Market Price Monitor

Local Equity Markets

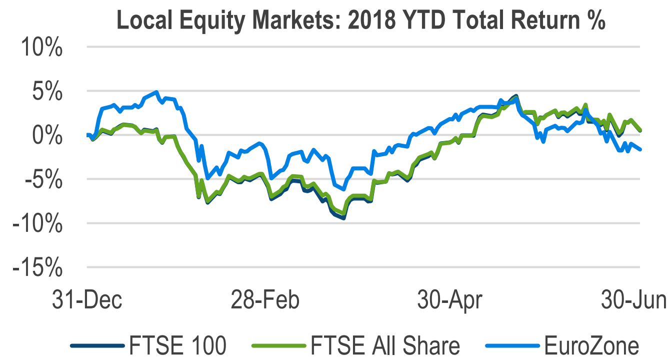
- European equity markets were all in slight negative territory for the month. This was on the back of ongoing tensions on trade tariffs with the US.
- UK and Eurozone equity were fairly well correlated during the month.

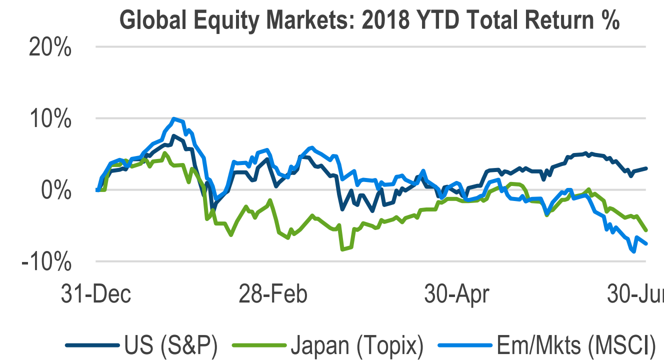
Global Equity Markets

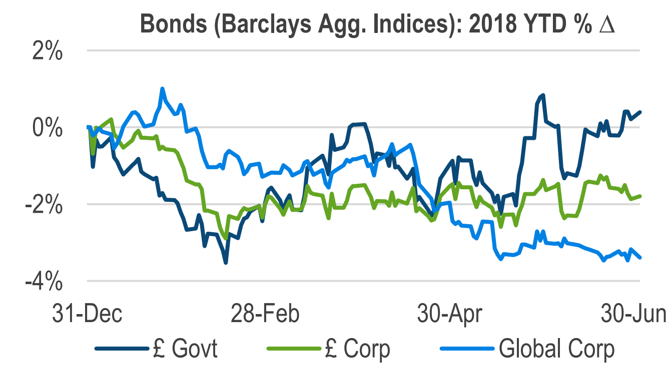
- Emerging Markets equity was one of the worst performing asset classes during June, being the most impacted by market fears over a trade war.
- Japanese equity also performed poorly, being down 0.8% for the month. The US equity market was one of the few to end the month in positive territory.

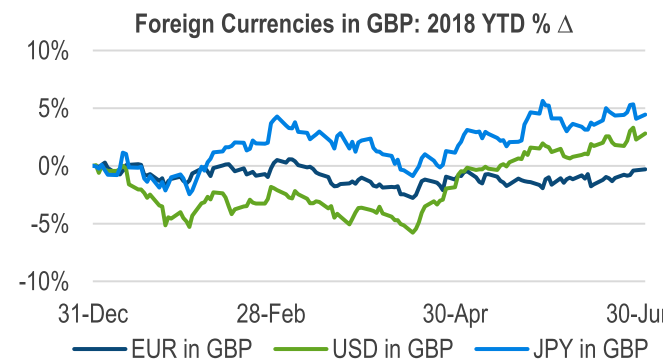
Bond/FX Markets

- Global corporate bonds continued their steady decline this year, being down another 0.5% in June. UK bonds (both government and corporate) were also down across the month by a similar amount.
- The British Pound lost ground against both the US Dollar and Euro during June, but gained over 1% against the Japanese Yen.









