

Market Price Monitor

Local Equity Markets

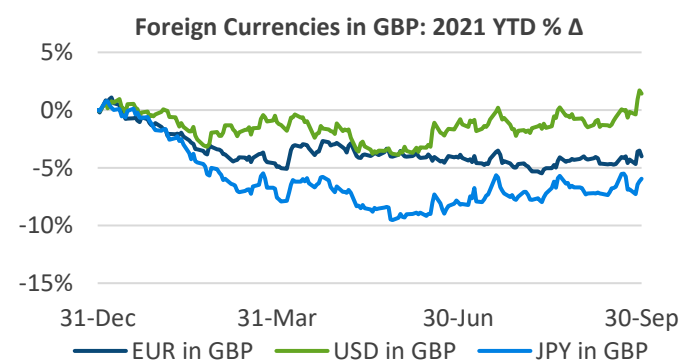
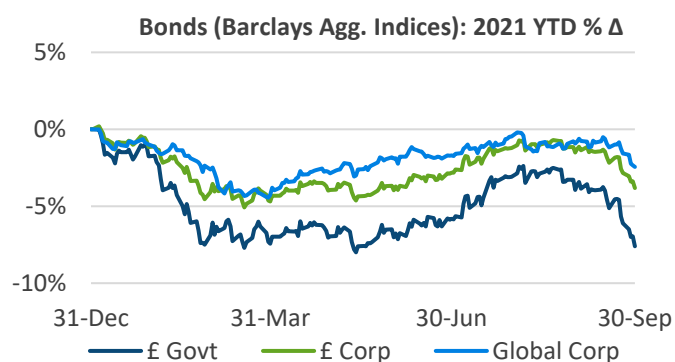
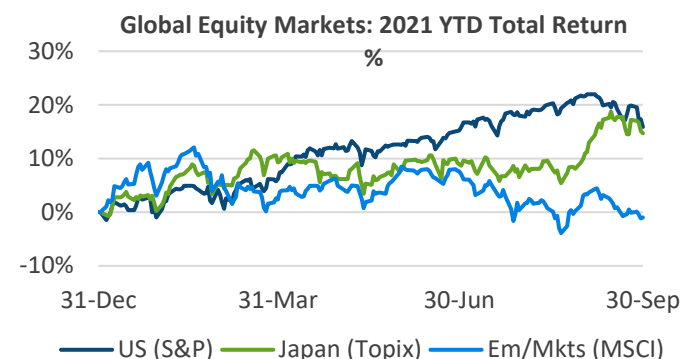
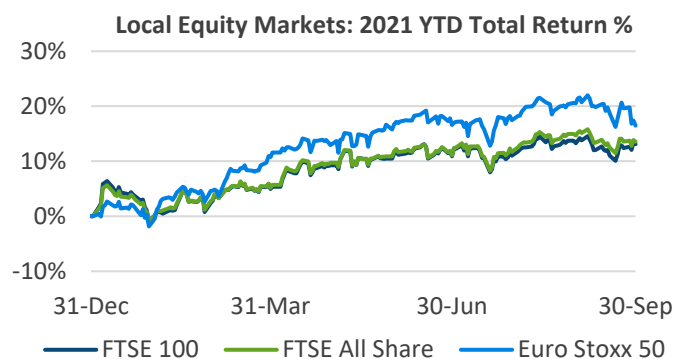
- Most major indices incurred losses in September as concerns over economic growth reaching its peak and rising inflation, weighed in on market sentiment.
- The FTSE 100 ended the month relatively flat, having gained 2% over the quarter.
- The Euro Stoxx 50 ended the month down 3.4%, resulting in a flat performance for the index over Q3.

Global Equity Markets

- The Japanese Topix was the outperformer of the month, returning 4.4%.
- In contrast, the S&P 500 and the MSCI Emerging Markets indices lost 4.7% and 3.9%, respectively. The year-to-date return for the Emerging Markets index became negative at the end of September.

