

## Market Price Monitor

### Local Equity Markets

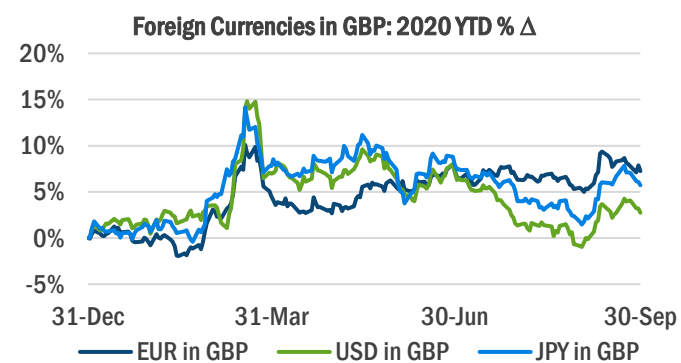
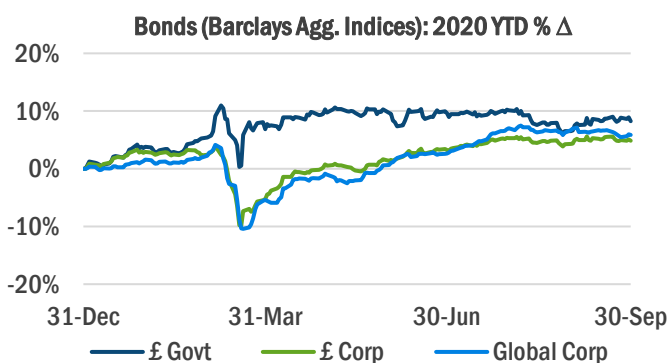
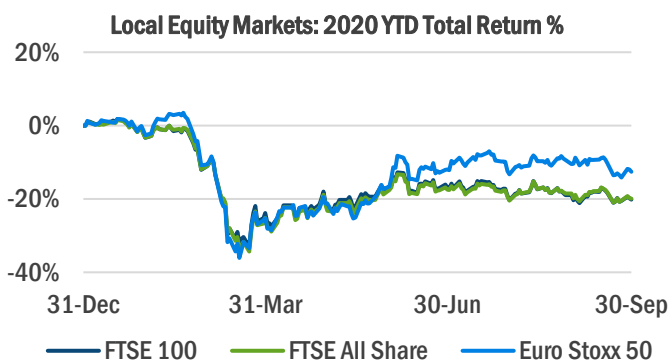
- Most major equity indices saw losses in September, with some investors concerned about current stock valuations as well as rising numbers of positive COVID-19 cases in many countries.
- The FTSE 100 ended the month down 1.5%, resulting in a 4% loss during Q3.
- The Euro Stoxx 50 was down 2.3% at month-end.

### Global Equity Markets

- The Japanese Topix index was one of the top performers of the month, making gains of 1.3%, but remains 3.4% down year-to-date.
- The S&P 500 ended the month down 3.8%. Meanwhile, the MSCI emerging markets index lost 1.6% during the same period.

### Bond/FX Markets

- Both the UK government bond and the UK corporate bond indices were up in September, returning 1.6% and 0.5%, respectively.
- In contrast, the global corporate bond index was down 0.8%.
- The British Pound lost 3.6% and 3.9% against the US Dollar and the Japanese Yen respectively, whilst weakening 1.7% against the Euro, as worries of a potential “Hard” Brexit increased the Pound’s volatility.



	Total Returns as of September 30, 2020											
	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	-1.5%	-1.7%	-2.3%	-3.8%	1.3%	-1.6%	1.6%	0.5%	-0.8%	1.7%	3.6%	3.9%
3 Month	-4.0%	-2.9%	-0.7%	8.9%	5.2%	9.7%	-1.3%	1.5%	3.1%	0.0%	-4.1%	-2.0%
1 Year	-18.1%	-16.6%	-8.0%	15.1%	4.9%	10.9%	3.7%	4.6%	7.7%	2.3%	-4.8%	-2.4%
YTD	-20.2%	-19.9%	-12.6%	5.6%	-3.4%	-0.9%	8.2%	4.8%	5.8%	7.2%	2.7%	5.7%

