.
- The report argues that the UK Statistics Authority is failing its statutory duties by publishing the RPI index despite acknowledging its flaws.
- From many of suggestions in the report, one was to change the RPI index calculations, which could be detrimental to the UK inflation-linked bond market.
- The Chancellor of Exchequer responded to the report on 30/04/19, deferring his decision on the issue pending further analysis.



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

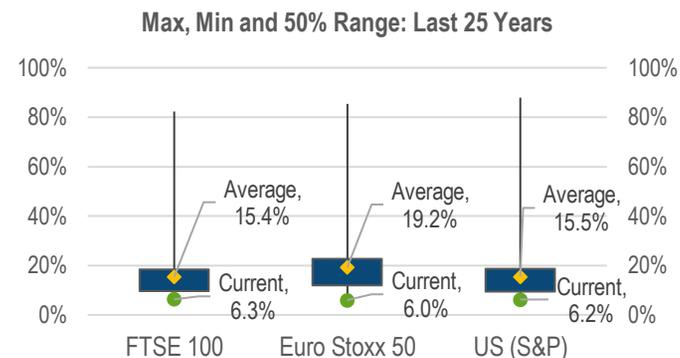
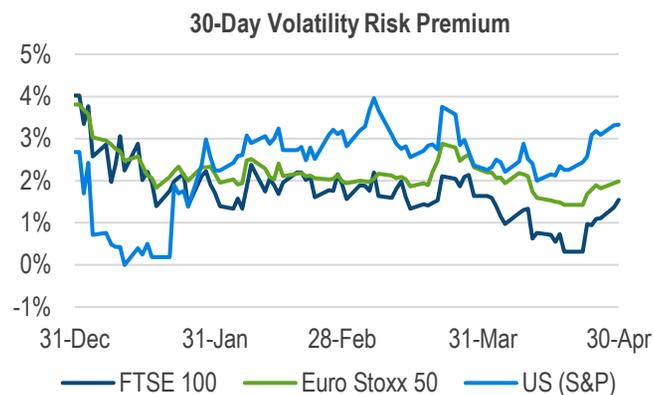
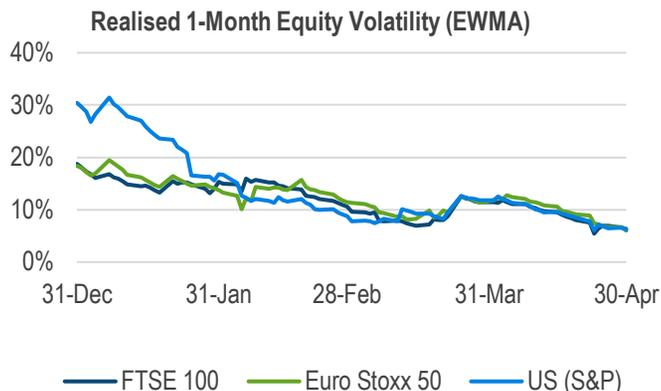
- **Consumer Price Index (CPI)** – measuring the monthly price of a basket of consumer goods and services
- **Retail Price Index (RPI)** – similar to CPI, but the main difference due the addition of mortgage payments, council tax and other housing costs
- **Average Earnings** – measuring the average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

- Volatility decreased during April across all developed markets.
- The realised volatility dropped below 10% for US, European and UK markets, with all of them posting a volatility of around 6%. This is the lowest level observed this year.
- The volatility risk premium for European equities ended the month around 2%. UK equities showed a smaller volatility risk premium of around 1.5%.
- S&P 500 had a volatility risk premium of above 3% by 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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