

Market Price Monitor

Local Equity Markets

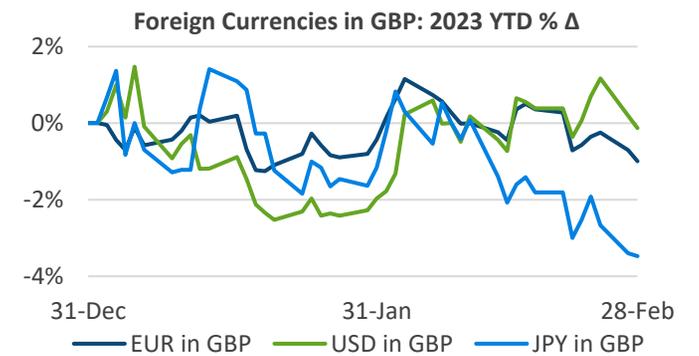
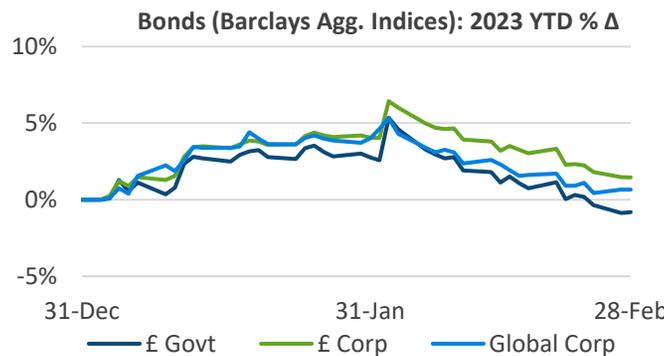
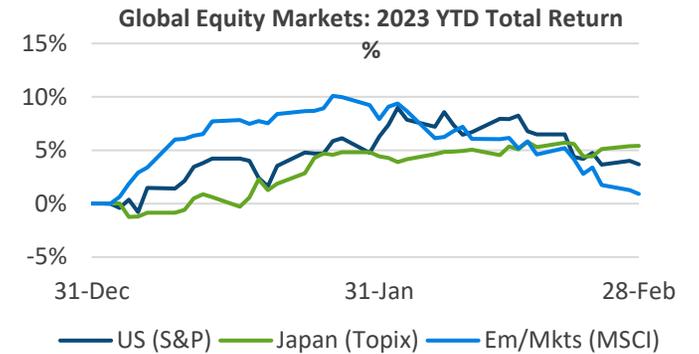
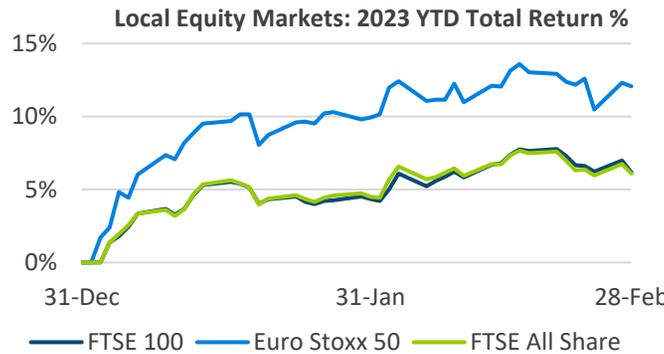
- Equity markets had mixed performance in February. While risk appetite was boosted by better economic data, there were concerns interest rates will remain higher for longer to curb inflation.
- The FTSE 100 index gained 1.8%, adding 6.2% year-to-date.
- The Euro Stoxx 50 index was up 1.9% in February, gaining 12.1% year-to-date.

Global Equity Markets

- The S&P 500 lost 2.4% in the month, while the Topix gained 0.9%.
- Emerging market equities underperformed their developed market counterparts, with the MSCI Emerging Market index down 6.5%.

Bond/FX Markets

- Bond markets declined in February, with the British government bond index and the British corporate bond index losing 3.5% and 2.5% respectively.
- The British Pound had a mixed performance, losing 2.5% against the US Dollar, but strengthening by 2.2% against the Japanese Yen. The Euro ended the month relatively flat against the British Pound, gaining 0.2%.



