

Market Price Monitor

Local Equity Markets

- Global equity markets had a strong performance in July with markets anticipating central banks will ease monetary tightening sooner on the back of weak global PMI data and a negative quarterly GDP growth figure out of the US. Risk assets are perceived to benefit from the change in policy.
- During the month, the ECB delivered its first rate hike in over a decade, raising rates by 50 basis points, as the Eurozone came out of the negative rate era.
- The FTSE 100 ended the month up 3.7%.
- The Euro Stoxx 50 index gained 7.5%.

Global Equity Markets

- Developed economies outperformed their emerging market counterparts, as the S&P 500 and the Japanese Topix index returned 9.2% and 3.7%, respectively.
- In contrast, the MSCI Emerging Markets index ended the month relatively flat.

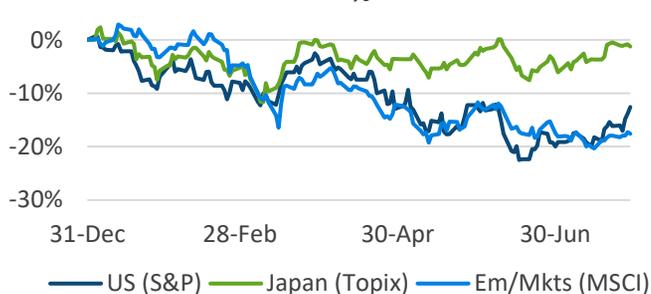
Bond/FX Markets

- The British government bond index was up 2.8% at month-end.
- The British and global corporate bond indices gained 3.5% and 2.8%, respectively.
- The British Pound was unchanged against the US Dollar, whilst gaining 2.5% against the Euro, and weakening by 1.8% against the Japanese Yen.

Local Equity Markets: 2022 YTD Total Return %



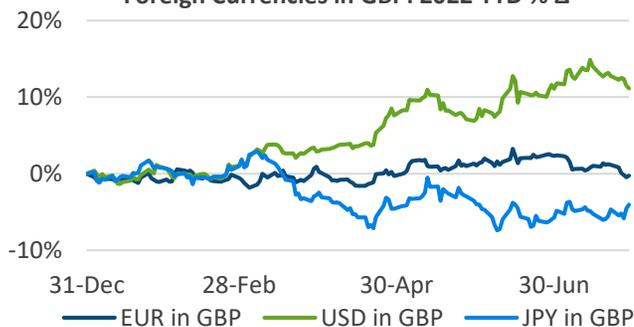
Global Equity Markets: 2022 YTD Total Return %



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



Foreign Currencies in GBP: 2022 YTD % Δ



Total Returns as of July 29, 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	3.7%	4.4%	7.5%	9.2%	3.7%	-0.2%	2.8%	3.5%	2.8%	-2.5%	0.0%	1.8%
3 Month	-1.0%	-1.2%	-0.7%	0.4%	2.4%	-6.3%	-2.4%	-1.5%	-0.4%	0.1%	3.3%	0.6%
1 Year	9.6%	5.5%	-6.3%	-4.6%	4.5%	-19.8%	-14.4%	-13.0%	-15.3%	-1.7%	14.2%	-6.0%
YTD	2.7%	-0.4%	-11.3%	-12.6%	-1.2%	-17.6%	-12.4%	-11.2%	-13.2%	-0.2%	11.1%	-4.0%

