Milliman Financial Risk Management
London Market Monitor – 30 June 2023
Data sources: Bloomberg; Barclays; EIOPA; PRA; ONS; Milliman FRM

Market Price Monitor

Local Equity Markets

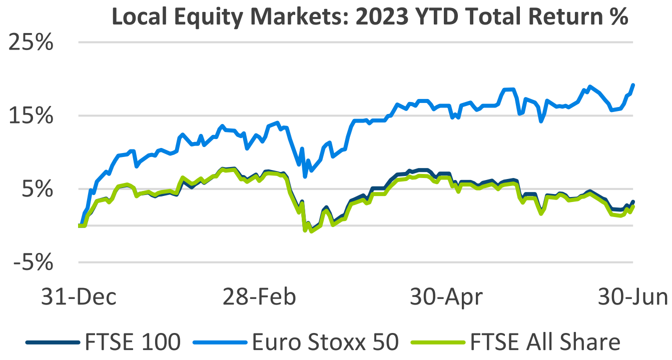
- Global equity markets had a positive performance in June.
- The FTSE 100 index gained 1.4%, returning -0.3% in the second quarter.
- The Euro Stoxx 50 index was up 4.4% in June, gaining 4.2% in the second quarter.

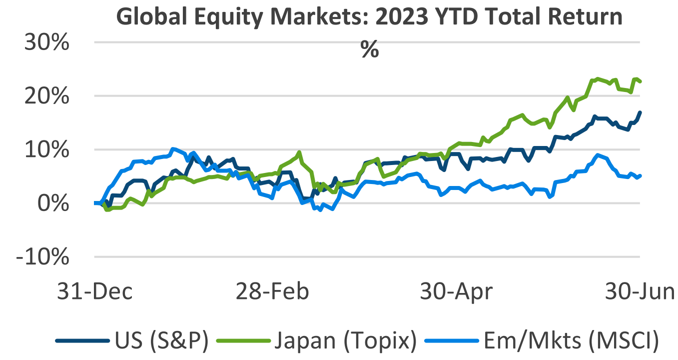
Global Equity Markets

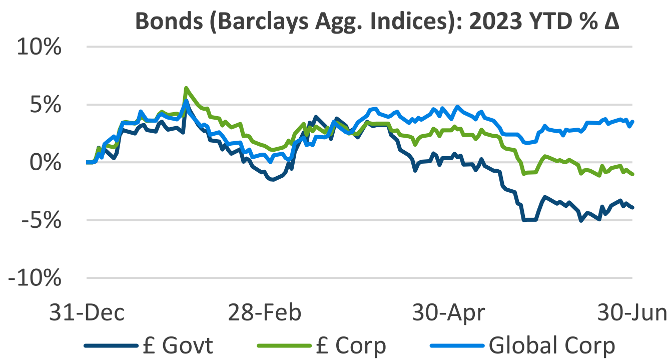
- Developed market equities outperformed their emerging market counterparts in June, with the S&P 500 up 6.6% and the Topix index gaining 7.5%. Meanwhile, the MSCI Emerging Markets index was up 3.9%.

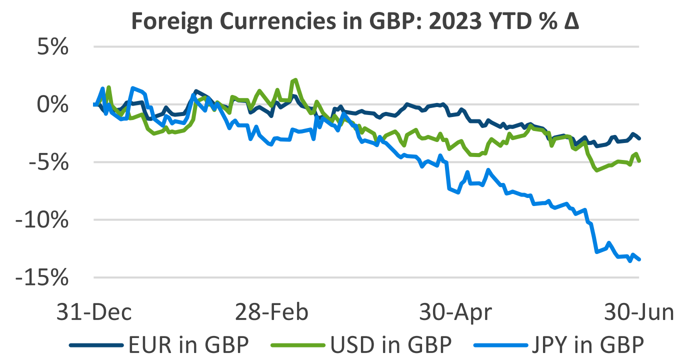
Bond/FX Markets

- The British government bond index ended the month down 0.5%, and the British corporate bond index fell by 1.2%.
- In contrast, the global corporate bond index gained 0.8%.
- The British Pound had a strong performance against the US Dollar and the Japanese Yen, gaining 2.5% and 5.5% against them, respectively.