	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	1.8%	1.5%	1.9%	-2.4%	0.9%	-6.5%	-3.5%	-2.5%	-3.2%	-0.6%	1.9%	-2.3%
3 Month	4.6%	4.6%	7.3%	-2.3%	0.6%	-0.4%	-5.2%	-0.3%	0.9%	1.5%	-1.3%	1.3%
1 Year	9.6%	7.3%	11.6%	-7.7%	8.5%	-14.9%	-21.4%	-13.1%	-11.7%	4.7%	10.7%	-6.2%
YTD	6.2%	6.1%	12.1%	3.7%	5.4%	0.9%	-0.8%	1.4%	0.7%	-1.0%	-0.1%	-3.5%

Milliman Financial Risk Management

London Market Monitor – 28 February 2023

Data sources: Bloomberg; Barclays; EIOPA; PRA; ONS; Milliman FRM

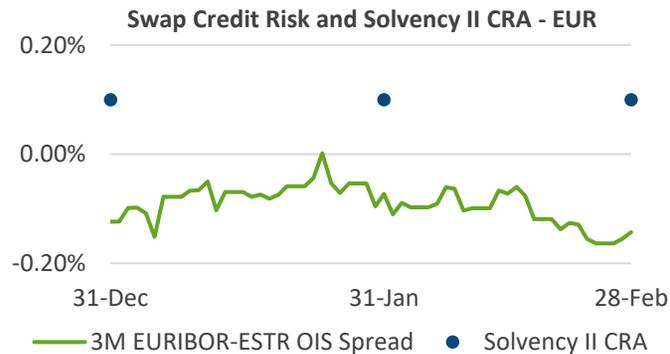
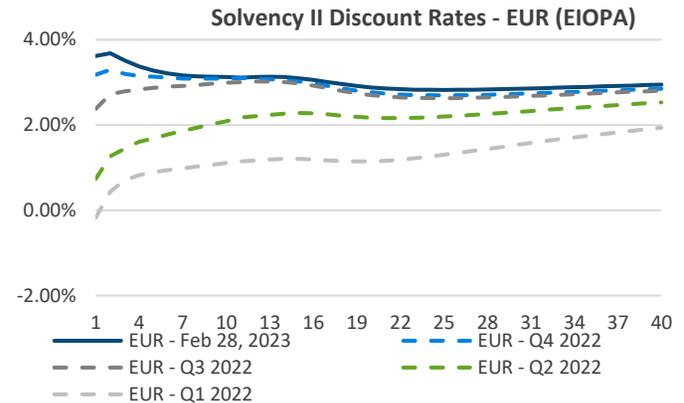
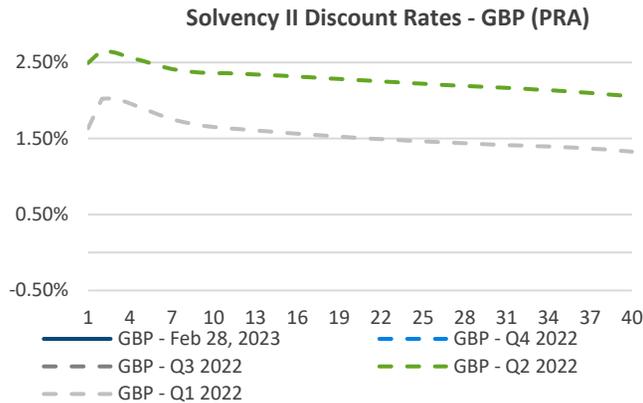
Solvency II Monitor - Rates

Risk Free Rates

- Both GBP and EUR risk-free rates increased at all terms in February.
- The increase was more pronounced at the short terms for the GBP risk-free curve.
- The 1-year, 5-year and 10-year GBP risk-free rates increased by 36, 46 and 37 basis points.
- The 1-year, 5-year and 10-year EUR risk-free rates increased by 36, 44 and 36 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 Q4 2022	21	-1	2	10	11
Since Q3 2022	-43	-99	-63	-17	0
Since Q2 2022	217	153	137	136	129
Since Q1 2022	303	216	208	212	204

	Change in EUR Discount and CRA (bps)					
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q4 2022	45	14	3	12	12	0
Since Q3 2022	124	40	13	18	18	0
Since Q2 2022	289	159	104	71	54	0
Since Q1 2022	380	238	202	174	132	0

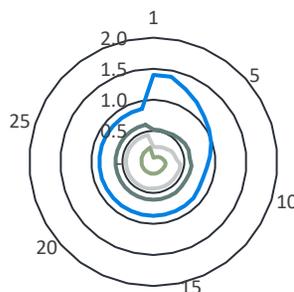
Solvency II Monitor - Spreads

Fundamental Spreads

- There were no material changes since the last report.