## Milliman Financial Risk Management

London Market Monitor – 30 September 2020

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

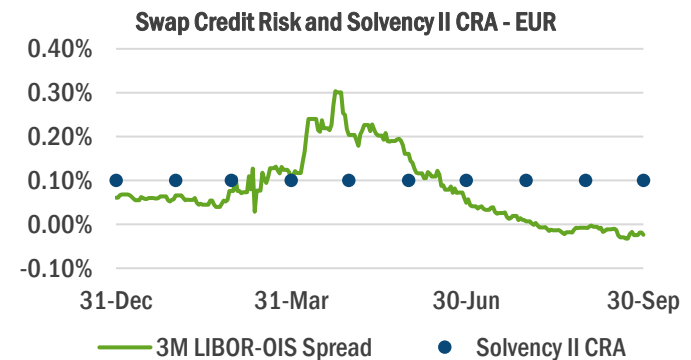
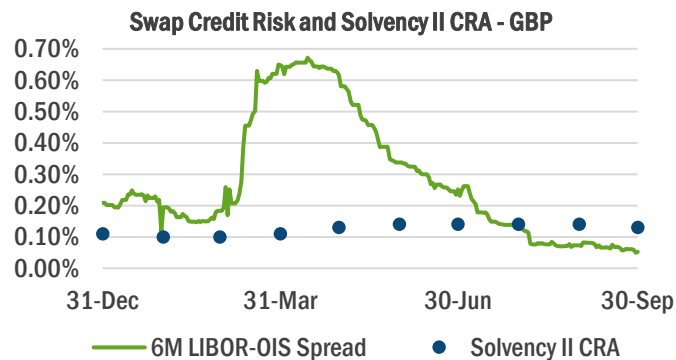
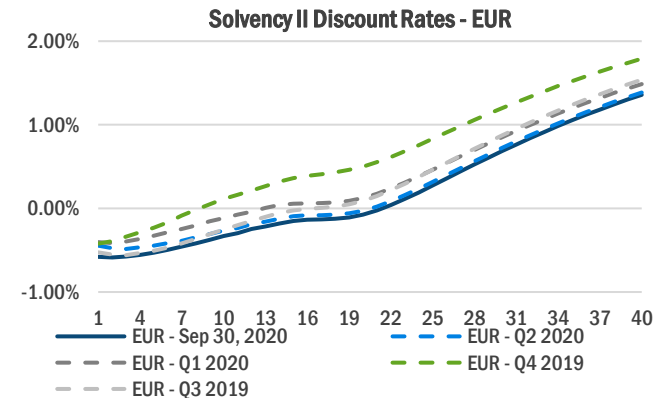
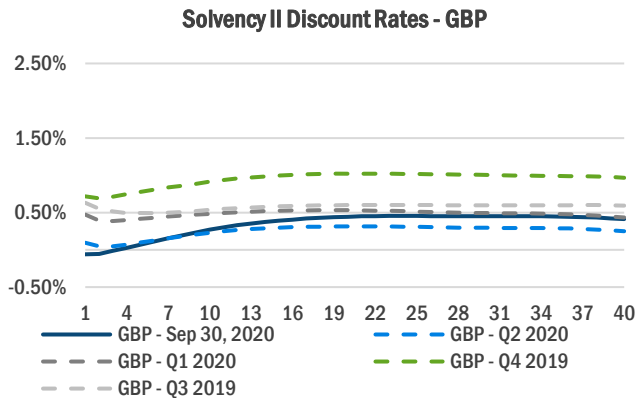
### Solvency II Monitor - Rates

#### Risk Free Rates

- Both GBP and EUR Risk-free rates declined at all terms in September, with the longer-term rates seeing the largest drop.
- The GBP 30-year and 20-year rates decreased by 8 and 7 basis points, respectively.
- The 10-year GBP risk-free rate decreased by 5 basis points.
- The EUR 20-year risk-free rate declined by 12 basis points, while the 30-year and 10-year rates decreased by 10 and 9 basis points, respectively.

