

Market Price Monitor

Local Equity Markets

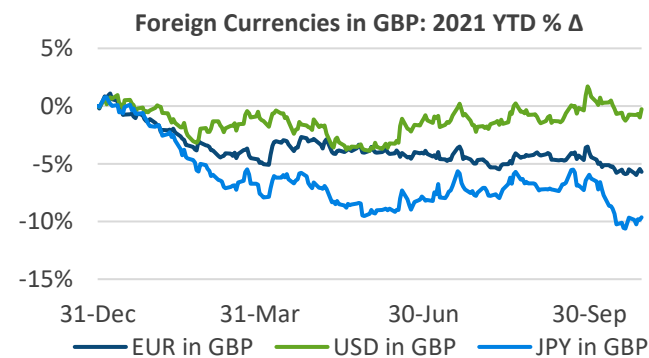
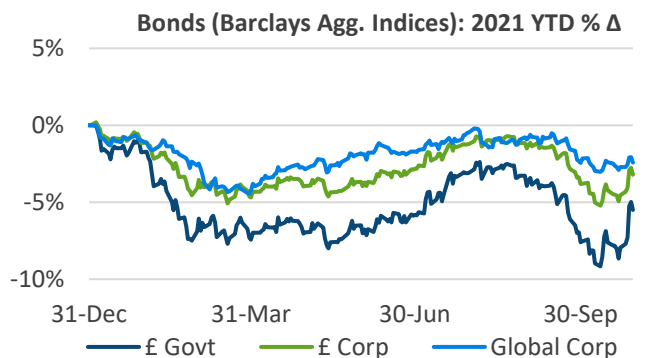
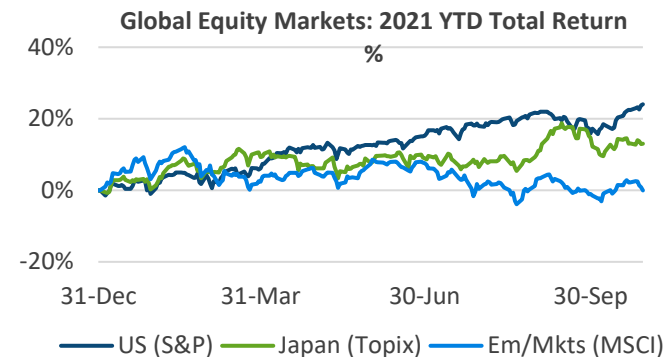
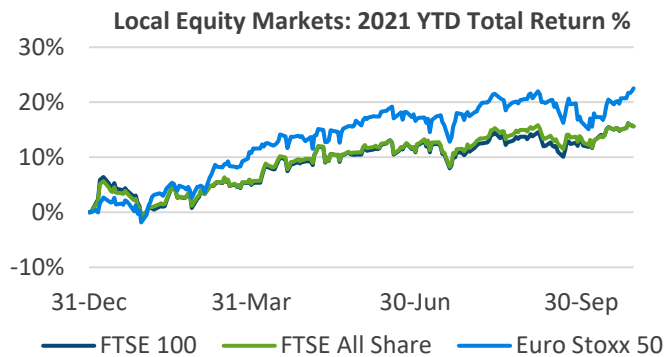
- Most major indices had a positive performance in October, supported by Q3 earnings releases which saw a number of companies beating expectations. Concerns over the Chinese property sector also eased as one of the largest property developers in China made interest payments that had been missed in September.
- The FTSE 100 gained 2.2% over the month, up 15.6% year-to-date.
- The Euro Stoxx 50 index ended the month up 5.2%.

Global Equity Markets

- The Japanese Topix was the underperformer of the month, losing 1.4%.
- In contrast, the S&P 500 returned 7.0% in October and the MSCI Emerging Markets index ended the month up 1.0%.

Bond/FX Markets

- This month witnessed a significant rise in short-term GBP yields, and a fall in long-term yields. The government bond index has a duration close to 13 years, hence the resulted gain of 2.3%.
- The British corporate bond index was up 0.6%, while its global counterpart ended the month flat.
- The British Pound had a strong performance in October, gaining 3.9% against the Japanese Yen and 1.7% against both the Euro and the US Dollar.



