

Market Price Monitor

Local Equity Markets

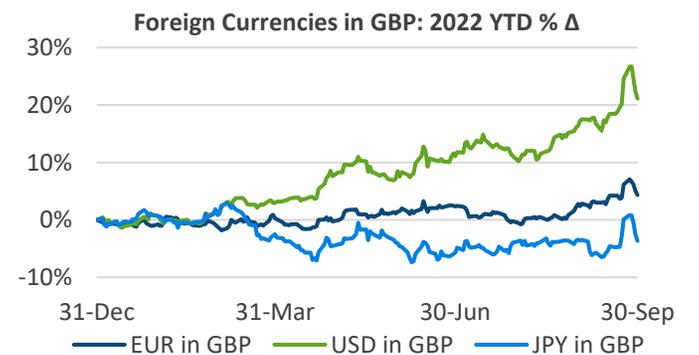
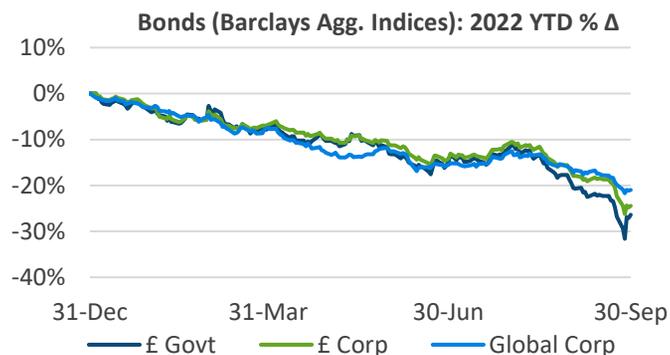
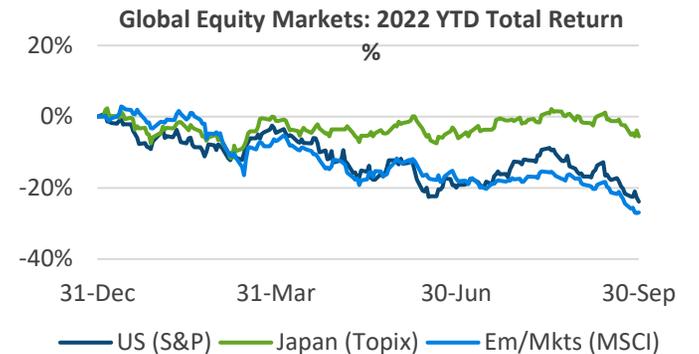
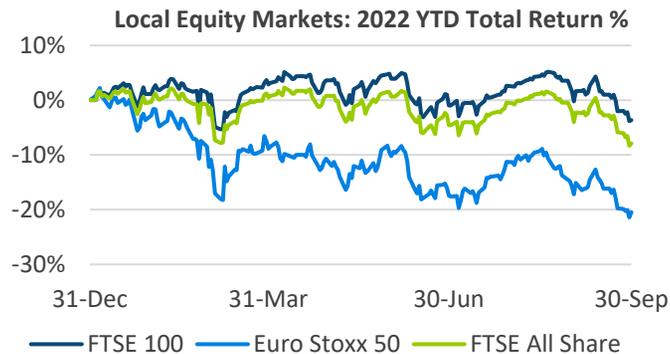
- Global equity markets had another negative performance in September as global central banks continued to hike policy rates.
- The FTSE 100 ended the month down 5.2%, having lost 2.7% during Q3.
- The Euro Stoxx 50 fell by 5.5%.

Global Equity Markets

- The S&P 500 witnessed a 9.2% drop in September, and the Japanese Topix lost 5.5%.
- The MSCI Emerging Markets index was down 11.7% at month-end.

Bond/FX Markets

- Bond markets continued their downward trend in September, with the British government bond index down 8.5% at month-end. UK bonds experienced a volatile end to the month following the UK government's "mini-budget" announcement.
- The British and global corporate bond indices lost 8.9% and 5.5%, respectively.
- The British Pound had a mixed performance in September, losing 4.1% and 1.5% against the US Dollar and the Euro, respectively. The Pound set a record low against the greenback during the month, before recovering some of those losses towards the month-end. The Pound ended the month relatively flat against the Japanese Yen.



