

## Market Price Monitor

### Local Equity Markets

- Equity markets had a positive performance in November, as concerns over inflation and central bank tightening eased due to the smaller than expected increase in the US inflation numbers for October. Risk appetite was also boosted by the hopes that China could slowly be ending its zero-covid policy, after policymakers eased some of the control measures.
- The FTSE 100 index gained 7.1%.
- The Euro Stoxx 50 index was up 9.7%.

### Global Equity Markets

- Emerging market equities outperformed their developed market counterparts, with the MSCI Emerging Market index up 14.8%.
- The S&P 500 gained 5.6% and the Japanese Topix ended the month up 3.0%.

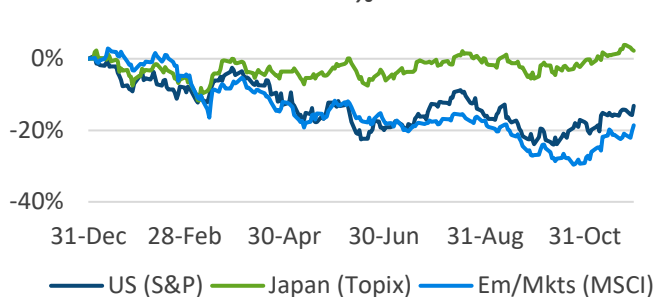
### Bond/FX Markets

- Bond markets rallied in November, with the UK government bond index returning 3.0%.
- The British and global corporate bond indices were up by 4.2% and 5.5%, respectively.
- The British Pound had a mixed performance, gaining 4.0% against the US Dollar, but weakening by 2.4% against the Japanese Yen. The Pound ended the month relatively flat against the Euro.

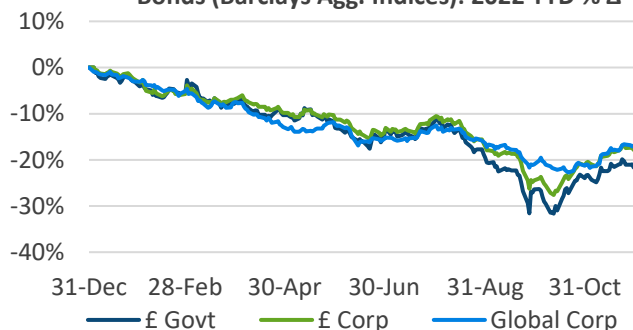
Local Equity Markets: 2022 YTD Total Return %



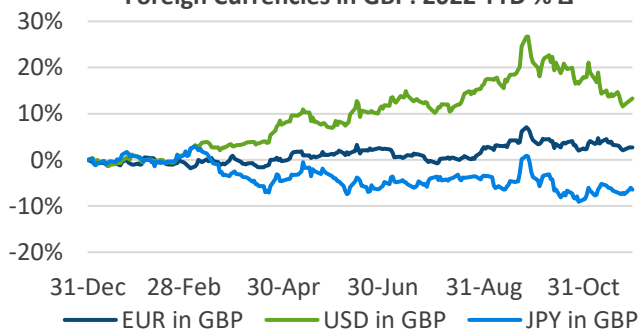
Global Equity Markets: 2022 YTD Total Return %



Bonds (Barclays Agg. Indices): 2022 YTD % Δ



Foreign Currencies in GBP: 2022 YTD % Δ



Total Returns as of November 30, 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	7.1%	7.1%	9.7%	5.6%	3.0%	14.8%	3.0%	4.2%	5.5%	0.2%	-4.0%	2.4%
3 Month	4.6%	4.0%	13.1%	3.6%	2.3%	-1.7%	-2.6%	-0.9%	-0.6%	-0.1%	-2.7%	-3.1%
1 Year	11.3%	6.5%	0.8%	-9.2%	5.7%	-17.1%	-23.8%	-18.9%	-16.6%	1.3%	11.0%	-9.9%
YTD	6.3%	1.8%	-4.8%	-13.1%	2.2%	-18.6%	-21.7%	-17.9%	-16.9%	2.7%	13.3%	-6.4%