#### Credit Risk Adjustment

- GBP CRA decreased by 1 basis points to 13 basis points.
- EUR CRA remained unchanged at the floor of 10 basis points.
- The 3 month Euribor-EONIA spread remains negative during the month of September.



	Change in GBP Discount and CRA (bps)					
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q2 2020	-16	-3	4	13	15	-1
Since Q1 2020	-53	-34	-21	-9	-4	2
Since Q4 2019	-78	-71	-64	-58	-56	2
Since Q3 2019	-69	-42	-26	-16	-15	2

	Change in EUR Discount and CRA (bps)					
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q2 2020	-13	-8	-6	-5	-4	0
Since Q1 2020	-17	-20	-22	-20	-17	0
Since Q4 2019	-16	-30	-44	-58	-51	0
Since Q3 2019	-5	-2	-8	-17	-19	0

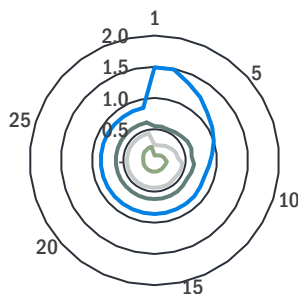
Solvency II Monitor - Spreads

Fundamental Spreads

- There were no material changes since the last report.

Fundamental Spreads %

GBP - Financial



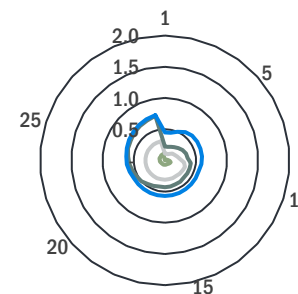
— AAA — AA — A — BBB

GBP Financial Fundamental Spread %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.08	0.12	0.19	0.18	0.22
AA	0.25	0.31	0.45	0.44	0.44
A	0.55	0.58	0.62	0.62	0.62
BBB	1.49	1.14	0.84	0.86	0.86

GBP Financial 'Before Floor' %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.04	0.08	0.16	0.22
AA	0.03	0.06	0.11	0.19	0.26
A	0.06	0.13	0.20	0.33	0.45
BBB	0.15	0.25	0.35	0.50	0.61

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	0.10
AA	0.11	0.16	0.34	0.31	0.31
A	0.22	0.29	0.42	0.50	0.73
BBB	0.45	0.59	0.57	0.57	0.74

GBP Non-Financial 'Before Floor' %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.01	0.04	0.07	0.10
AA	0.00	0.04	0.08	0.16	0.24
A	0.03	0.14	0.26	0.50	0.73
BBB	0.11	0.22	0.34	0.55	0.74

The **Solvency II risk-free discount rates** are based on applying the Smith-Wilson Extrapolation to LIBOR swap rates sourced from Refinitiv and applying the Credit Risk Adjustment as defined in the Technical Specs. The data is provided by EIOPA and as of 30/09/20.

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.

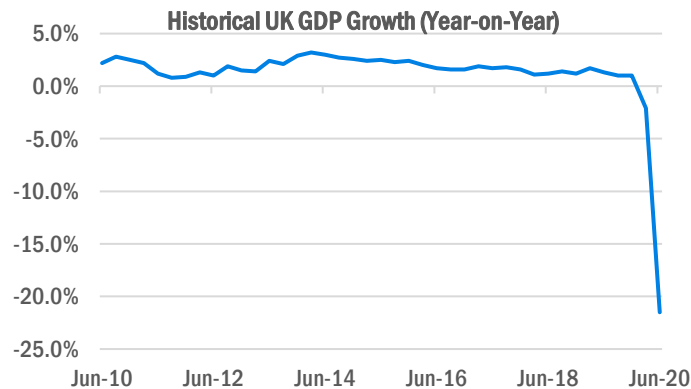
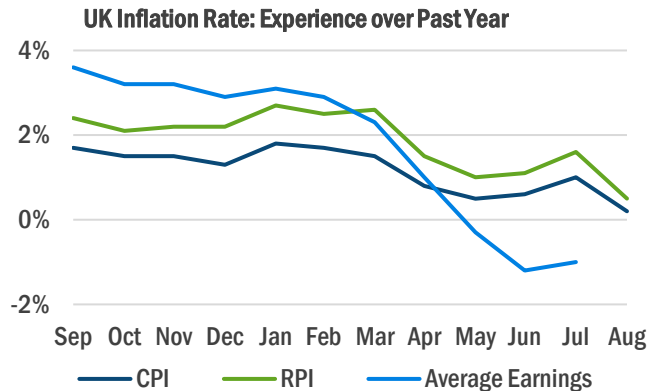
**EIOPA fundamental spreads** show the credit spread corresponding to the risk of default or downgrading of an asset. This is shown here across financial and non-financial assets, credit quality steps 0-3 and durations of 1-30 years. The data is provided by EIOPA and as of 30/09/20. **Fundamental spread** = 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