Total Returns as of June 30, 2023

	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	1.4%	1.0%	4.4%	6.6%	7.5%	3.9%	-0.5%	-1.2%	0.8%	0.1%	-2.5%	-5.5%
3 Month	-0.3%	-0.5%	4.2%	8.7%	14.4%	1.0%	-6.0%	-3.4%	0.1%	-2.2%	-2.9%	-10.6%
1 Year	9.1%	7.9%	31.6%	19.6%	25.7%	2.2%	-15.5%	-6.9%	2.1%	-0.2%	-4.1%	-9.8%
YTD	3.2%	2.6%	19.2%	16.9%	22.7%	5.1%	-3.9%	-1.0%	3.5%	-2.9%	-4.9%	-13.4%

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Insurance Monitor

Solvency II Risk Free Rates

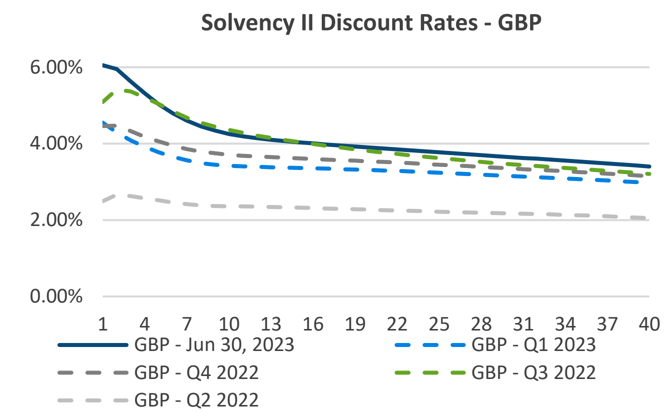
- On the back of rate hikes from the BoE and the ECB, short and medium-term risk-free rates increased in June, whilst the longer-term risk-free rates declined.
- The 1 and 5-year GBP risk-free rates rose by 80 and 60 basis points. In contrast the 30-year GBP SII rate fell by 12 basis points.
- The 1-year EUR risk-free rate rose by 25 basis points. Meanwhile the 30-year rate declined by 7 basis points.
- The EUR CRA was unchanged and remains floored at 10 basis points.

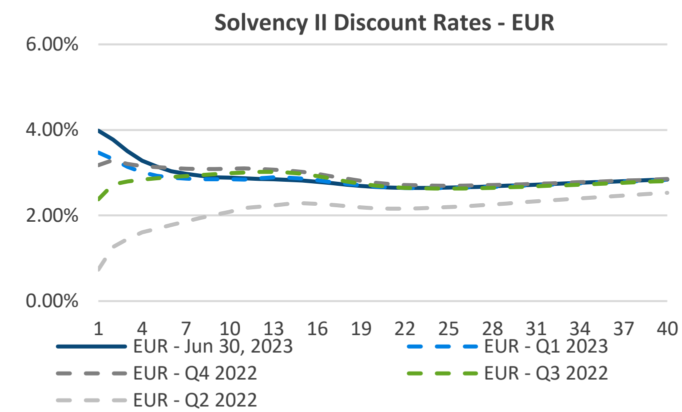
The **Solvency II risk-free discount rates** are calculated independently based on applying the Smith-Wilson Extrapolation to swap rates sourced from Bloomberg and applying the Credit Risk Adjustment as defined in the Technical Specs. For the official published curves please refer to EIOPA and PRA websites.