## Milliman Financial Risk Management

London Market Monitor – 30 November 2022

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

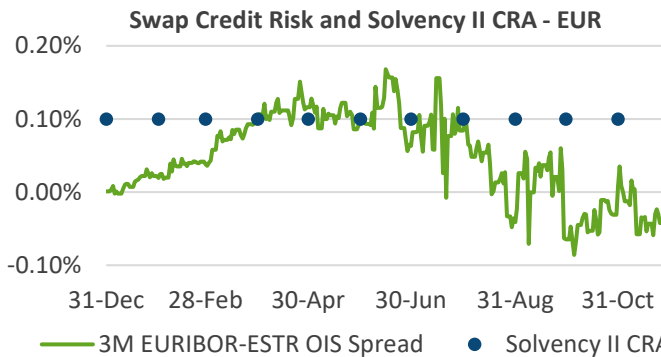
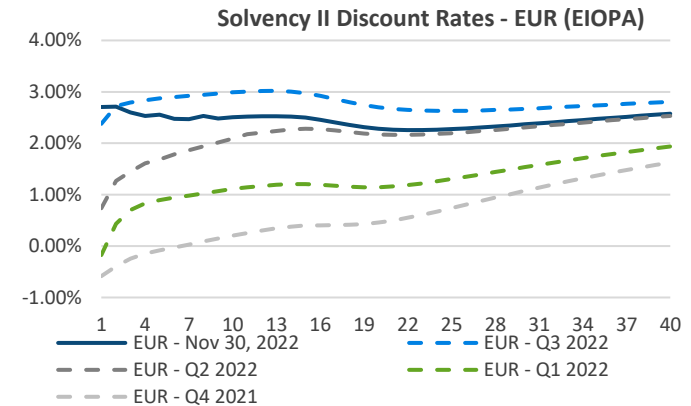
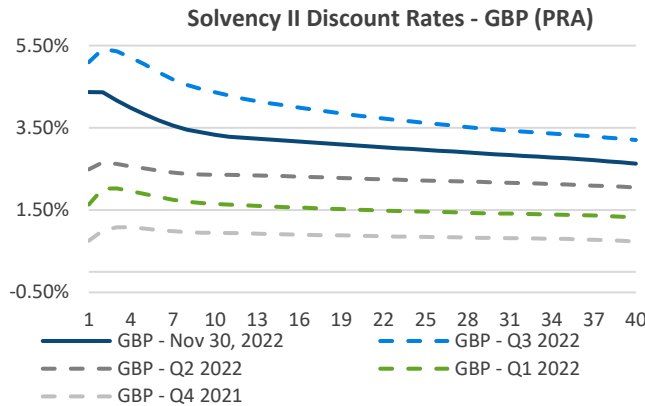
### Solvency II Monitor - Rates

#### Risk Free Rates

- Both GBP and EUR risk-free rates dropped in November, with the exception of the 1-year risk-free rate which rose by 17 basis points for the EUR and by 2 basis points for GBP.
- The falls were more pronounced at the medium to longer terms.
- The 5-year and 10-year GBP risk-free rates fell by 43 and 45 basis points, respectively.
- The EUR 10 and 20-year rates declining by 43 and 46 basis points, respectively.

#### 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	-72	-121	-104	-74	-60
Since Q2 2022	188	131	97	80	69
Since Q1 2022	274	194	168	156	144
Since Q4 2021	361	278	238	219	204

	Change in EUR Discount and CRA (bps)					
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q3 2022	33	-32	-49	-42	-30	0
Since Q2 2022	197	87	41	11	6	0
Since Q1 2022	288	166	139	114	83	0
Since Q4 2021	329	264	230	183	129	0

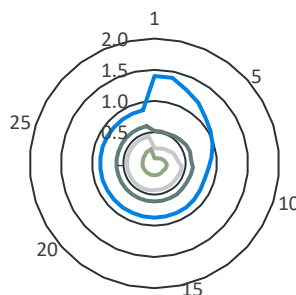
Solvency II Monitor - Spreads

Fundamental Spreads

- There were no material changes since the last report.