Total Returns as of September 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	-5.2%	-5.9%	-5.5%	-9.2%	-5.5%	-11.7%	-8.5%	-8.9%	-5.5%	1.5%	4.1%	-0.3%
3 Month	-2.7%	-3.4%	-3.7%	-4.9%	-0.8%	-11.4%	-13.6%	-12.0%	-6.5%	1.9%	9.0%	2.2%
1 Year	0.9%	-4.0%	-15.3%	-15.5%	-7.1%	-27.8%	-24.5%	-24.0%	-21.3%	2.1%	20.5%	-7.2%
YTD	-3.7%	-7.9%	-20.5%	-23.9%	-5.5%	-26.9%	-26.4%	-24.5%	-21.0%	4.3%	21.1%	-3.7%

Milliman Financial Risk Management

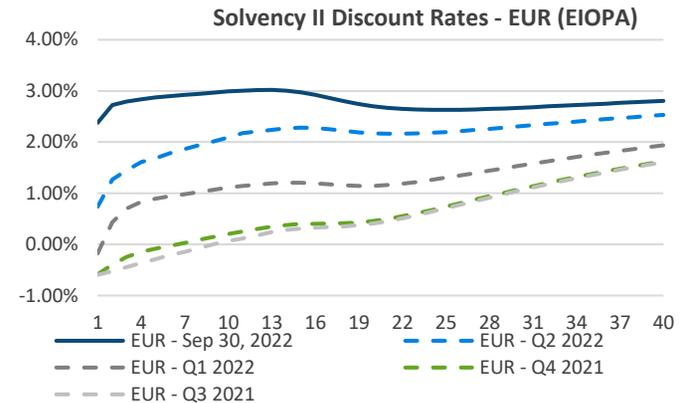
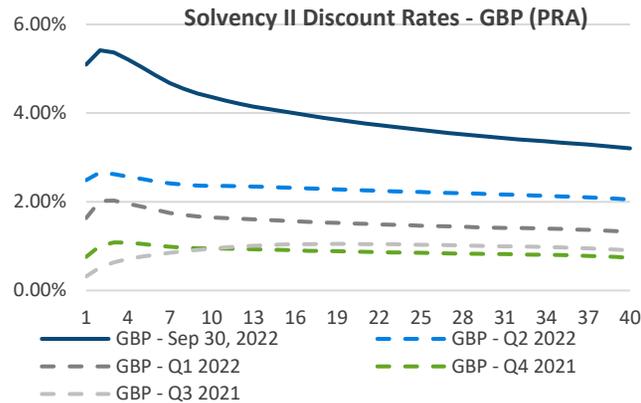
London Market Monitor – 30 September 2022

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

Solvency II Monitor - Rates

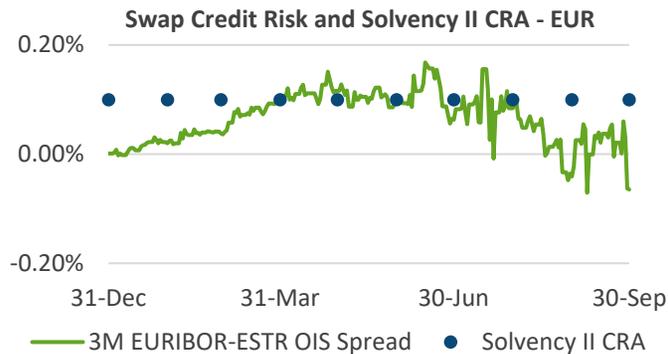
Risk Free Rates

- Both GBP and EUR risk-free rates rose at all terms in September.
- The 1 and 5-year GBP risk-free rates saw the largest increase, rising by 142 and 168 basis points, respectively.
- The EUR 5 and 10-year risk-free rates increased by 70 and 66 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 Q2 2022	260	252	200	154	129
Since Q1 2022	346	315	271	230	204
Since Q4 2021	434	399	342	293	264
Since Q3 2021	478	427	342	276	246

	Change in EUR Discount and CRA (bps)					
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q2 2022	164	119	90	53	36	0
Since Q1 2022	255	198	188	156	114	0
Since Q4 2021	296	296	279	224	160	0
Since Q3 2021	297	316	293	229	162	0

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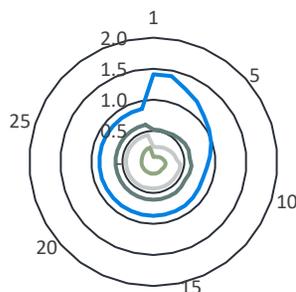
Solvency II Monitor - Spreads

Fundamental Spreads

- There were no material changes since the last report.