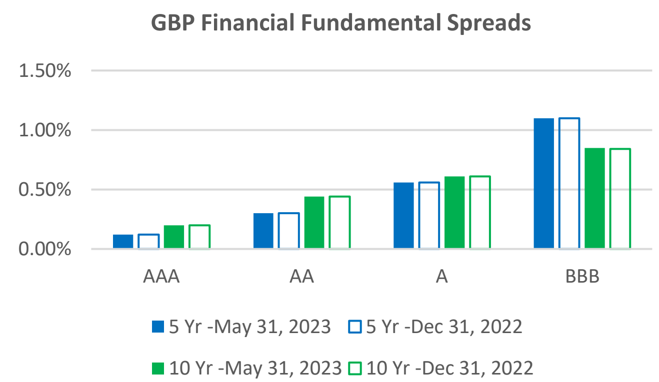
Solvency II Fundamental Spreads

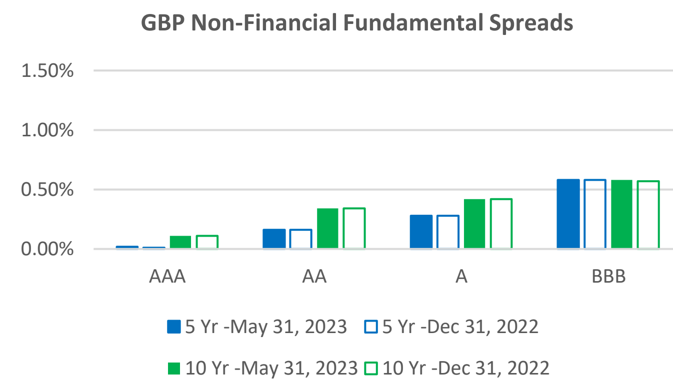
- There were no material changes since the start of the year.

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. **Fundamental spread** = maximum (probability of default + cost of downgrade; 35% of long-term average spread). For fundamental spreads on other tenors please refer to the EIOPA website.









Change in GBP Discount Rates (bps)

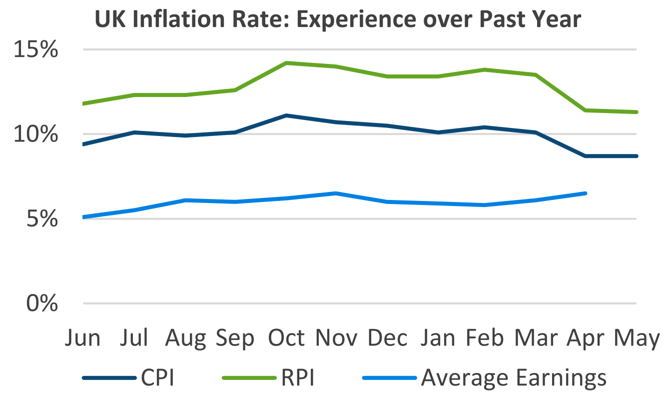
	1Y	Y5	Y10	Y20	Y30
Since Q1 2023	150	125	83	59	50
Since Q4 2022	159	97	55	36	30
Since Q3 2022	96	-1	-11	9	19
Since Q2 2022	356	251	190	162	148

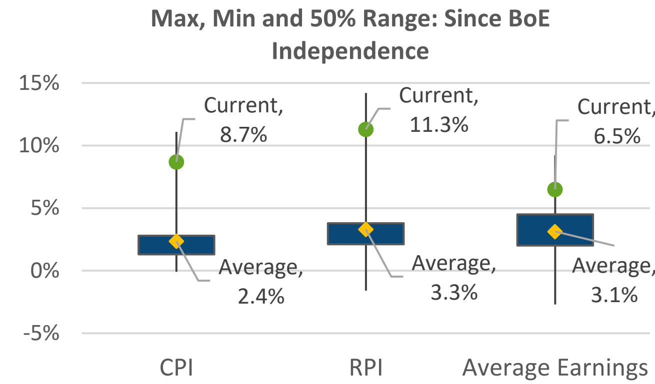
Change in EUR Discount Rates (bps)