Fundamental Spreads %

GBP - Financial

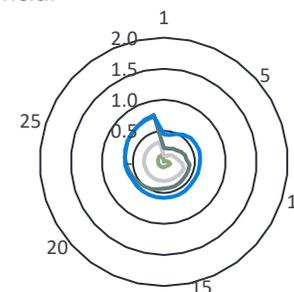


— AAA — AA — A — BBB

GBP Financial Fundamental Spread %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.07	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	0.18	0.26
A	0.06	0.12	0.19	0.32	0.43
BBB	0.14	0.24	0.32	0.47	0.57

GBP - Non-Financial



— AAA — AA — A — BBB

GBP Non-Financial Fundamental Spread %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.02	0.11	0.09	0.12
AA	0.10	0.16	0.34	0.31	0.32
A	0.22	0.28	0.42	0.52	0.77
BBB	0.44	0.58	0.58	0.58	0.75

GBP Non-Financial 'Before Floor' %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.02	0.04	0.08	0.12
AA	0.00	0.04	0.09	0.18	0.27
A	0.04	0.15	0.28	0.52	0.77
BBB	0.11	0.22	0.35	0.56	0.75

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 28/02/23.

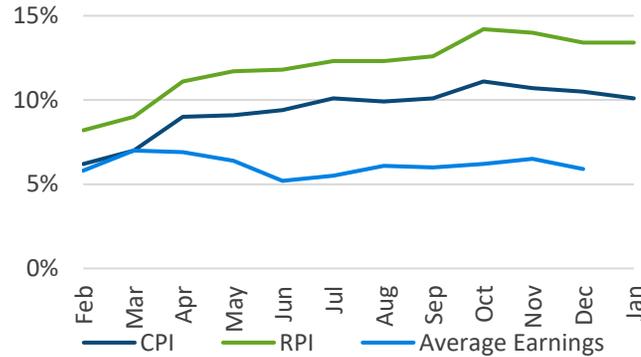
The **Credit Risk Adjustment** is a component of the risk-free discount curve defined by EIOPA. It is calculated from actual experience in the 'LIBOR-OIS' spread (3 months for EUR), and is bounded between 0.10 and 0.35. We show actual LIBOR-OIS spread levels and the defined CRA, for EUR.

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 28/02/23. **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.

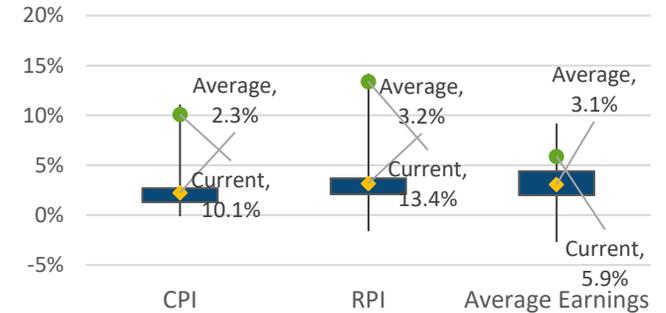
UK Inflation Monitor

- UK's CPI fell by 40 basis points in January to 10.1%.
- The RPI measure remained stable at 13.4% in January.
- According to the ONS: *“The largest downward contribution to... inflation rates... came from transport (particularly passenger transport and motor fuels), and restaurants and hotels, with rising prices in alcoholic beverages and tobacco making the largest partially offsetting upward contribution to the change.”*
- Average earnings declined by 60 basis points to 5.9% in December.
- The projected RPI curve increased slightly at shorter tenors whilst the rest of the curve remained relatively unchanged.

UK Inflation Rate: Experience over Past Year



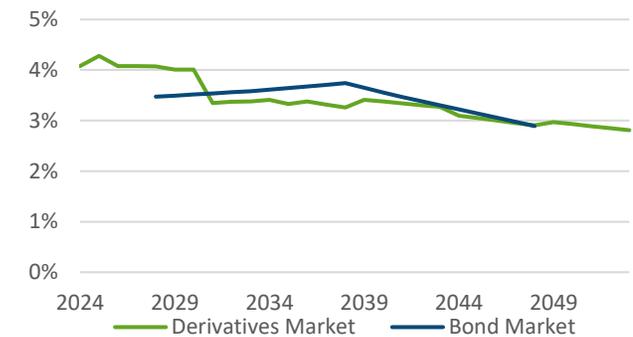
Max, Min and 50% Range: Since BoE Independence



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:

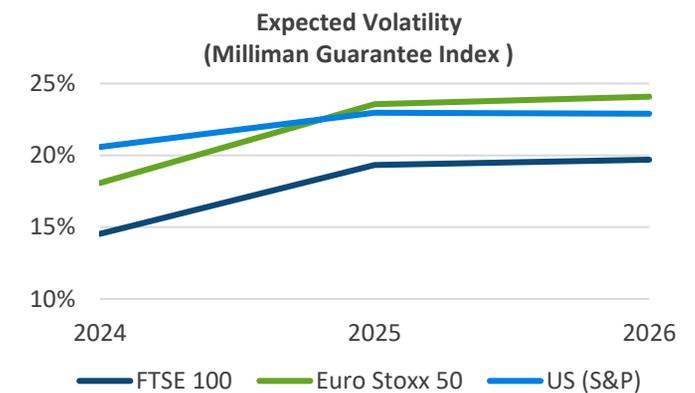
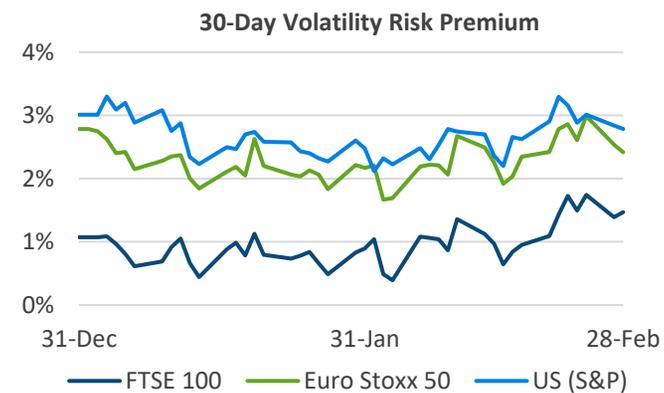
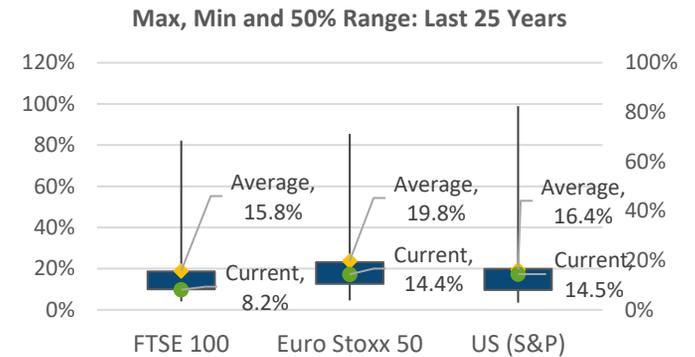
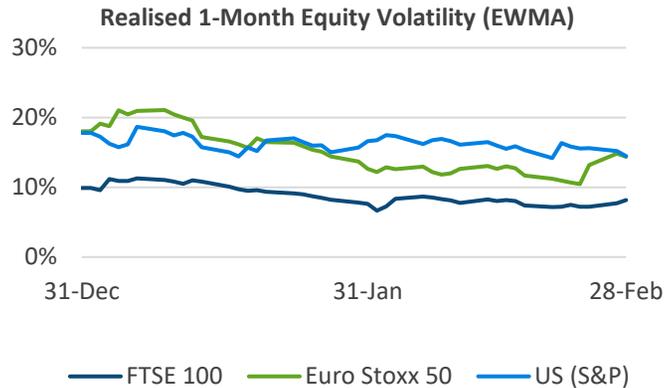
- **Consumer Price Index (CPI)** – measuring the monthly price of a basket of consumer goods and services
- **Retail Price Index (RPI)** – similar to CPI, but the main difference due the addition of mortgage payments, council tax and other housing costs
- **Average Earnings** – measuring the average 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 volatilities on major indices increased at the start of the month, but then declined for the second half of the month.
- The FTSE 100 ended the month with a realised volatility of 8.2%. The same measure stood at 14.4% and 14.5% on the Euro Stoxx 50 and the S&P 500.
- Volatility risk premiums declined for the Euro Stoxx and the S&P but increased for the FTSE. The FTSE 100 had a volatility risk premium of 1.5%. The volatility risk premium on the Euro Stoxx 50 and the S&P 500 was 2.4% and 2.8%, 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. 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 – 28 February 2023

Data sources: Bloomberg; Barclays; EIOPA; PRA; ONS; Milliman FRM

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