Milliman Financial Risk Management

London Market Monitor – 29 July 2022

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

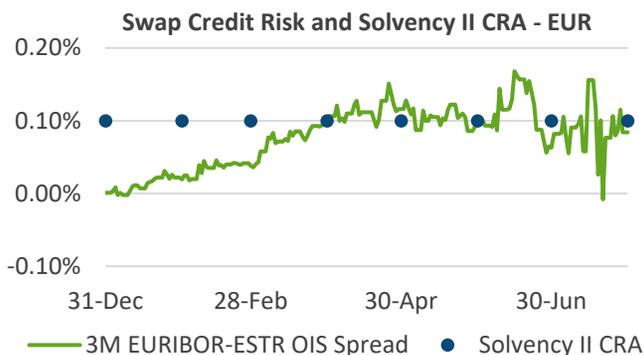
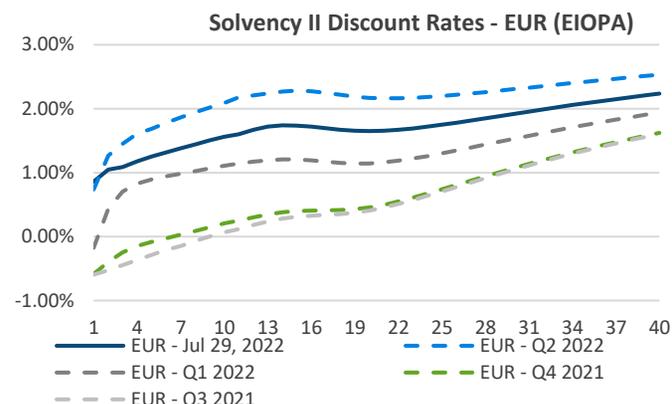
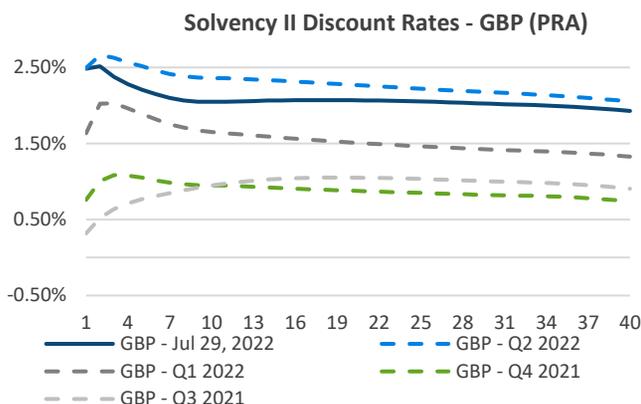
Solvency II Monitor - Rates

Risk Free Rates

- GBP risk-free rates decreased at all terms in July.
- The 5 and 10-year GBP risk-free rates saw the largest drop, both falling by 21 basis points.
- EUR risk-free rates declined at all terms in July with the exception of the 1-year rate which witnessed a 12 basis points rise.
- The 10 and 20-year risk-free rates dropped by 53 and 52 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	-1	-31	-31	-20	-15
Since Q1 2022	85	32	40	56	60
Since Q4 2021	173	116	110	119	120
Since Q3 2021	217	145	110	102	102

	Change in EUR Discount and CRA (bps)					
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q2 2022	12	-44	-53	-52	-39	0
Since Q1 2022	104	36	45	51	39	0
Since Q4 2021	145	134	136	119	85	0
Since Q3 2021	146	154	150	124	87	0

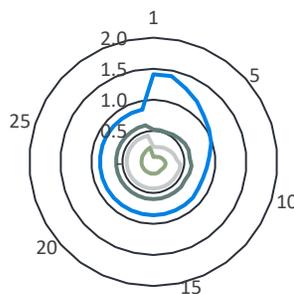
Solvency II Monitor - Spreads

Fundamental Spreads

- There were no material changes since the last report.

Fundamental Spreads %

GBP - Financial

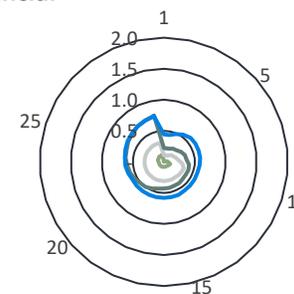


— AAA — AA — A — BBB

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	0.43	0.43
A	0.52	0.56	0.61	0.60	0.60
BBB	1.41	1.10	0.84	0.86	0.86

GBP Financial 'Before Floor' %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.04	0.08	0.15	0.23
AA	0.04	0.07	0.11	0.18	0.26
A	0.06	0.12	0.18	0.31	0.42
BBB	0.15	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	0.08	0.12
AA	0.11	0.16	0.34	0.31	0.31
A	0.22	0.28	0.42	0.51	0.76
BBB	0.44	0.58	0.57	0.58	0.75

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	0.27	0.51	0.76
BBB	0.11	0.22	0.34	0.55	0.75