Total Returns as of June 30, 2018

	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	-0.2%	-0.2%	-0.2%	0.6%	-0.8%	-4.2%	-0.6%	-0.5%	-0.5%	0.6%	0.7%	-1.1%
3 Month	9.6%	9.2%	2.9%	3.4%	1.1%	-8.0%	0.1%	-0.3%	-2.4%	0.6%	6.1%	1.8%
1 Year	8.7%	9.0%	1.3%	14.4%	9.7%	8.2%	2.0%	0.4%	0.4%	0.9%	-1.4%	0.1%
YTD	1.7%	1.7%	-1.0%	2.6%	-3.7%	-6.7%	0.2%	-1.9%	-3.2%	-0.4%	2.3%	4.1%

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

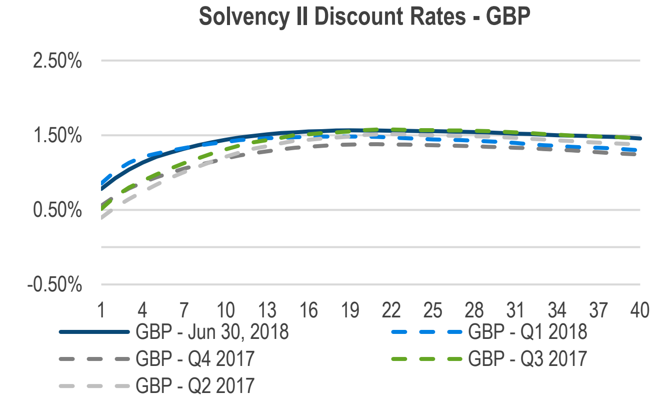
Solvency II Monitor - Rates

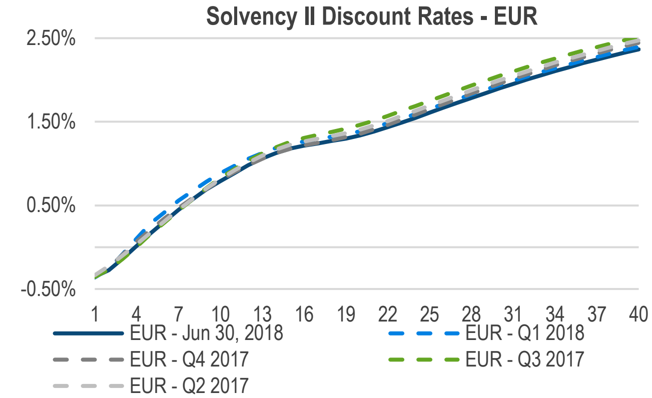
Risk Free Rates

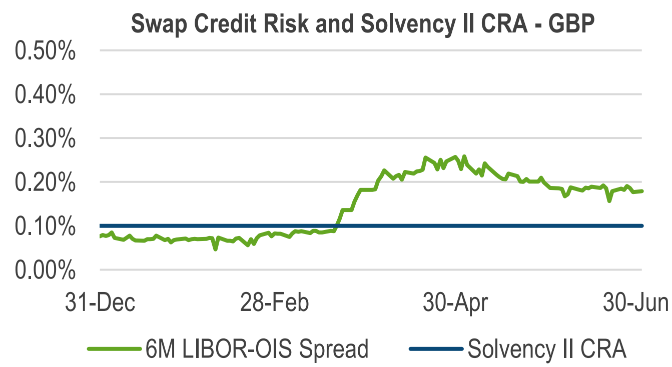
- For GBP, there has been a general rise in interest rates across the term structure since last month. This rise is more pronounced at shorter terms, which results in a slight flattening of the curve.
- For EUR, the curve has fallen slightly across the month, across all terms. Again, this is more pronounced for shorter terms.

