

Market Price Monitor

Local Equity Markets

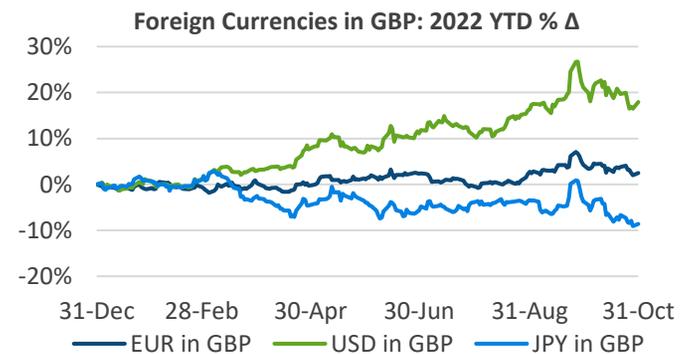
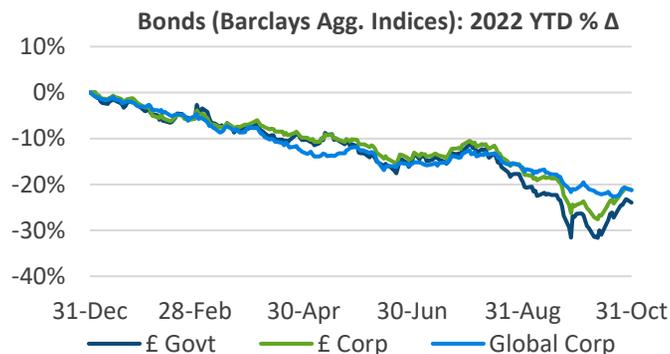
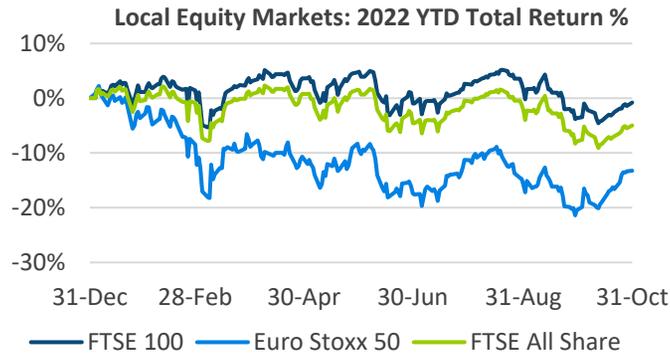
- Major global equity indices fell at the start of the month, but eventually pared their losses and ended the month positively.
- The FTSE 100 gained 3.0% in October.
- The Euro Stoxx 50 ended the month up 9.1%.

Global Equity Markets

- Developed market equities outperformed their emerging market counterparts, with the S&P 500 and the Japanese Topix up 8.1% and 5.1%, respectively.
- In contrast, the MSCI Emerging Markets index lost 3.1% in October.

Bond/FX Markets

- Following the September turmoil in the UK bond markets, the British government and corporate bond indices ended the month up 3.3% and 4.4%, respectively. As the market welcomed the news of the appointment of the new prime minister, Rishi Sunak.
- The global corporate bond index made a marginal loss of 0.3%.
- The British Pound had a strong performance in October, gaining 2.6% and 5.1% against the US Dollar and the Japanese Yen, respectively. The pound was 1.8% stronger against the Euro at month-end.



Total Returns as of October 31, 2022												
	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	3.0%	3.1%	9.1%	8.1%	5.1%	-3.1%	3.3%	4.4%	-0.3%	-1.8%	-2.6%	-5.1%
3 Month	-3.4%	-4.6%	-2.2%	-5.9%	0.5%	-14.0%	-13.1%	-11.2%	-9.3%	2.7%	6.1%	-4.8%
1 Year	1.7%	-2.8%	-12.1%	-14.6%	-1.0%	-30.7%	-23.8%	-21.2%	-21.6%	2.1%	19.4%	-8.4%
YTD	-0.8%	-5.0%	-13.2%	-17.7%	-0.7%	-29.2%	-24.0%	-21.2%	-21.2%	2.5%	18.0%	-8.6%