	Total Returns as of October 29, 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	2.2%	1.8%	5.2%	7.0%	-1.4%	1.0%	2.3%	0.6%	0.0%	-1.7%	-1.7%	-3.9%
3 Month	4.1%	3.5%	4.3%	5.1%	6.1%	-0.4%	-2.5%	-2.0%	-2.0%	-1.1%	1.6%	-2.3%
1 Year	34.5%	35.4%	47.3%	42.9%	29.4%	17.3%	-4.4%	0.5%	1.8%	-6.1%	-5.4%	-13.2%
YTD	15.6%	15.6%	22.5%	24.0%	13.1%	0.0%	-5.5%	-3.2%	-2.4%	-5.7%	-0.3%	-9.6%

Milliman Financial Risk Management

London Market Monitor – 29 October 2021

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

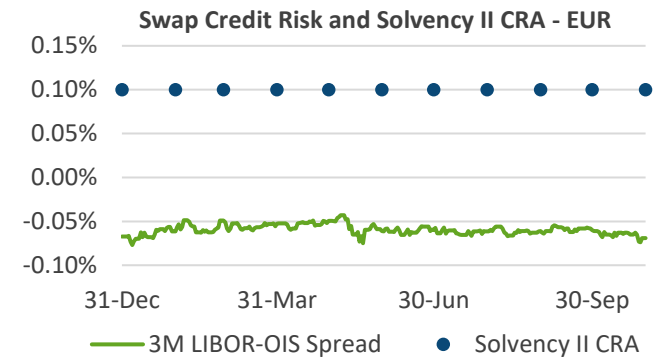
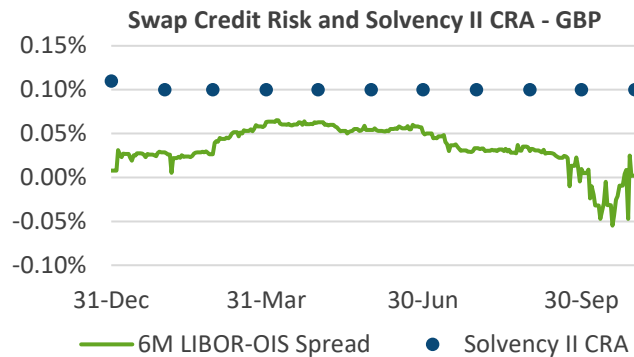
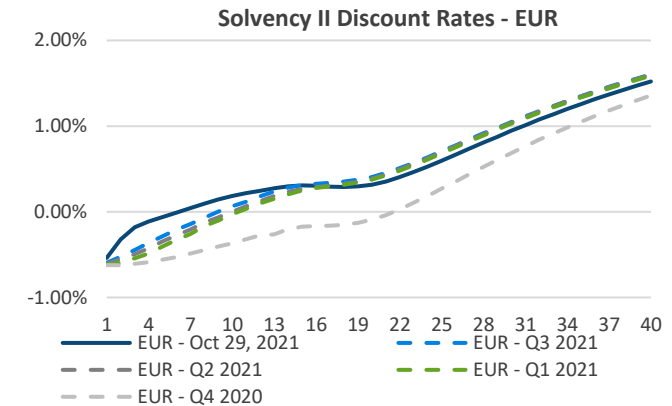
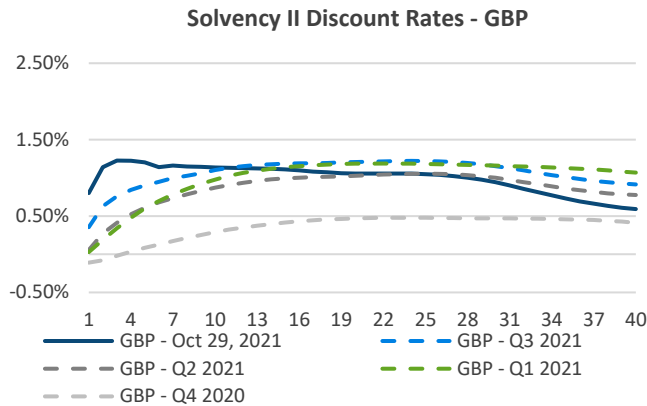
Solvency II Monitor - Rates

Risk Free Rates

- Short to medium term risk-free rates increased for both GBP and EUR, with the 5-year rate rising by 30 basis points for the former and 23 basis points for the latter.
- In contrast, longer term risk-free rates declined for both currencies. The GBP 20 and 30-year rates fell by 15 and 21 basis points, respectively.
- The EUR 20 and 30-year risk-free rates decreased by 9 and 10 basis points, respectively.

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 Q3 2021	45	30	4	-15	-21	0
Since Q2 2021	74	60	27	3	-6	0
Since Q1 2021	77	61	16	-13	-22	0
Since Q4 2020	91	112	85	59	47	-1

	Change in EUR Discount and CRA (bps)					
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q3 2021	6	23	12	-9	-10	0
Since Q2 2021	7	29	18	-7	-10	0
Since Q1 2021	8	35	21	-6	-8	0
Since Q4 2020	9	50	55	41	26	0

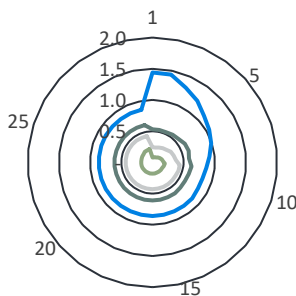
Solvency II Monitor - Spreads

Fundamental Spreads

- There were no material changes since the last report.