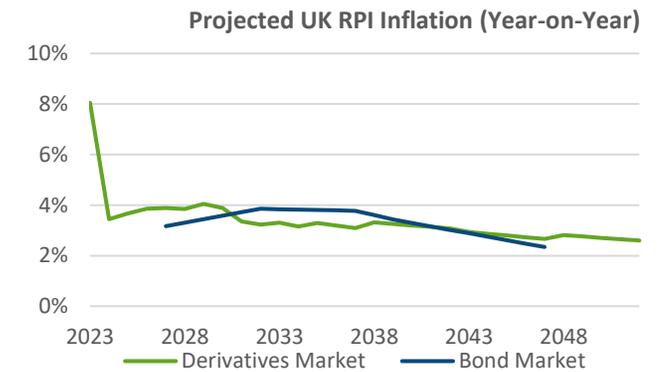
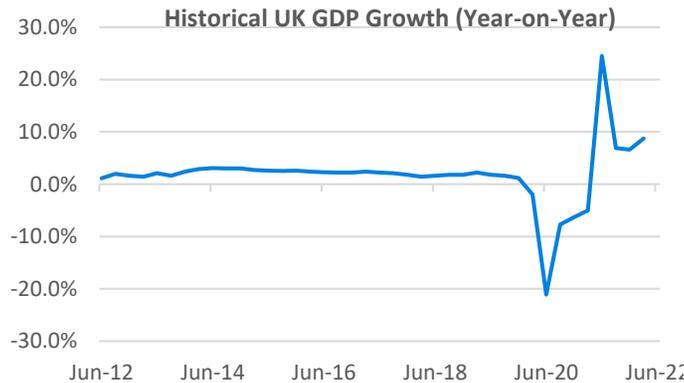
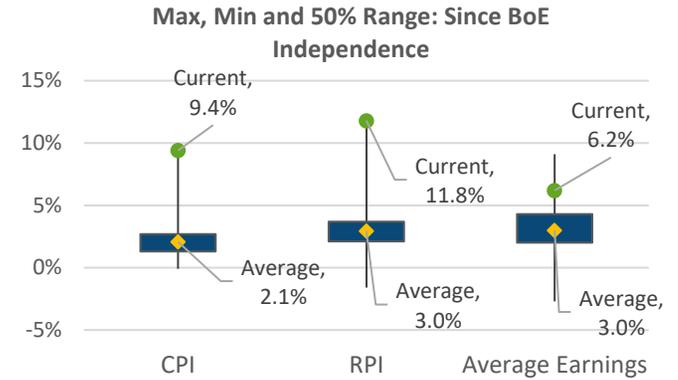
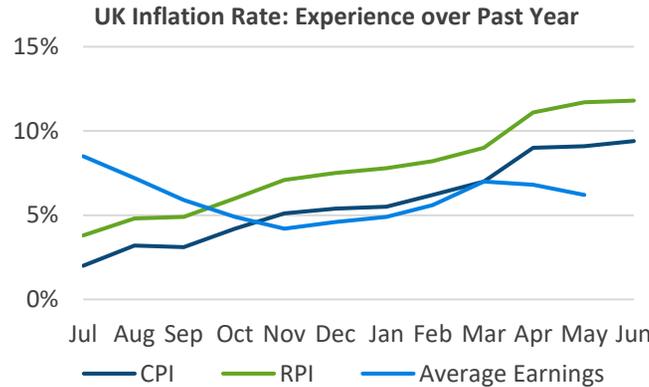
The **Solvency II risk-free discount rates** are based on applying the Smith-Wilson Extrapolation to LIBOR swap rates sourced from Refinitiv and applying the Credit Risk Adjustment as defined in the Technical Specs. The data is provided by EIOPA for EUR, and by PRA for GBP, as of 31/07/22.

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 31/07/22. **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 continued to trend higher in June, up 30 basis points from the previous month at 9.4%
- The RPI inflation measure rose by 10 basis points to 11.8% in June.
- According to the ONS: *“Rising prices for motor fuels and food made the largest upward contributions to the change. The largest, partially offsetting downward contributions to change in the rates were from second-hand cars and audio-visual equipment (principally recording media).”*
- Average earning dropped by 60 basis points to 6.2% in May.
- The projected RPI curve was relatively unchanged from the previous month.