Milliman Financial Risk Management

London Market Monitor – 31 October 2022

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

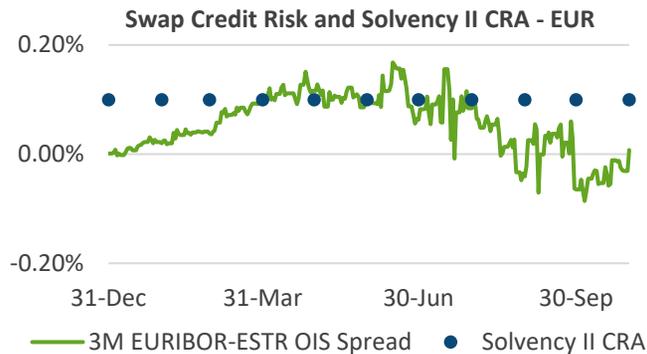
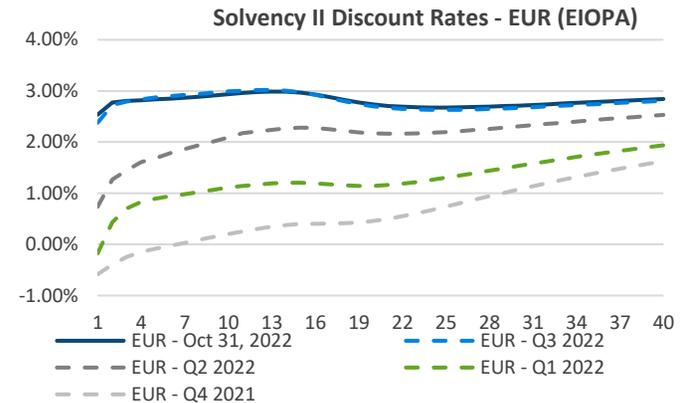
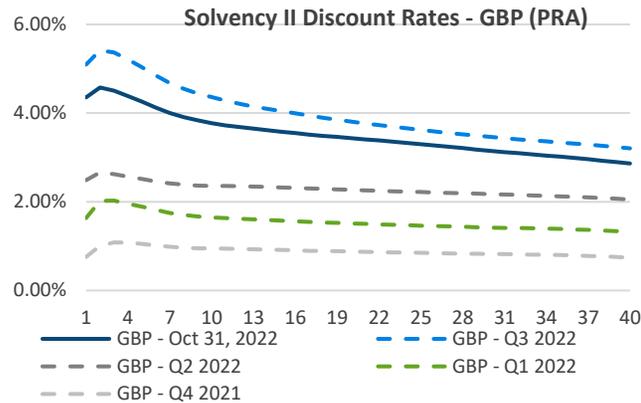
Solvency II Monitor - Rates

Risk Free Rates

- GBP risk-free rates fell sharply in October.
- The 1 and 5-year GBP risk-free rates declined by 74 and 78 basis points, respectively.
- The movement in EUR risk-free rates was mixed in October.
- The 1-year risk-free rate rose by 16 basis points. Meanwhile the 5 and 10-year rates fell by 4 and 6 basis points, respectively.
- The longer-term EUR risk-free rates increased.

Credit Risk Adjustment

- The EUR CRA was unchanged and remains floored at 10 basis points



	Change in GBP Discount (bps)				
	1Y	Y5	Y10	Y20	Y30
Since Q3 2022	-74	-78	-59	-37	-31
Since Q2 2022	186	174	141	116	98
Since Q1 2022	272	237	212	192	173
Since Q4 2021	360	321	282	256	233

	Change in EUR Discount and CRA (bps)					
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q3 2022	16	-4	-6	4	4	0
Since Q2 2022	180	115	85	57	41	0
Since Q1 2022	271	194	183	159	118	0
Since Q4 2021	312	292	273	228	164	0

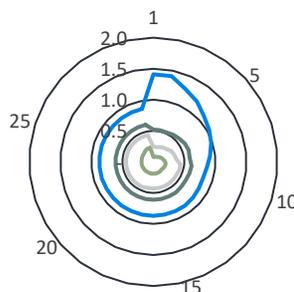
Solvency II Monitor - Spreads

Fundamental Spreads

- There were no material changes since the last report.