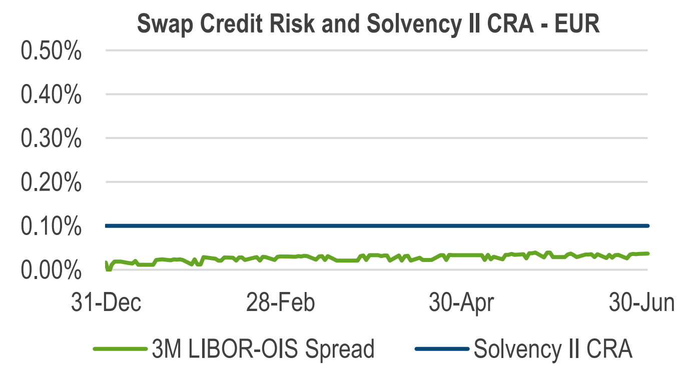
Credit Risk Adjustment

- GBP LIBOR-OIS spread continues to be above the CRA 10 basis point. However, this has still yet to lead to a rise in CRA above the minimum 10 basis point floor. This is because the CRA is based upon a historical average of the LIBOR-OIS spread.
- EUR LIBOR-OIS continues to remain below the 10 basis point floor.









Change in GBP Discount and CRA (bps)

	1Y	Y5	Y10	Y20	Y30	CRA
Since Q1 2018	-7	-5	3	8	12	0
Since Q4 2017	23	27	25	19	19	0
Since Q3 2017	27	23	13	0	-2	-3
Since Q2 2017	39	37	23	6	6	-6

Change in EUR Discount and CRA (bps)

	1Y	Y5	Y10	Y20	Y30	CRA
Since Q1 2018	1	-12	-10	-5	-4	0
Since Q4 2017	0	-4	-1	-2	-6	0
Since Q3 2017	0	1	-4	-13	-15	0
Since Q2 2017	-2	-1	-3	-7	-9	0

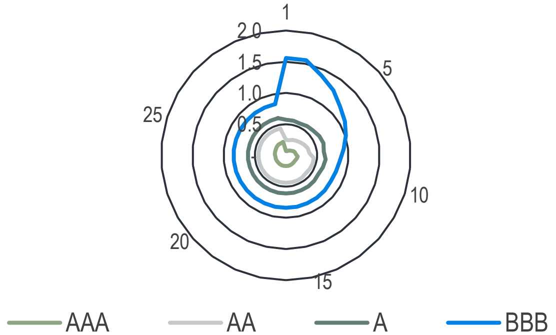
Solvency II Monitor - Spreads

Fundamental Spreads

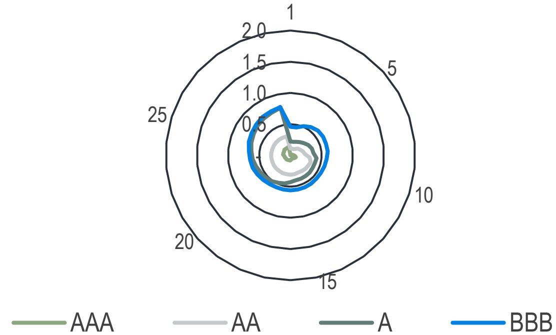
- The fundamental spread data shown is for end of May.
- There were no material changes compared to the end of April.

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	0.22
AA	0.25	0.31	0.45	0.44	0.44
A	0.57	0.59	0.62	0.61	0.61
BBB	1.56	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*	*0.48*
BBB	*0.17*	*0.28*	*0.39*	*0.57*	*0.69*

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	0.31	0.31
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 30/06/18) and applying the Credit Risk Adjustment as defined in the Technical Specs.

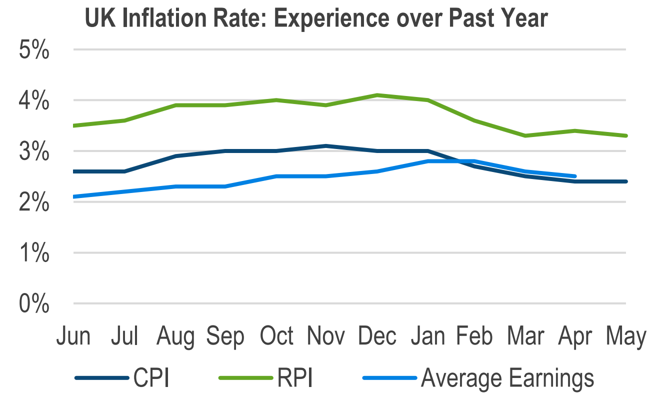
The **Credit Risk Adjustment** is a component of the risk-free discount curve defined by EIOPA. It is calculated from actual experience in the 'LIBOR-OIS' spread (3 months for EUR, 6 months for GBP), and is bounded between 0.10 and 0.35. We show actual LIBOR-OIS spread levels and the defined CRA, for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