Bond/FX Markets

- Bond markets had a negative performance in September, with the British government and corporate bond indices down 3.8% and 2.3%, respectively.
- The global corporate bond index lost 1.5%.
- The British pound ended the month relatively flat against the Euro but lost 2.2% and 0.8% against the US Dollar and the Japanese Yen, respectively.



	Total Returns as of September 30, 2021											
	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%	-1.0%	-3.4%	-4.7%	4.4%	-3.9%	-3.8%	-2.3%	-1.5%	0.1%	2.2%	0.8%
3 Month	2.0%	2.2%	-0.1%	0.6%	5.3%	-8.0%	-1.9%	-1.0%	-0.8%	0.1%	2.5%	2.2%
1 Year	25.4%	27.9%	29.8%	30.0%	27.5%	18.6%	-7.0%	0.1%	1.7%	-5.3%	-4.1%	-9.2%
YTD	13.1%	13.6%	16.5%	15.9%	14.7%	-1.0%	-7.6%	-3.8%	-2.4%	-4.0%	1.4%	-6.0%

Milliman Financial Risk Management

London Market Monitor – 30 September 2021

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

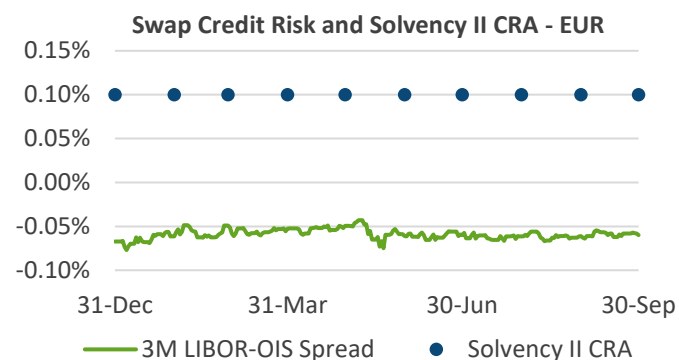
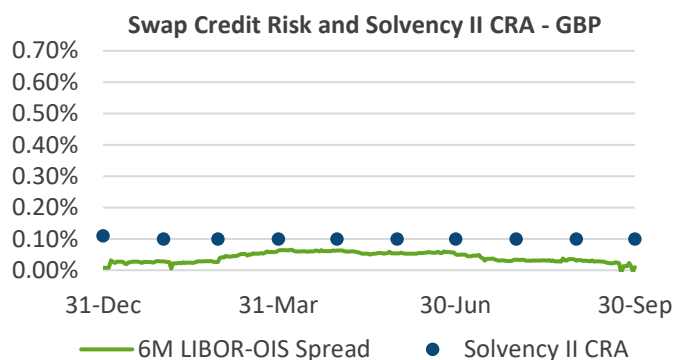
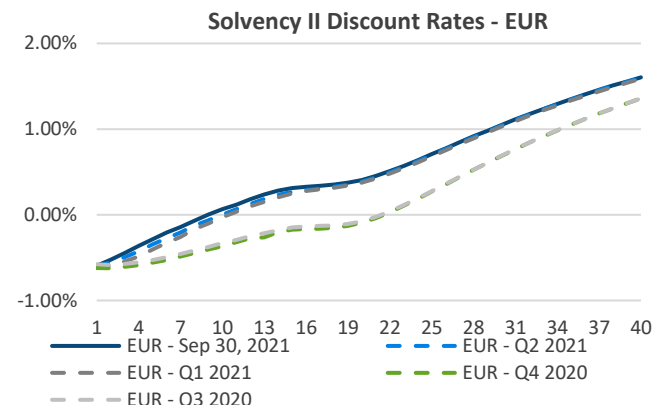
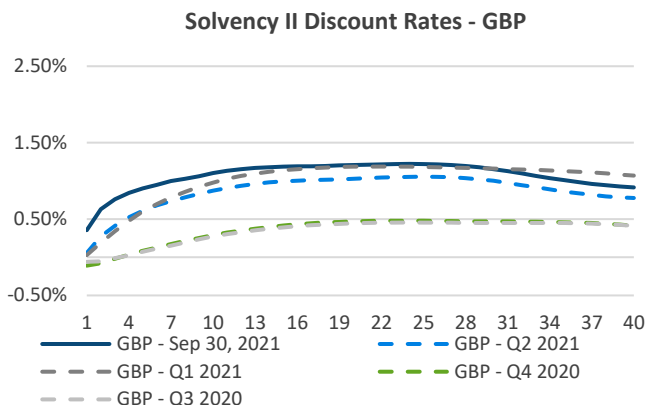
Solvency II Monitor - Rates

