

### Market Price Monitor

#### Local Equity Markets

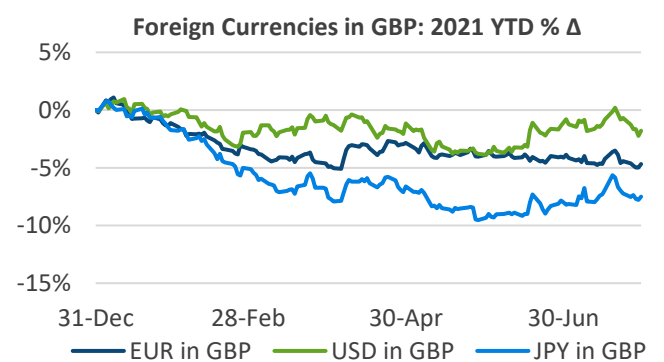
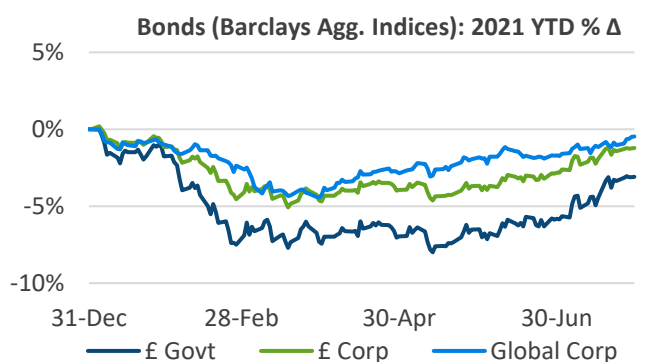
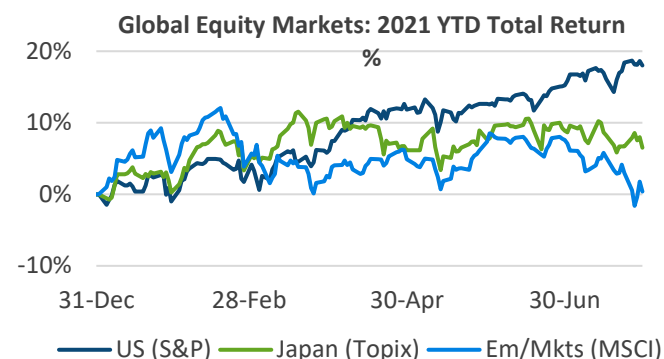
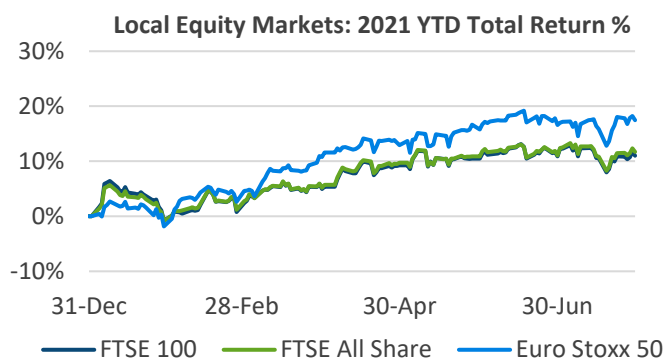
- Equity markets had a mixed performance in July. The economic recovery continued on the back of the easing of restrictions, however the spread of the Delta variant increased uncertainty and weighed on market sentiment.
- The FTSE 100 ended the month relatively flat.
- The Euro Stoxx 50 index returned 0.8% over the month.

#### Global Equity Markets

- The S&P 500 index was up 2.4% at month-end.
- In contrast, the Japanese Topix and the MSCI Emerging Markets indices suffered losses during the month. The former down 2.2%, and the latter losing 6.7% over the month.

#### Bond/FX Markets

- Credit markets had a positive month. The British government and corporate bond indices were up 2.9% and 1.6% at month-end, respectively.
- The global corporate bond index gained 1.3%.
- The British Pound had a mixed performance in July, gaining 0.6% and 0.7% against the Euro and the US Dollar, respectively. The British Pound weakened by 0.5% against the Japanese Yen.