Fundamental Spreads %

GBP - Financial

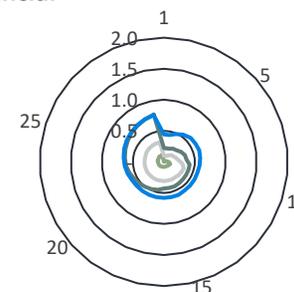


— AAA — AA — A — BBB

GBP Financial Fundamental Spread %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.08	0.12	0.20	0.19	0.23
AA	0.24	0.30	0.44	0.44	0.44
A	0.52	0.56	0.61	0.61	0.61
BBB	1.41	1.10	0.84	0.87	0.87

GBP Financial 'Before Floor' %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.04	0.08	0.16	0.23
AA	0.04	0.08	0.11	0.19	0.26
A	0.06	0.12	0.20	0.32	0.44
BBB	0.16	0.25	0.34	0.49	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	0.09	0.12
AA	0.10	0.16	0.34	0.31	0.32
A	0.22	0.28	0.42	0.53	0.78
BBB	0.44	0.58	0.57	0.58	0.77

GBP Non-Financial 'Before Floor' %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.01	0.04	0.07	0.12
AA	0.00	0.04	0.09	0.18	0.26
A	0.04	0.15	0.28	0.53	0.78
BBB	0.11	0.23	0.36	0.57	0.77

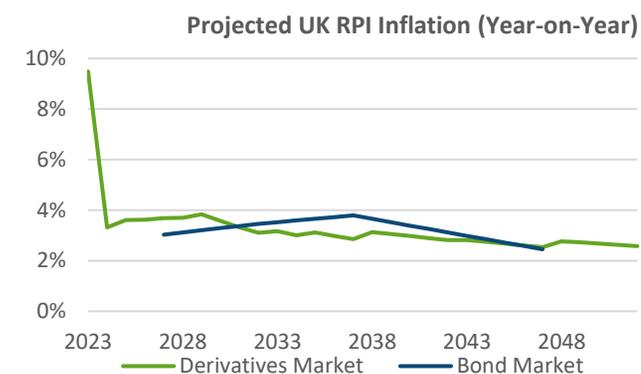
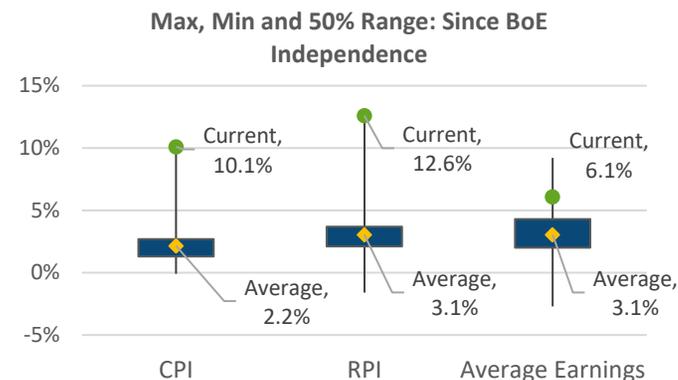
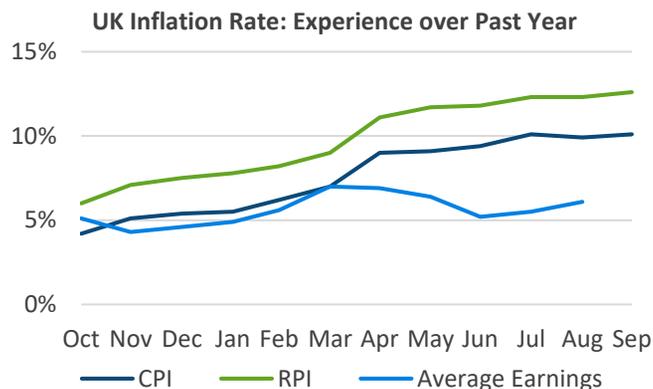
The **Solvency II risk-free discount rates** are based on applying the Smith-Wilson Extrapolation to LIBOR swap rates sourced from Refinitiv and applying the Credit Risk Adjustment as defined in the Technical Specs. The data is provided by EIOPA for EUR, and by PRA for GBP, as of 31/10/22.

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), and is bounded between 0.10 and 0.35. We show actual LIBOR-OIS spread levels and the defined CRA, for 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 31/10/22. **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 rose by 20 basis points to 10.1% in September.
- The RPI inflation measure increased by 30 basis points in September, coming in at 12.6%.
- According to the ONS: "Rising food prices made the largest upward contribution to the change. The continued fall in the price of motor fuels made the largest, partially offsetting, downward contribution to the change in the rates."
- Average earnings rose by 60 basis points in August to 6.1%.
- The projected RPI curve increased at the 1-year tenor, but saw a decline for the rest of the curve.



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.