Fundamental Spreads %

GBP - Financial

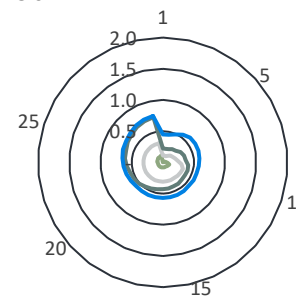


— AAA — AA — A — BBB

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	0.56	0.61	0.61	0.61
BBB	1.44	1.11	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

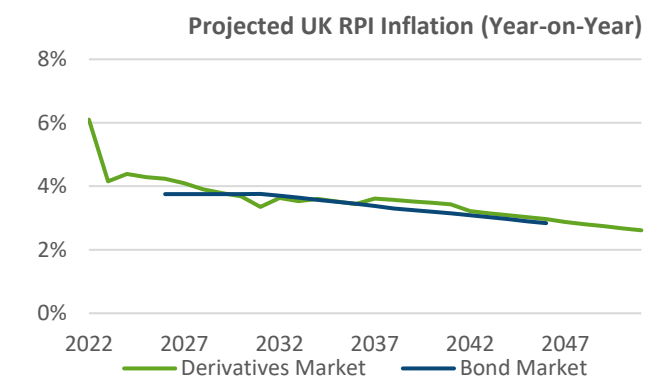
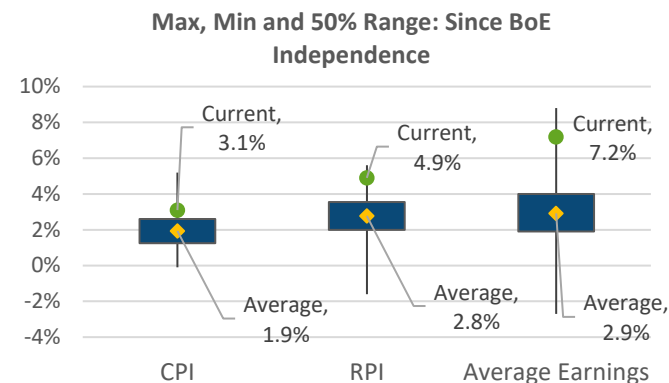
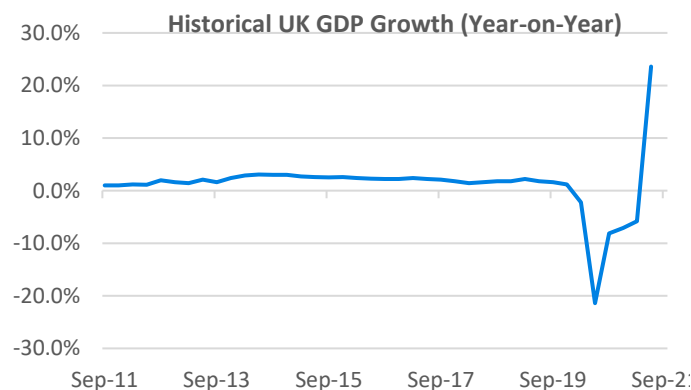
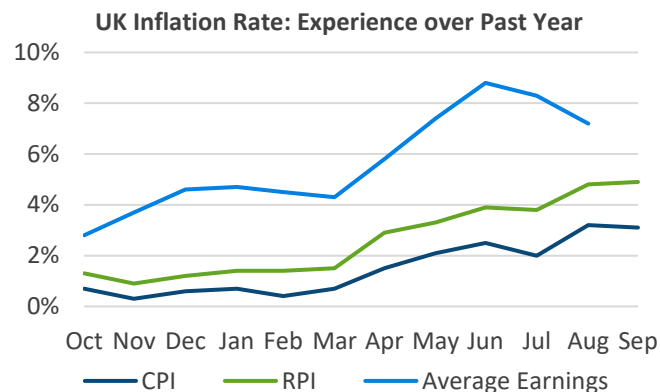
The **Solvency II risk-free discount rates** are based on applying the Smith-Wilson Extrapolation to LIBOR swap rates sourced from Refinitiv and applying the Credit Risk Adjustment as defined in the Technical Specs. The data is provided by EIOPA and as of 31/10/21.