Fundamental Spreads %

GBP - Financial



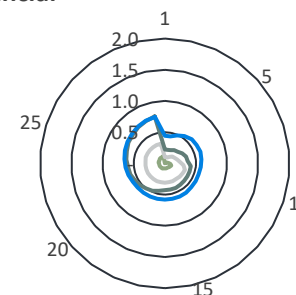
— AAA — AA — A — BBB

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	1.40	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	0.07	0.11	0.19	0.26
A	0.06	0.12	0.20	0.32	0.44
BBB	0.16	0.25	0.34	0.48	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	0.77
BBB	0.44	0.58	0.57	0.58	0.76

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	0.77
BBB	0.11	0.23	0.35	0.57	0.76

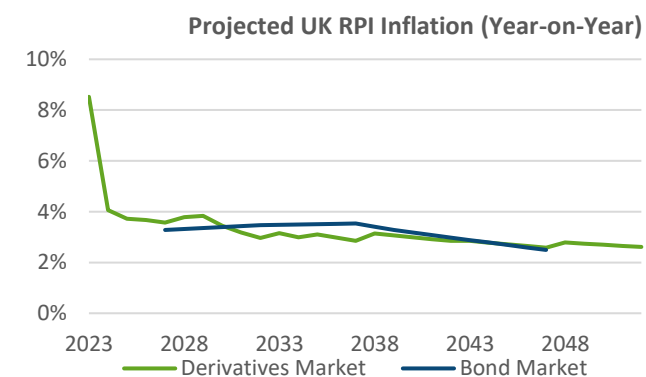
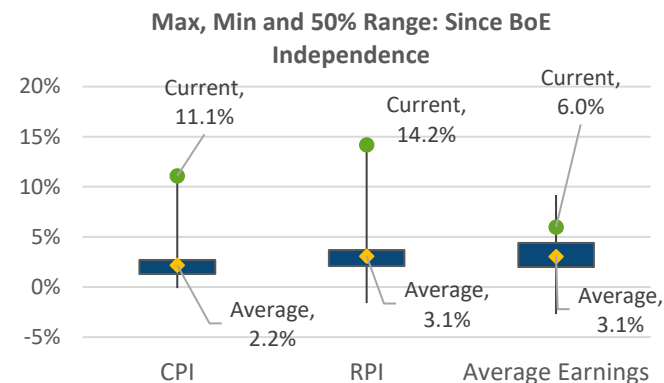
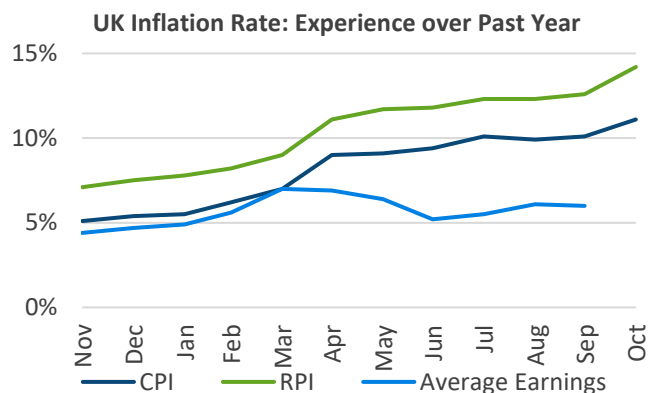
The **Solvency II risk-free discount rates** are based on applying the Smith-Wilson Extrapolation to LIBOR swap rates sourced from Refinitiv and applying the Credit Risk Adjustment as defined in the Technical Specs. The data is provided by EIOPA for EUR, and by PRA for GBP, as of 30/11/22.

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 30/11/22. **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 hit a 41-year high in October, increasing by 100 basis points to reach 11.1%.
- The RPI measure rose by 160 basis points to 14.2% in October.
- According to the ONS: "Gas and electricity prices made the largest upward contribution to the change. Rising food prices also made a large upward contribution to change with transport (principally motor fuels and second-hand car prices) making the largest, partially offsetting, downward contribution to the change."
- Average earnings fell by 10 basis points to 6.0% in September.
- UK's Q3 2022 GDP growth figure fell by 200 basis points from the previous quarter to 2.4%.
- The projected RPI curve declined at the 1-year tenor but remained relatively unchanged for the rest of the curve.