	Total Returns as of July 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	0.1%	0.5%	0.8%	2.4%	-2.2%	-6.7%	2.9%	1.6%	1.3%	-0.6%	-0.7%	0.5%
3 Month	1.6%	1.8%	4.0%	5.5%	0.3%	-4.3%	4.1%	2.8%	2.5%	-1.9%	-0.6%	-1.0%
1 Year	23.3%	26.6%	32.0%	36.4%	29.8%	21.0%	-4.2%	2.3%	2.7%	-5.2%	-5.9%	-9.2%
YTD	11.0%	11.7%	17.5%	18.0%	6.5%	0.4%	-3.1%	-1.2%	-0.5%	-4.7%	-1.8%	-7.5%

## Milliman Financial Risk Management

London Market Monitor – 30 July 2021

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

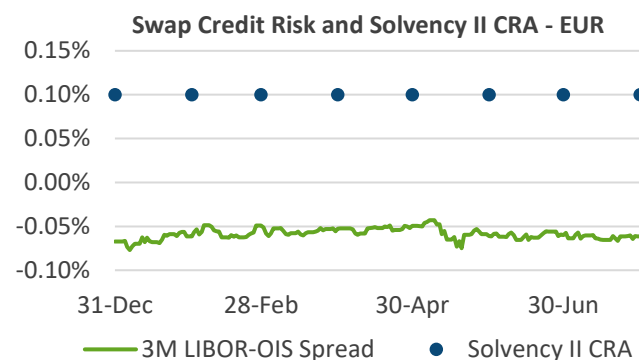
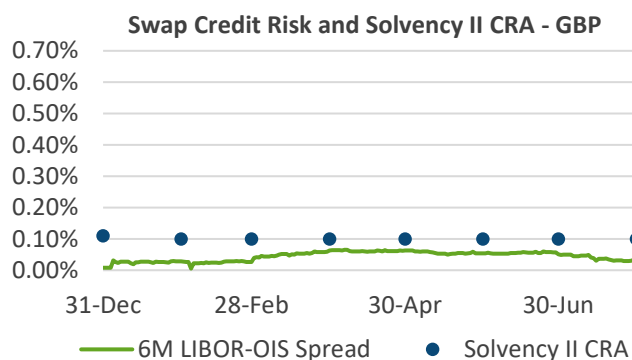
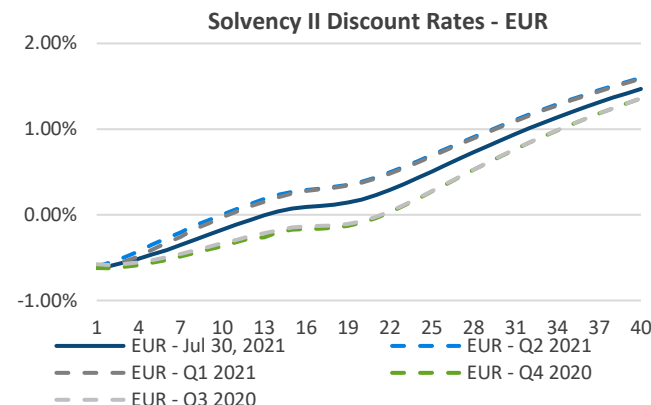
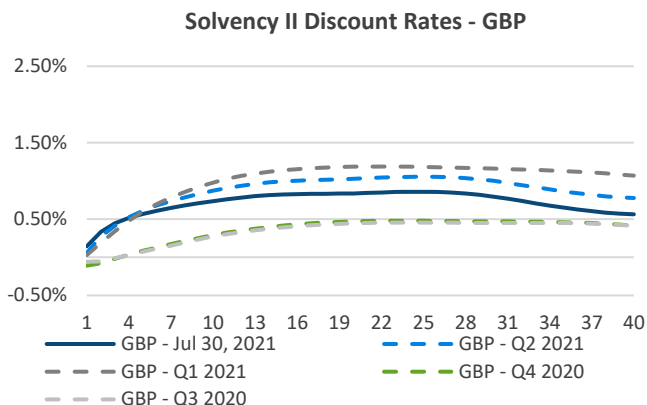
### Solvency II Monitor - Rates

#### Risk Free Rates

- Near-term GBP risk-free rates increased, while the rest of the tenors saw a decline.
- The 1-year GBP risk-free rate rose by 9 basis points.
- The 30 and 20-year GBP risk-free rates fell by 21 and 19 basis points, respectively.
- EUR risk-free rates decreased at all terms in July.
- The 20 and 10-year EUR risk-free rates fell by 21 and 18 basis points, respectively. While the 30-year EUR rate declined by 17 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	9	-4	-14	-19	-21	0
Since Q1 2021	12	-3	-24	-35	-37	0
Since Q4 2020	25	48	45	37	33	-1
Since Q3 2020	20	50	46	39	34	-3

	Change in EUR Discount and CRA (bps)					
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q2 2021	-1	-12	-18	-21	-17	0
Since Q1 2021	0	-6	-14	-20	-16	0
Since Q4 2020	1	10	20	27	19	0
Since Q3 2020	-3	7	16	25	19	0

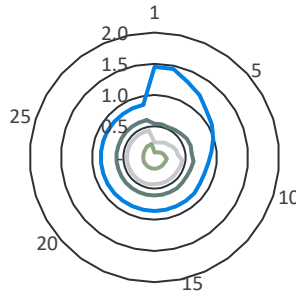
Solvency II Monitor - Spreads

Fundamental Spreads

- There were no material changes since the last report.