Fundamental Spreads %

GBP - Financial

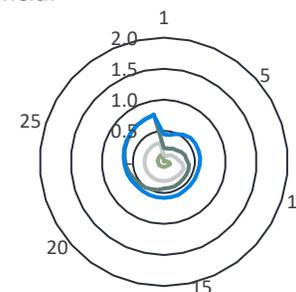


— AAA — AA — A — BBB

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	0.17	0.23
AA	0.04	0.08	0.12	0.19	0.27
A	0.06	0.12	0.20	0.32	0.44
BBB	0.16	0.25	0.35	0.49	0.60

GBP - Non-Financial



— AAA — AA — A — BBB

GBP Non-Financial Fundamental Spread %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.02	0.11	0.09	0.12
AA	0.11	0.16	0.34	0.31	0.31
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	0.02	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

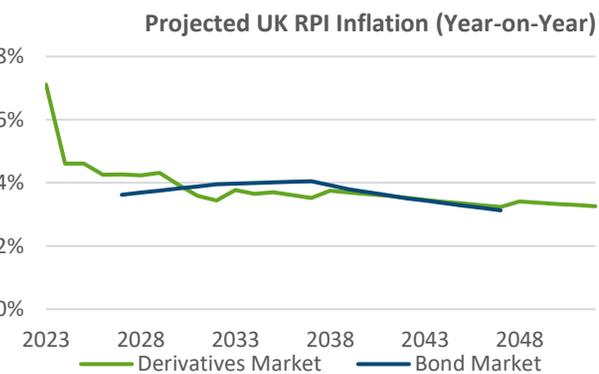
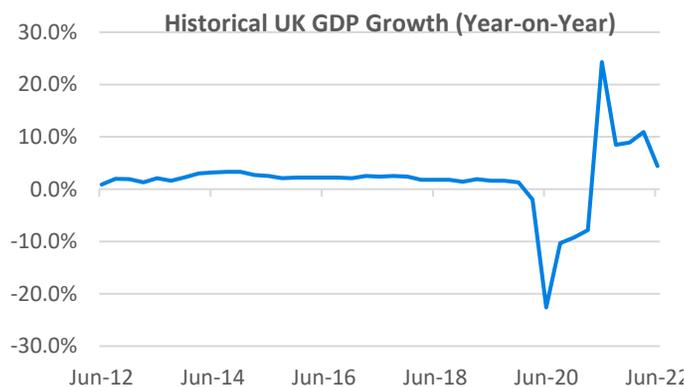
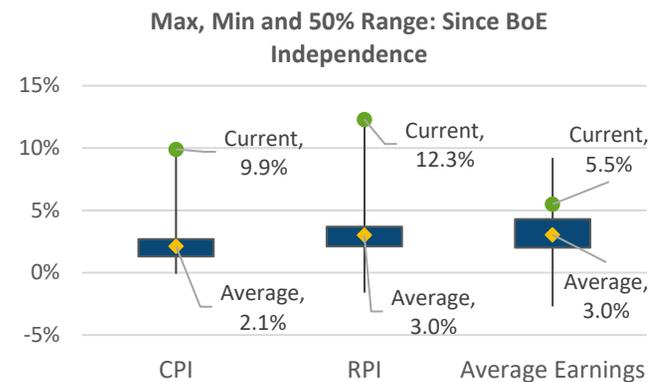
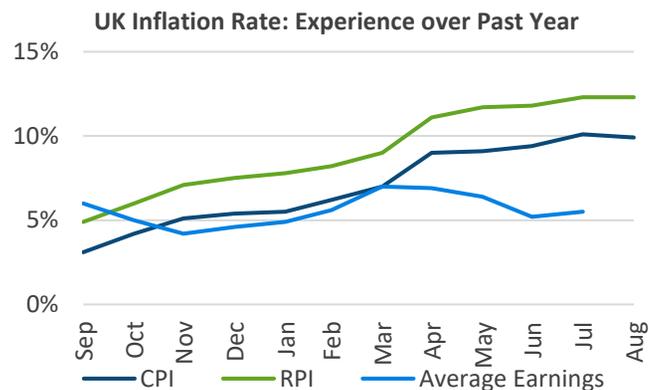
The **Solvency II risk-free discount rates** are based on applying the Smith-Wilson Extrapolation to LIBOR swap rates sourced from Refinitiv and applying the Credit Risk Adjustment as defined in the Technical Specs. The data is provided by EIOPA for EUR, and by PRA for GBP, as of 30/09/22.