Risk Free Rates

- Both GBP and EUR risk-free rates increased at all terms for the second consecutive month.
- The 10 and 20-year GBP rates increased by 30 basis points, and the 30-year climbed higher by 29 basis points.
- The 10 and 20-year EUR risk-free rates rose by 19 basis points, while the 30-year rate increased by 15 basis points.

Credit Risk Adjustment

- Both the GBP and EUR CRAs were unchanged and remain floored at 10 basis points.



	Change in GBP Discount and CRA (bps)					
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q2 2021	30	30	23	18	15	0
Since Q1 2021	33	30	12	2	-1	0
Since Q4 2020	46	82	81	74	69	-1
Since Q3 2020	41	83	83	76	70	-3

	Change in EUR Discount and CRA (bps)					
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q2 2021	1	6	6	2	1	0
Since Q1 2021	2	12	10	3	2	0
Since Q4 2020	3	27	43	50	36	0
Since Q3 2020	-2	24	40	48	36	0

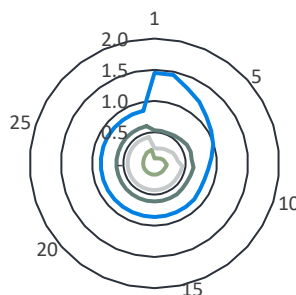
Solvency II Monitor - Spreads

Fundamental Spreads

- There were no material changes since the last report.

Fundamental Spreads %

GBP - Financial

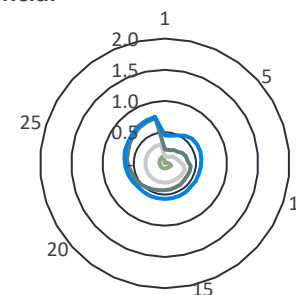


— AAA — AA — A — BBB

GBP Financial Fundamental Spread %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.08	0.12	0.19	0.18	0.22
AA	0.24	0.30	0.44	0.43	0.43
A	0.53	0.57	0.61	0.61	0.61
BBB	1.45	1.12	0.84	0.86	0.86

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	0.26
A	0.06	0.12	0.20	0.33	0.44
BBB	0.15	0.24	0.34	0.49	0.60

GBP - Non-Financial



— AAA — AA — A — BBB

GBP Non-Financial Fundamental Spread %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.01	0.11	0.08	0.11
AA	0.11	0.16	0.34	0.31	0.31
A	0.22	0.28	0.42	0.51	0.74
BBB	0.45	0.59	0.57	0.57	0.76

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	0.14	0.26	0.51	0.74
BBB	0.11	0.23	0.36	0.57	0.76

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 30/09/21.

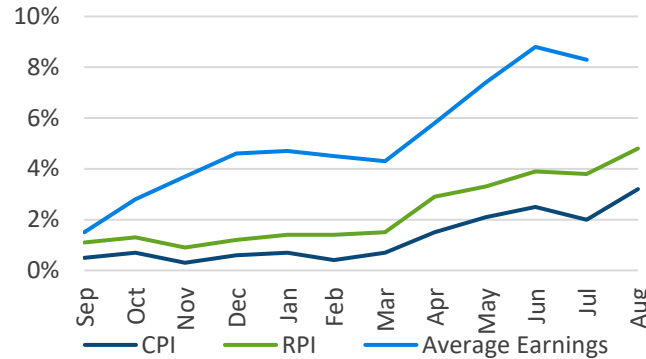
The **Credit Risk Adjustment** is a component of the risk-free discount curve defined by EIOPA. It is calculated from actual experience in the 'LIBOR-OIS' spread (3 months for EUR, 6 months for GBP), and is bounded between 0.10 and 0.35. We show actual LIBOR-OIS spread levels and the defined CRA, for 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 30/09/21. **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.