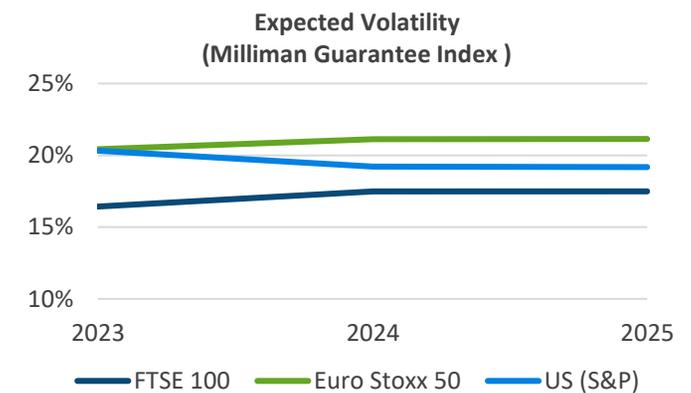
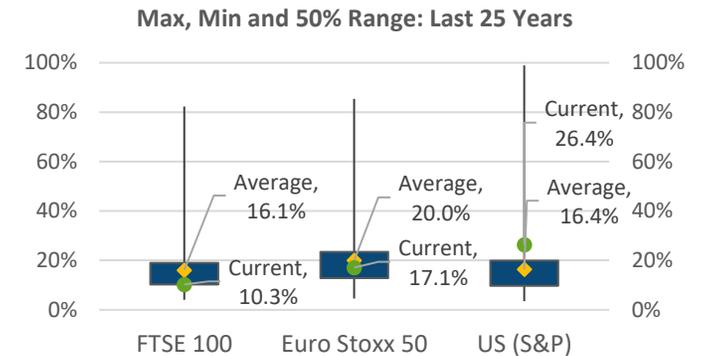
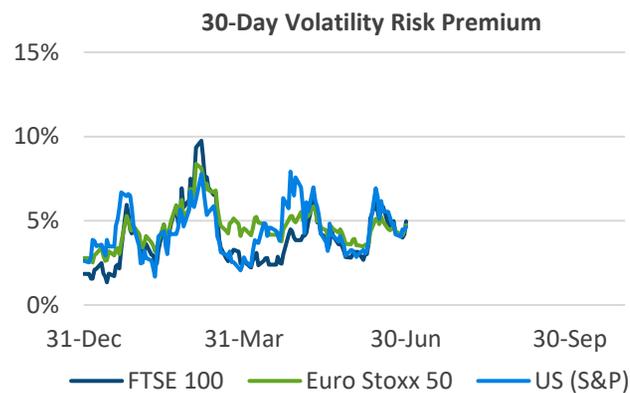
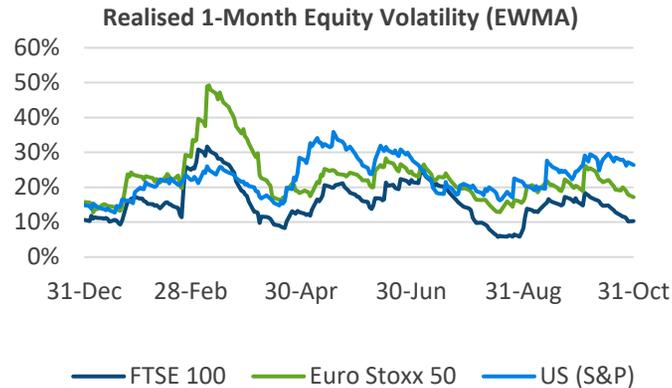
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London Market Monitor – 31 October 2022

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

Volatility and Hedging Cost Monitor

- Realised volatilities on major indices were mixed in September, declining by month-end for the European indices but increasing for the S&P 500.
- The FTSE 100 ended the month with a realised volatility of 10.3%. The same measure stood at 17.1% and 26.4% on the Euro Stoxx 50 and the S&P 500.
- ** Please note that due to some missing data the volatility risk premiums have only been updated to the 28th of June. **



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.

Chicago

71 South Wacker Drive
Chicago, IL 60606
+1 855 645 5462

London

11 Old Jewry
London
EC2R 8DU
UK
+44 0 20 7847 1557

Sydney

32 Walker Street
North Sydney, NSW 2060
Australia
+610 2 8090 9100

Amsterdam

Haaksbergweg 75
Amsterdam, 1101 BR
Netherlands
+31 6 211 70 583

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

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