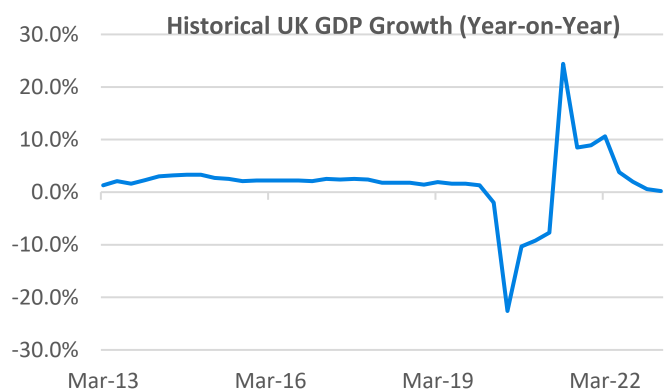
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q1 2023	51	21	4	-1	1	0
Since Q4 2022	81	1	-20	-10	-2	0
Since Q3 2022	161	27	-10	-3	4	0
Since Q2 2022	325	146	80	50	40	0

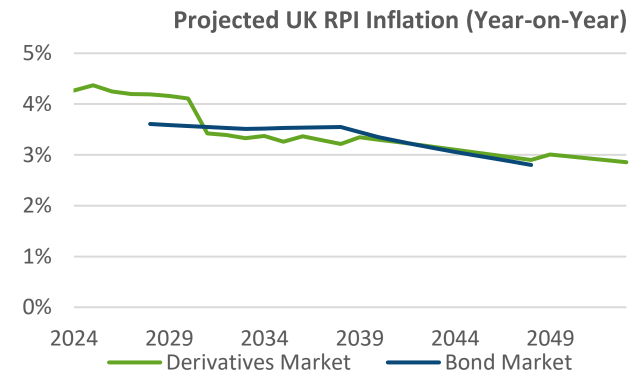
UK Inflation Monitor

- UK's CPI remained unchanged in May at 8.7%.
- UK's RPI measure decreased by 10 basis points to 11.3% in May.
- According to the ONS: *"Rising prices for air travel, recreational and cultural goods and services, and second-hand cars resulted in the largest upward contributions to the monthly change. Falling prices for motor fuel led to the largest downward contribution."*.
- Average earnings increased by 40 basis points to 6.5% in April after the previous month's reading was revised higher by 30 basis points.
- The projected RPI curve increased at the shorter end in comparison to the previous month.









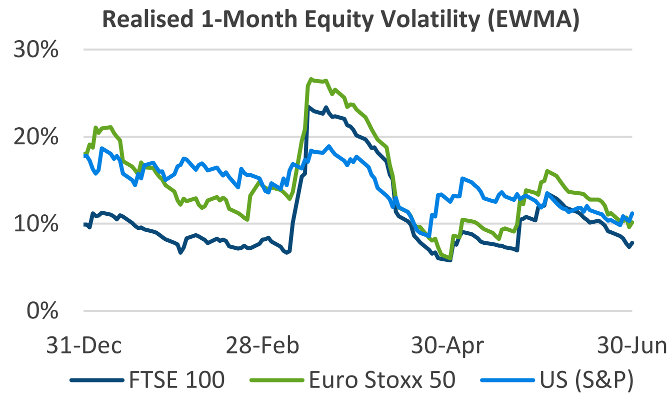
Historical year-on-year inflation rate is assessed by the % change on:
- **Consumer Price Index (CPI)** – measuring the monthly price of a basket of consumer goods and services
- **Retail Price Index (RPI)** – similar to CPI, but the main difference due the addition of mortgage payments, council tax and other housing costs
- **Average Earnings** – measuring the average total weekly employee remuneration over the previous 3 months.