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

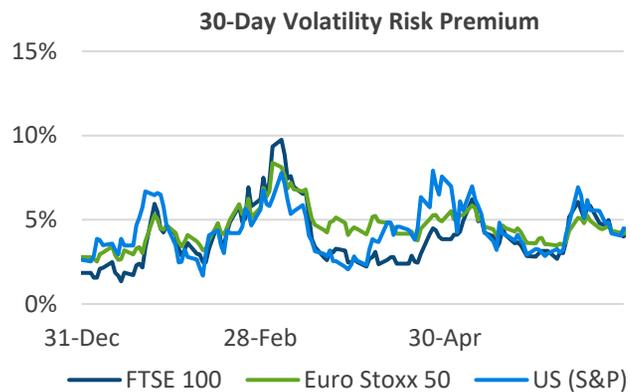
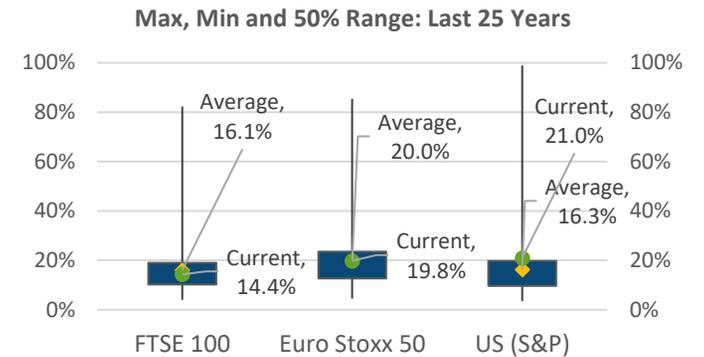
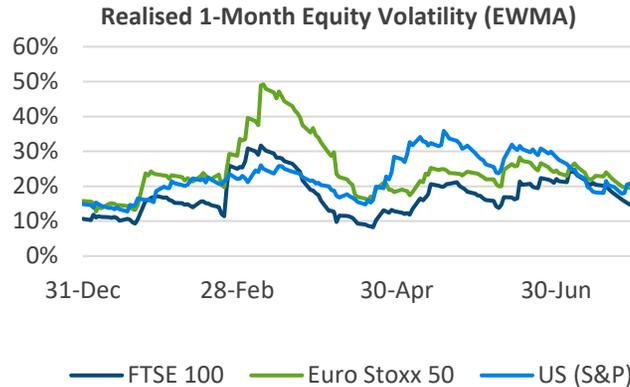
- **Consumer Price Index (CPI)** – measuring the monthly price of a basket of consumer goods and services
- **Retail Price Index (RPI)** – similar to CPI, but the main difference due the addition of mortgage payments, council tax and other housing costs
- **Average Earnings** – measuring the average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

Volatility and Hedging Cost Monitor

- Realised volatilities of major indices eased in July, as equity markets rallied. The FTSE 100 ended the month with a realised volatility of 14.4%. The same measure stood at 19.8% and 21.0% 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

Creating transformational improvement in the retirement savings industry.

Milliman Financial Risk Management LLC / Milliman Financial Strategies Ltd. is a global leader in financial risk management to the retirement savings industry. Milliman FRM provides investment advisory, hedging, and consulting services on approximately \$176.1 billion USD in global assets (31 December 2021).

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

[MILLIMAN.COM/FRM](https://www.milliman.com/frm)

Milliman is among the world's largest providers of actuarial and related products and services. The firm has consulting practices in healthcare, property & casualty insurance, life insurance and financial services, and employee benefits. Founded in 1947, Milliman is an independent firm with offices in major cities around the globe.

Recipients must make their own independent decisions regarding any strategies or securities or financial instruments mentioned herein.

The products or services described or referenced herein may not be suitable or appropriate for the recipient. Many of the products and services described or referenced herein involve significant risks, and the recipient should not make any decision or enter into any transaction unless the recipient has fully understood all such risks and has independently determined that such decisions or transactions are appropriate for the recipient.

Past performance is not indicative of future results. Index performance information is for illustrative purpose only, does not represent the performance of any actual investment or portfolio, and should not be viewed as a recommendation to buy/sell. It is not possible to invest directly in an index. Any hypothetical, backtested data illustrated herein is for illustrative purposes only, and is not representative of any investment or product.

Any discussion of risks contained herein with respect to any product or service should not be considered to be a disclosure of all risks or a complete discussion of the risks involved.

The recipient should not construe any of the material contained herein as investment, hedging, trading, legal, regulatory, tax, accounting or other advice. The recipient should not act on any information in this document without consulting its investment, hedging, trading, legal, regulatory, tax, accounting and other advisors.

The materials in this document represent the opinion of the authors and are not representative of the views of Milliman, Inc. Milliman does not certify the information, nor does it guarantee the accuracy and completeness of such information. Use of such information is voluntary and should not be relied upon unless an independent review of its accuracy and completeness has been performed. Materials may not be reproduced without the express consent of Milliman.

Milliman Financial Strategies Ltd. is authorised and regulated by the Financial Conduct Authority. Firm Registration Number 539399