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

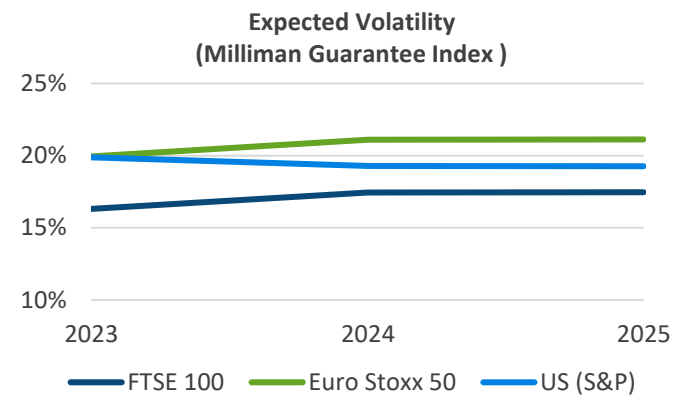
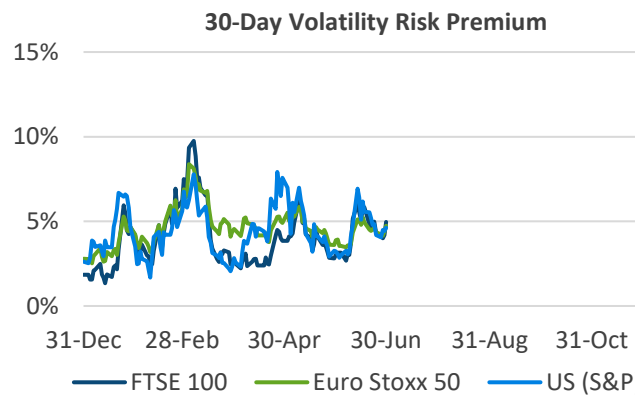
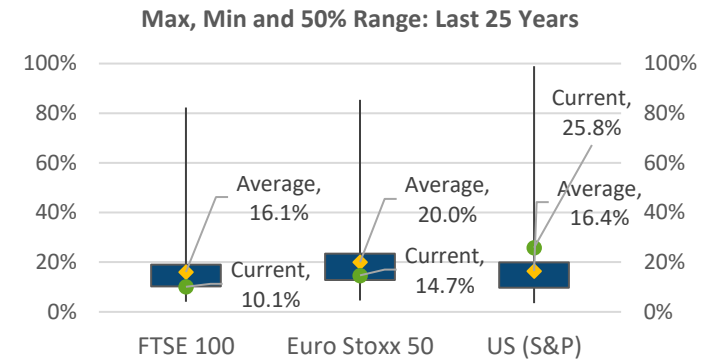
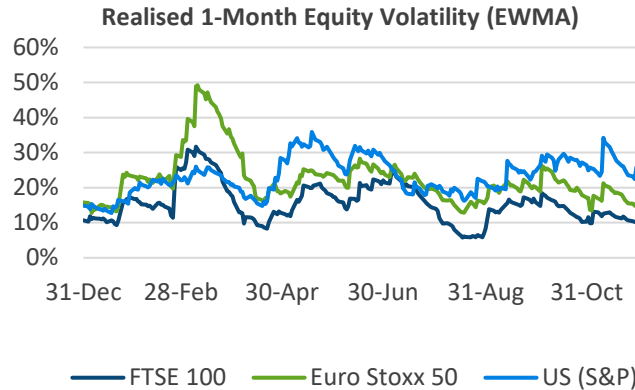
- **Consumer Price Index (CPI)** – measuring the monthly price of a basket of consumer goods and services
- **Retail Price Index (RPI)** – similar to CPI, but the main difference due the addition of mortgage payments, council tax and other housing costs
- **Average Earnings** – measuring the average 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.

**Volatility and Hedging Cost Monitor**

- Realised volatilities on major indices increased at the start of the month, but then subsidised and declined for the second half of the month.
- The FTSE 100 ended the month with a realised volatility of 10.1%. The same measure stood at 14.7% and 25.8% 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 28<sup>th</sup> 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.

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