Fundamental Spreads %

GBP - Financial



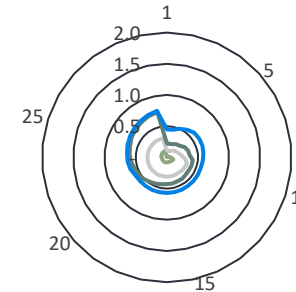
— AAA — AA — A — BBB

GBP Financial Fundamental Spread %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.08	0.12	0.19	0.18	0.22
AA	0.24	0.30	0.44	0.44	0.44
A	0.54	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	0.18	0.26
A	0.06	0.12	0.20	0.32	0.44
BBB	0.15	0.24	0.33	0.47	0.59

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	0.35	0.57	0.76

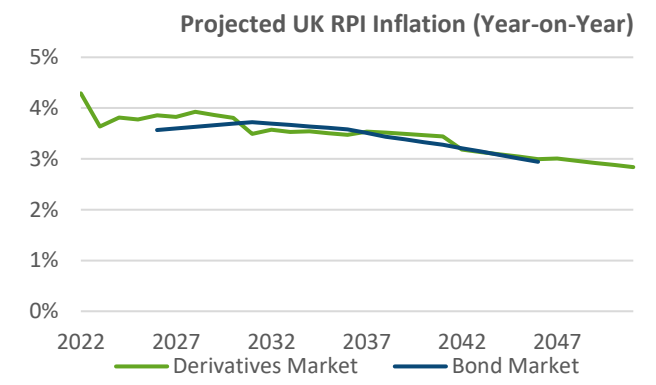
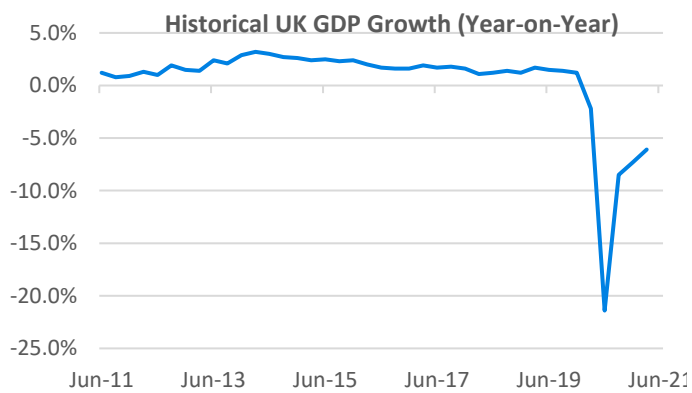
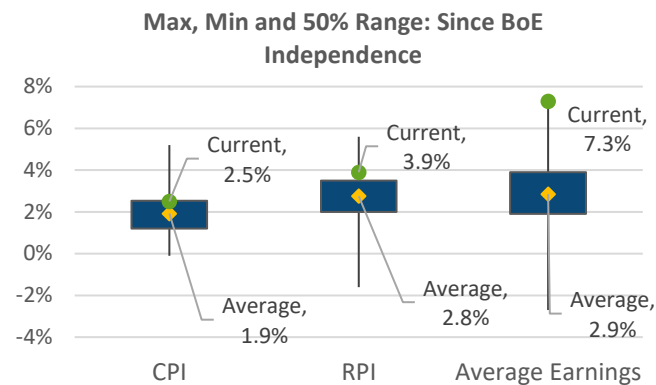
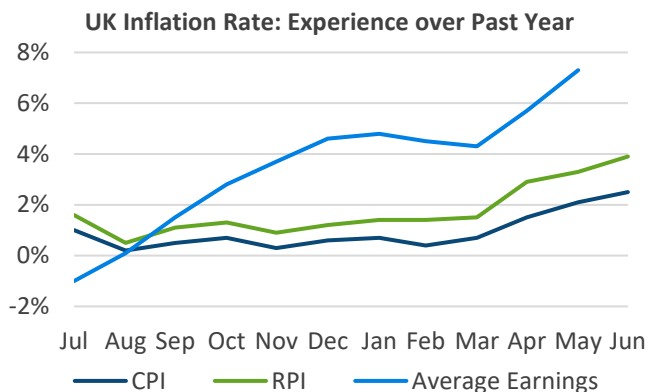
The **Solvency II risk-free discount rates** are based on applying the Smith-Wilson Extrapolation to LIBOR swap rates sourced from Refinitiv and applying the Credit Risk Adjustment as defined in the Technical Specs. The data is provided by EIOPA and as of 31/07/21.