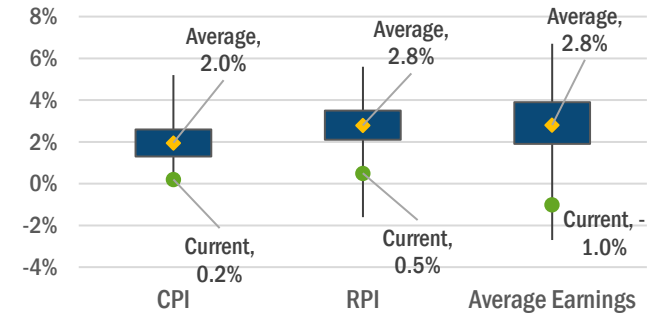
- Both UK's CPI and RPI inflation measures declined in August. The former came in at 0.2%, a drop of 80 basis points from the previous month, meanwhile the latter fell by 110 basis points to a reading of 0.5%.
- According to the ONS: *"Falling prices in restaurants and cafes, arising from the Eat Out to Help Out Scheme, resulted in the largest downward contribution. The largest, partially offsetting, upward contributions came from games, toys and hobbies, accommodation services, road transport services and second-hand cars"*
- Average earnings increased by 20 basis points in July, but still remains in negative territory.
- The projected RPI curve was broadly unchanged from the previous month. We continue to note that, to some extent, a projected decline could be due to the changes that we're expecting in the calculation of the RPI sometime between 2025 and 2030 from the House of Lords consultation.

### House of Lords' Report

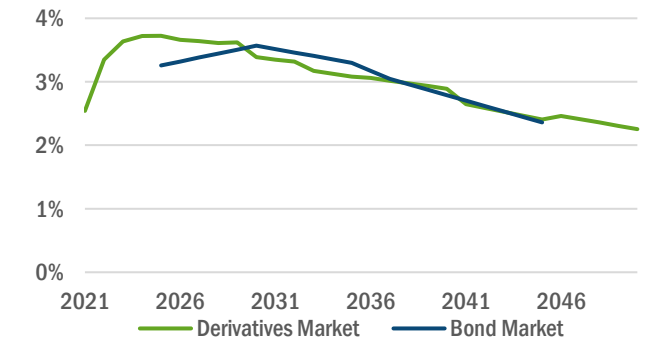
- The UK government and UKSA are expected to respond to the consultation during this autumn.