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 31/10/21. **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 measure fell by 10 basis points to 3.1% in September.
- UK's RPI inflation measure rose by 10 basis points to 4.9%.
- According to the ONS: "Restaurants and hotels made the largest downward contribution to the change, with partially offsetting upward contributions from most other divisions, notably transport, furniture and household goods, food and non-alcoholic beverages, and housing and household services."
- Average earnings fell by 110 basis points to 7.2% in August.
- 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 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 projected UK RPI curve was higher at the shorter end of the curve in comparison to the previous month, with the 1-year forward rate above 6%, and subsequently it remains above 4% for the following 6 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.

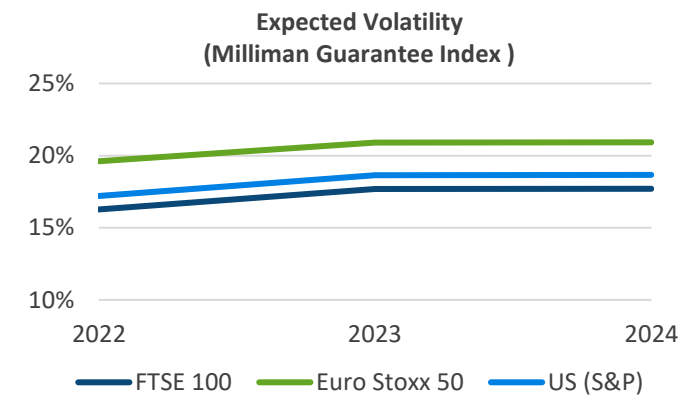
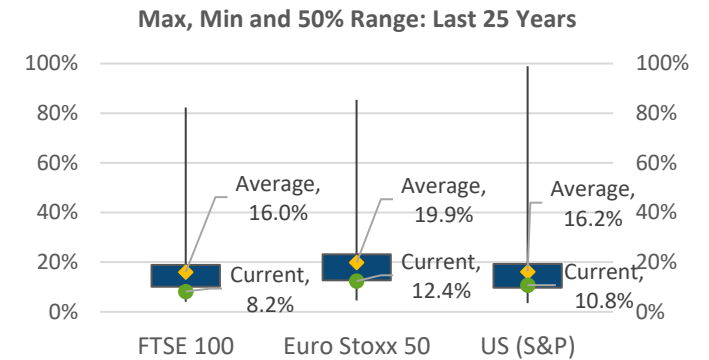
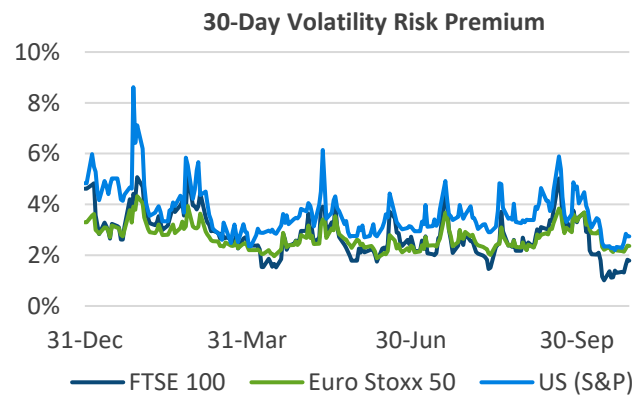
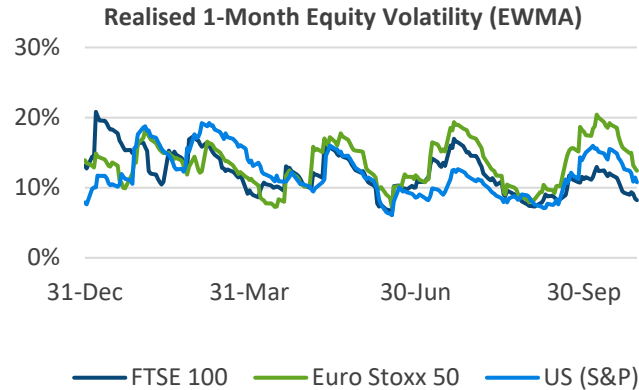
Milliman Financial Risk Management

London Market Monitor – 29 October 2021

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

Volatility and Hedging Cost Monitor

- Realised volatility on major indices fell during the month as equity markets posted strong gains.
- The FTSE 100 had a realised volatility of 8.2% at month-end. The realised volatility on the Euro Stoxx 50 and S&P 500 indices stood at 12.4% and 10.8%, respectively.
- Volatility risk premiums declined during the month. At month-end, the volatility risk premium on the FTSE 100 was 1.8%. The measure stood at 2.4% and 2.7% on the Euro Stoxx 50 and the S&P 500, respectively.



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.



Creating transformational improvement in the retirement savings industry.

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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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