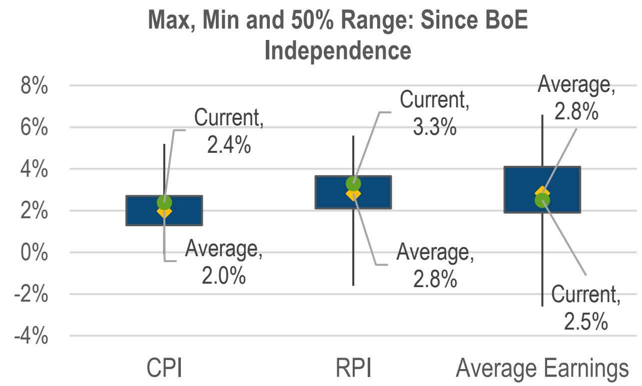
EIOPA fundamental spreads show the credit spread corresponding to the risk of default or downgrading of an asset. This is shown here across financial and non-financial assets, credit quality steps 0-3 and durations of 1-30 years. The data is provided by EIOPA and as of 31/05/18. **Fundamental spread** = 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.

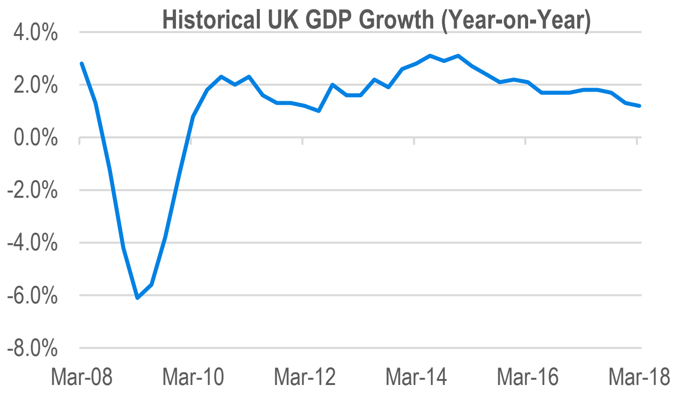
Data sources: Bloomberg; Barclays; EIOPA; Oxford-Man Institute; ONS; Milliman FRM

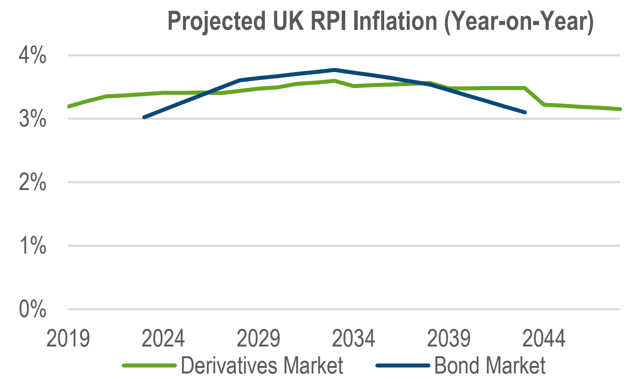
UK Inflation Monitor

- UK price inflation changes in May are fairly small. CPI price inflation has stayed at 2.4%, and RPI price inflation has dropped back down to 3.3%. Both rates remain close to their lowest levels for the past 12 months.
- The latest data for earnings inflation decreased from 2.6% to 2.5% in April.
- According to the ONS: *The largest upward contribution came from transport, where prices rose by 4.6%.*
- The market implied view of future inflation shows little change since April. The derivatives market implies an RPI inflation rate of 3% for very short terms, rising to higher levels in future years.