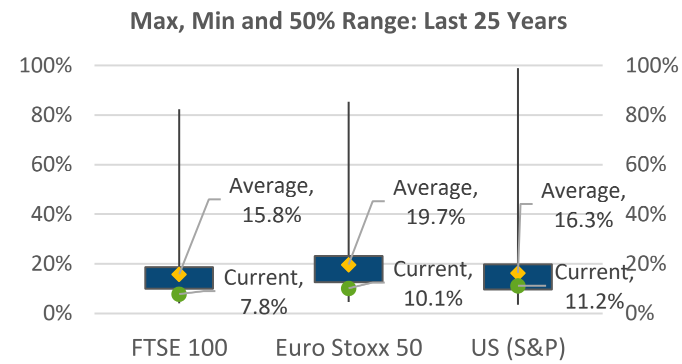
Projection year-on-year inflation rate is the forward rate calculated from market data:
- **Derivatives Market View** – constructed from zero coupon inflation par swap rates against the RPI index at various tenors
- **Bond Market View** – constructed from the difference between the nominal rates implied by the conventional gilts and the real rates implied by the index-linked (RPI) gilts.

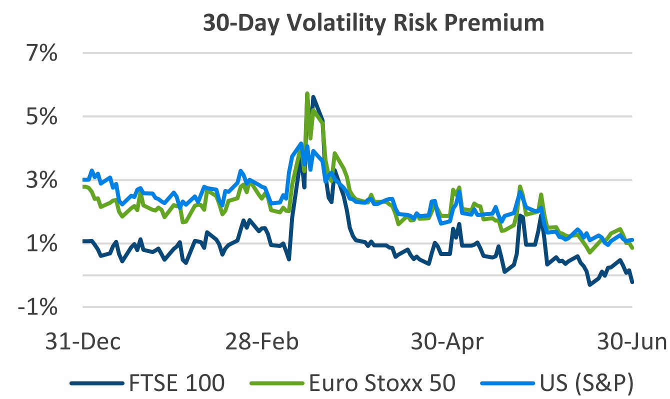
Data sources: Bloomberg; Barclays; EIOPA; PRA; ONS; Milliman FRM

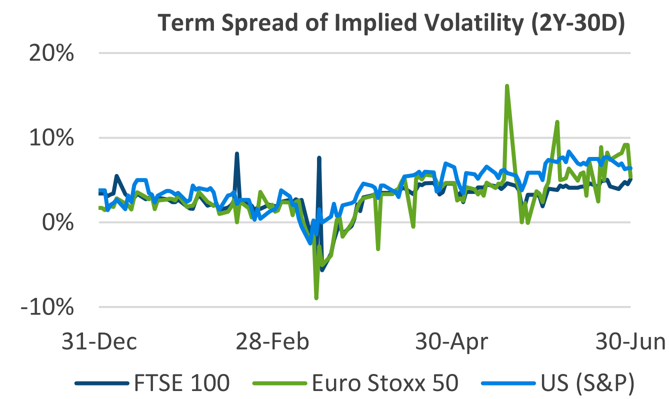
Volatility and Hedging Cost Monitor

- Realised volatilities on major indices decreased in June.
- The FTSE 100 ended the month with a realised volatility of 7.8%. The same measure stood at 10.1% and 11.2% on the Euro Stoxx 50 and the S&P 500, respectively.
- Volatility risk premiums on major indices also decreased in June. The FTSE 100 had a volatility risk premium of -0.2% at month-end. The volatility risk premium on the Euro Stoxx 50 and the S&P 500 was 0.9% and 1.1%, respectively.
- The spread between implied volatility of 2-year and 30-day at-the-money options on major indices increased and remained positive.









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).

Volatility Term Premium is calculated as the difference between the implied volatility of an at-the-money 2-year maturity option and the implied volatility of an at-the-money 30-day option. This gives an indication of market demand for protection over the longer term, relative to demand for protection in the shorter-term. Bloomberg as the source of the data interpolates between listed options to provide implied volatility data for these fixed terms.

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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).

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