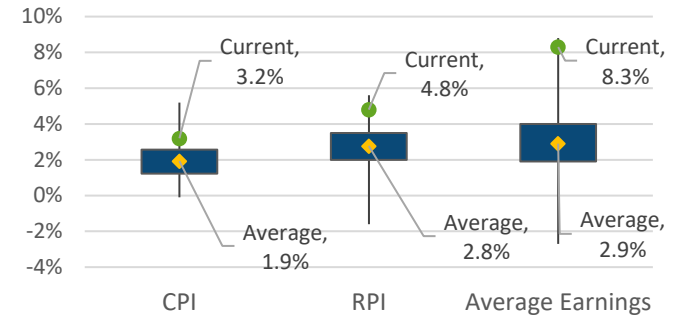
UK Inflation Monitor

- UK's CPI inflation rose by 120 basis points to 3.2% in August.
- UK's RPI inflation came in at 4.8%, an increase of 100 basis points from the previous month.
- According to the ONS: *“The largest upward contribution to change is a base effect, because, in part, of discounted restaurant and café prices in August 2020 resulting from the government’s Eat Out to Help Out scheme and, to a lesser extent, reductions in Value Added Tax (VAT) across the same sector.”*
- Average earning declined by 50 basis points to 8.3% in July.
- According to the ONS: *“Annual growth in average employee pay is being affected by temporary factors that have inflated the increase in the headline growth rate: base effects where the latest months are now compared with low base periods when earnings were first affected by the coronavirus pandemic, and compositional effects where there has been a fall in the number and proportion of lower-paid employee jobs, therefore increasing average earnings.”*
- The Q2 2021 GDP growth was revised higher by 140 basis points to 23.6%.
- The projected UK RPI spiked higher at the near-term, reaching almost 6%, while the medium and longer terms remained broadly unchanged from the previous month.

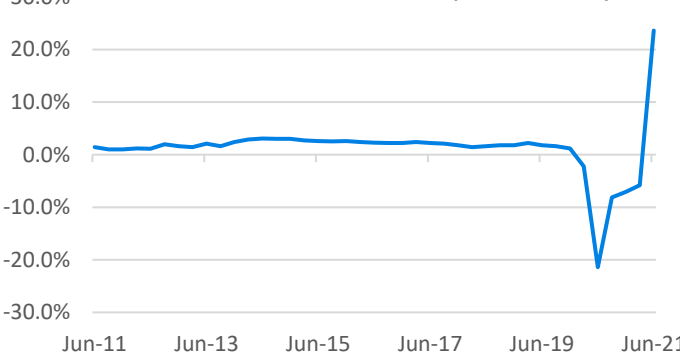
UK Inflation Rate: Experience over Past Year



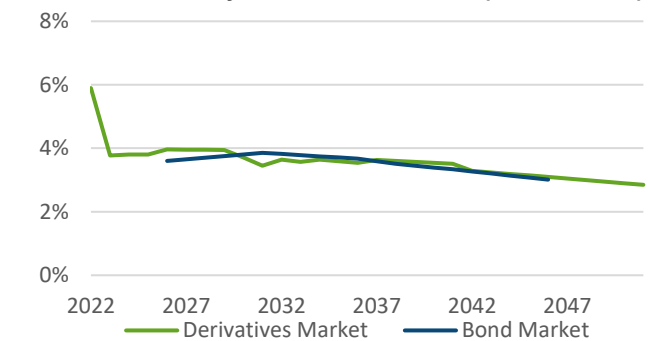
Max, Min and 50% Range: Since BoE Independence



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:

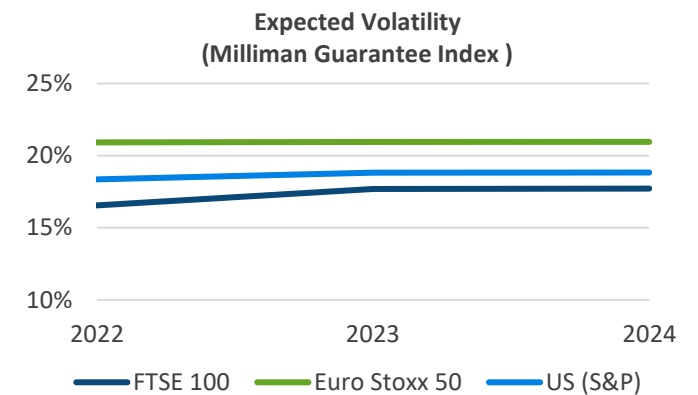
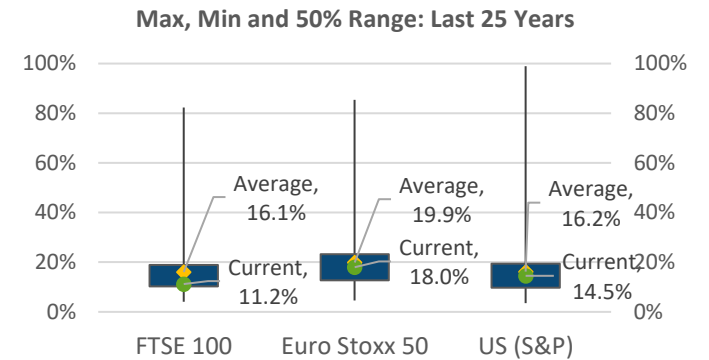
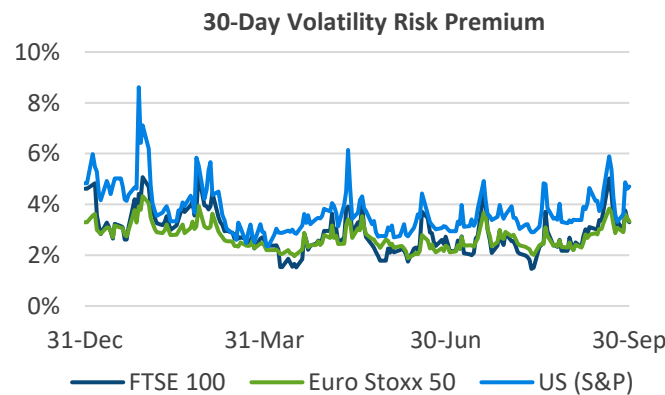
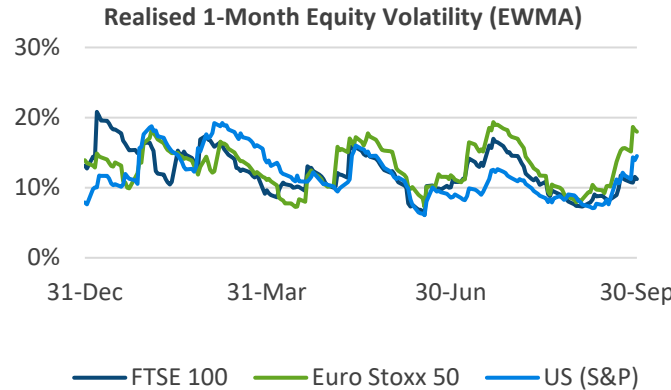
- **Consumer Price Index (CPI)** – measuring the monthly price of a basket of consumer goods and services
- **Retail Price Index (RPI)** – similar to CPI, but the main difference due the addition of mortgage payments, council tax and other housing costs
- **Average Earnings** – measuring the average 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 on major indices increased in September as equity markets experienced a tumultuous end to the month.
- The FTSE 100 had a realised volatility of 11.2% at month-end, while the measure stood at 18% and 14.5% for the Euro Stoxx 50 and the S&P 500, respectively.
- Volatility risk premiums increased, with the FTSE 100 and Euro Stoxx 50 both recording a volatility risk premium of 3.3% at month-end. The volatility risk premium on the S&P 500 was 4.7%.



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.

Milliman Financial Risk Management

London Market Monitor – 30 September 2021

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



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Established in 1998, the practice includes professionals operating from three trading platforms around the world (Chicago, London, Amsterdam and Sydney).

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