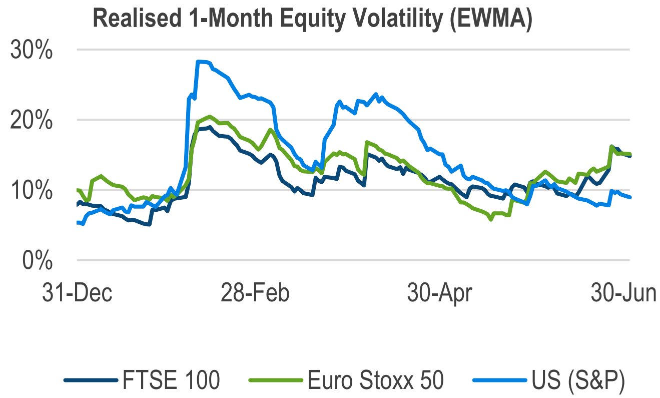
Historical year-on-year inflation rate is assessed by the % change on:
- **Consumer Price Index (CPI)** – measuring the monthly price of a basket of consumer goods and services
- **Retail Price Index (RPI)** – similar to CPI, but the main difference due the addition of mortgage payments, council tax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

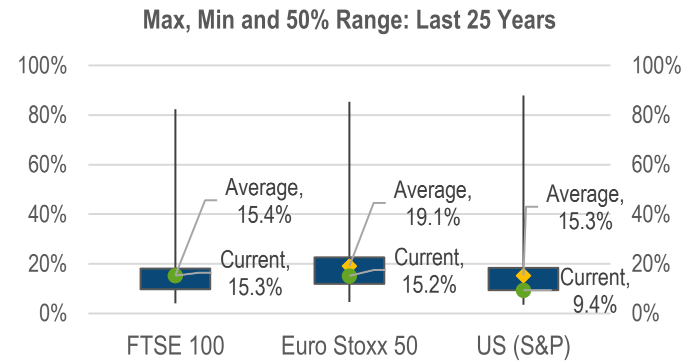
Projection year-on-year inflation rate is the forward rate calculated from market data:
- **Derivatives Market View** – constructed from zero coupon inflation par swap rates against the RPI index at various tenors
- **Bond Market View** – constructed from the difference between the nominal rates implied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

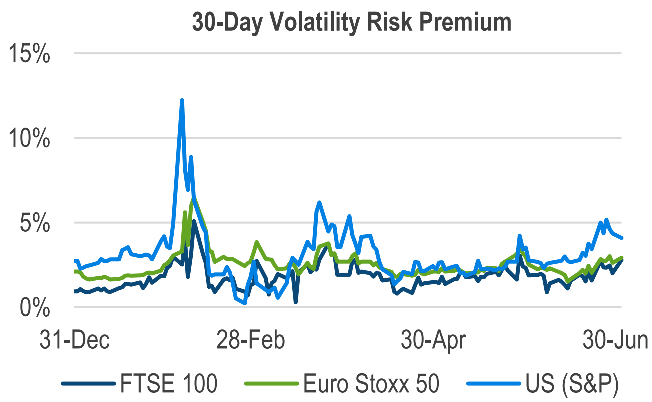
Data sources: Bloomberg; Barclays; EIOPA; Oxford-Man Institute; ONS; Milliman FRM

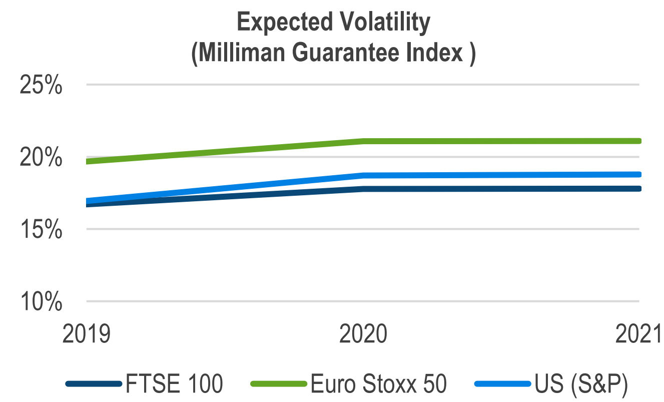
Volatility and Hedging Cost Monitor

- For European indices, realised volatility picked up in June, to reach close to average levels. Whereas for the S&P volatility declined to below 10%, well below its historical average.
- The volatility risk premium for European major indices converged to around 3% the month end, with the S&P higher at 4%.









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.