### Max, Min and 50% Range: Since BoE Independence



### Projected UK RPI Inflation (Year-on-Year)



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

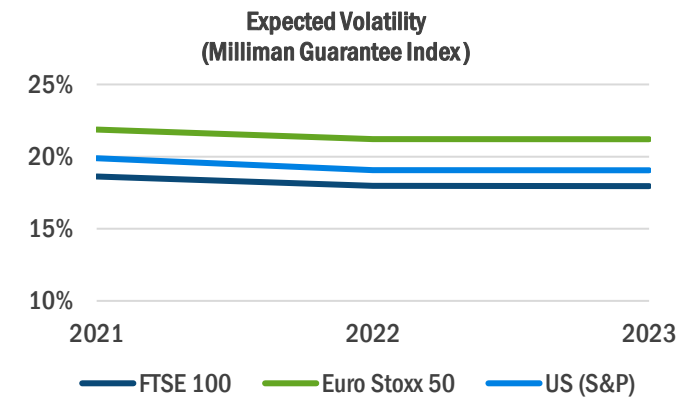
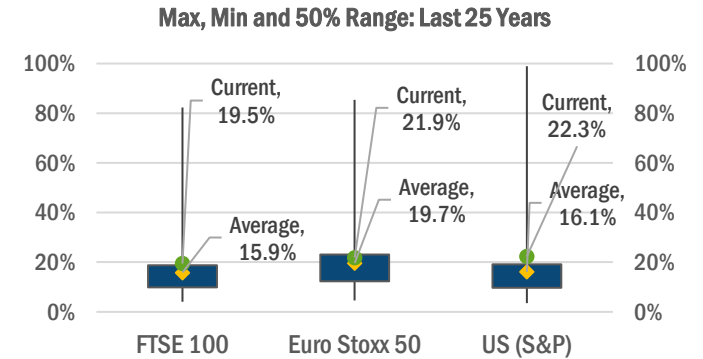
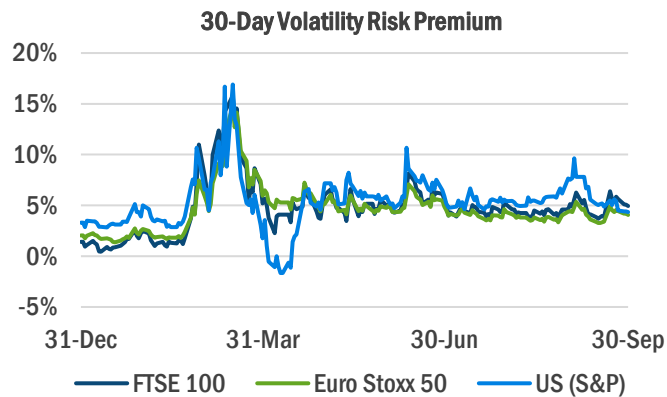
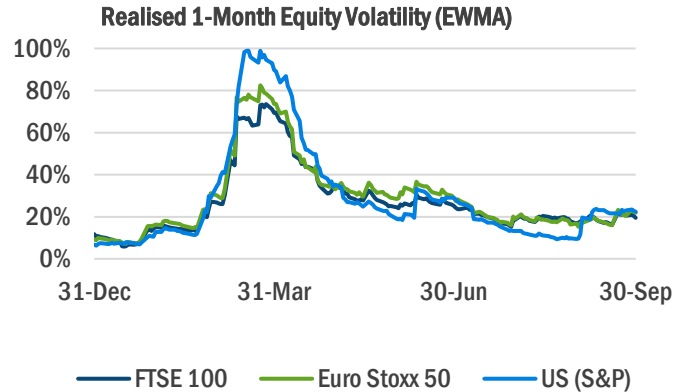
- **Consumer Price Index (CPI)** – measuring the monthly price of a basket of consumer goods and services
- **Retail Price Index (RPI)** – similar to CPI, but the main difference due the addition of mortgage payments, council tax and other housing costs
- **Average Earnings** – measuring the average 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 of major indices increased during September, on the back of increased uncertainty around US elections, increased risk of “no-deal” at the end of the Brexit transition period, increasing numbers of positive COVID-19 cases in Europe and concerns of overvaluations in the tech sector.
- The FTSE 100 index had a realised volatility of 19.5% at month-end, while the Euro Stoxx 50 and S&P 500 indices saw their realised volatility rising to 21.9% and 22.3%, respectively.
- Volatility risk premiums were broadly unchanged, with the FTSE 100 seeing a slight increase to a risk premium of 5%, while the Euro Stoxx 50 had a marginally lower risk premium of 4.1% at month-end.
- The volatility risk premium of the S&P 500 declined to 4.4%, as its implied volatility was unchanged but its realised volatility increased during the month.



**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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