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 31/07/21. **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 40 basis points to 2.5% in June.
- UK's RPI inflation measure increased by 60 basis points to 3.9%.
- Both UK inflation indices continued to trend higher above their long-term average levels.
- According to the ONS: "Prices for food, second-hand cars, clothing and footwear, eating and drinking out, and motor fuel rose in 2021 but mostly fell in 2020, resulting in the largest upward contributions to the change. These were partially offset by a large downward contribution from games, toys and hobbies, where prices fell this year but rose a year ago."
- UK's average earnings rose by 160 basis points to 7.3% in May, after the previous month's reading was revised higher by 10 basis points.
- 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. These are compositional effects where there has been a fall in the number and proportion of lower-paid employee jobs so increasing average earnings and base effects where the latest months are now compared with the start of the coronavirus pandemic, when earnings were first affected and pushed down."
- The projected UK RPI curve increased at the very near term, going above 4%. However, the rest of the curve was broadly unchanged in comparison to the previous month.



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.

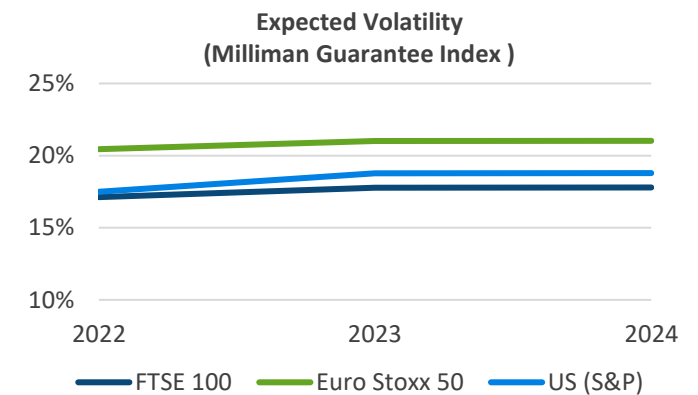
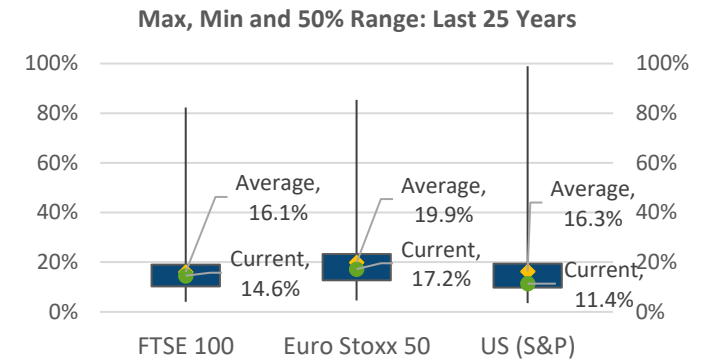
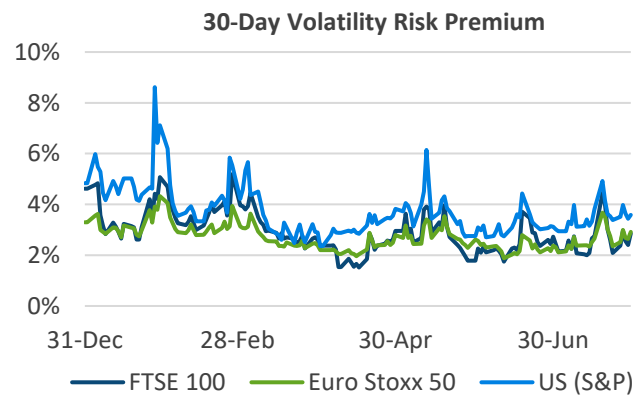
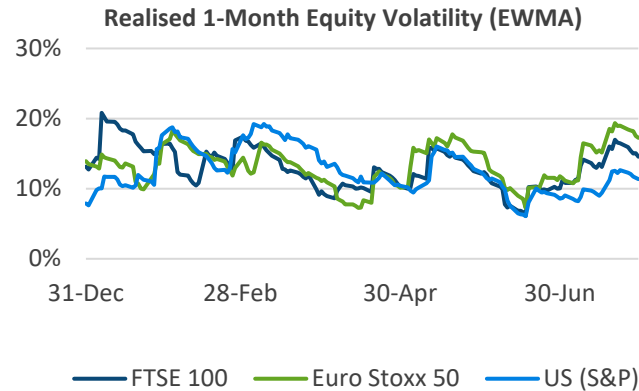
## Milliman Financial Risk Management

London Market Monitor – 30 July 2021

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

### Volatility and Hedging Cost Monitor

- Realised volatilities on major indices increased in July.
- The FTSE 100 recorded a realised volatility of 14.6% at month-end. The measure stood at 17.2% and 11.4% for the Euro Stoxx 50 and S&P 500 indices, respectively.
- Volatility risk premiums increased in July. The volatility risk premium on the FTSE 100 was 2.9%. The Euro Stoxx 50 and the S&P 500 indices had a volatility risk premium of 2.9% and 3.6% at month-end, 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, and Sydney).

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