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 30/09/22. **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 declined by 20 basis points to 9.9% in August.
- The RPI inflation measure was unchanged in August at 12.3%.
- According to the ONS: "A fall in the price of motor fuels made the largest downward contribution to the change. Rising food prices made the largest, partially offsetting, upward contribution to the change in the rates."
- Average earnings rose by 30 basis points in July to 5.5%, after the previous month's reading was revised higher by 10 basis points.
- The projected RPI curve declined at the 1-year tenor, but saw an increase for the rest of the curve, with the increases more pronounced at the shorter-term.



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.

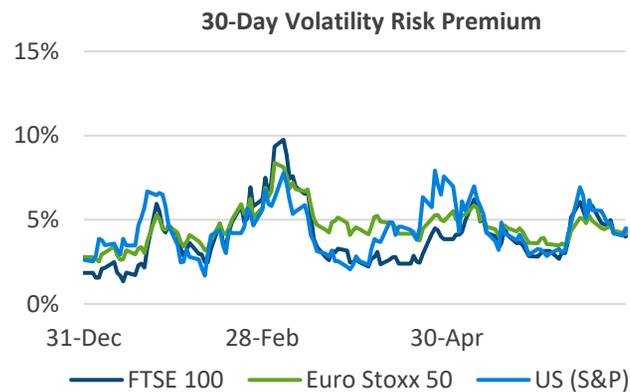
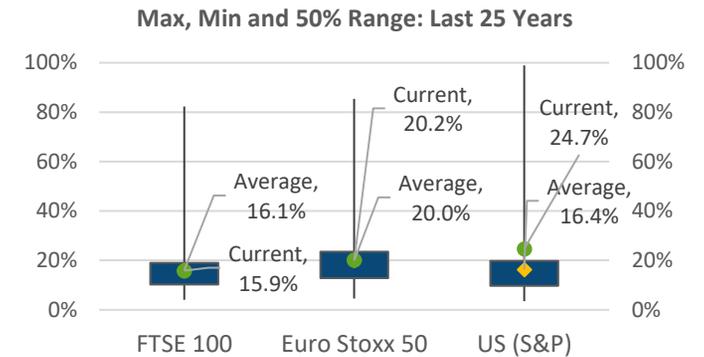
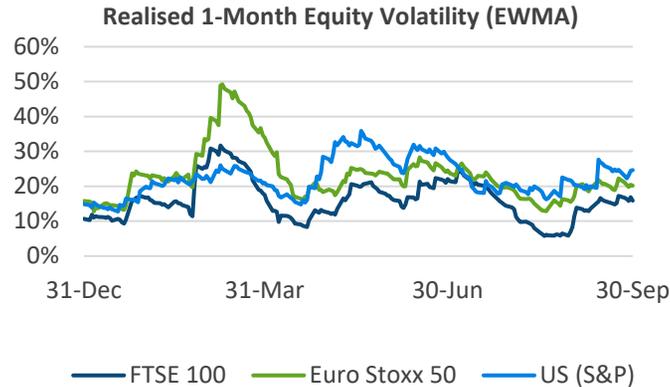
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Volatility and Hedging Cost Monitor

- Realised volatilities on major indices increased in September as equity markets witnessed a wide selloff.
- The FTSE 100 ended the month with a realised volatility of 15.9%. The same measure stood at 20.2% and 24.7% 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.

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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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