

**Asset Price Monitor**

**Local Equity Markets**

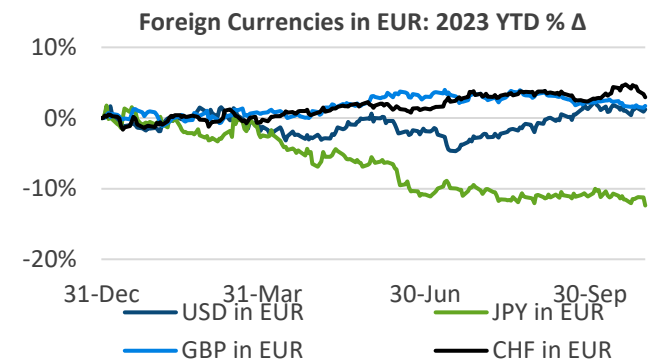
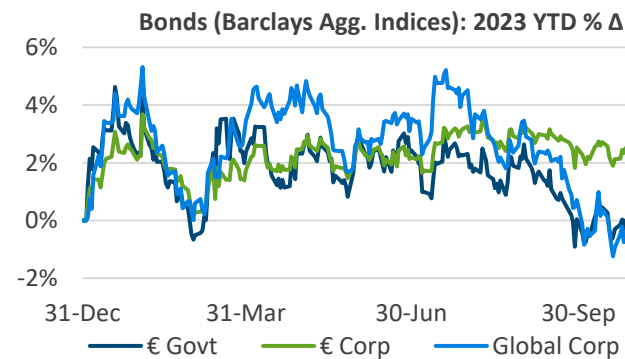
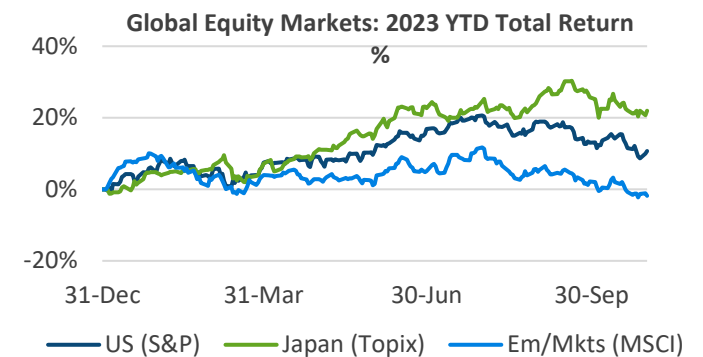
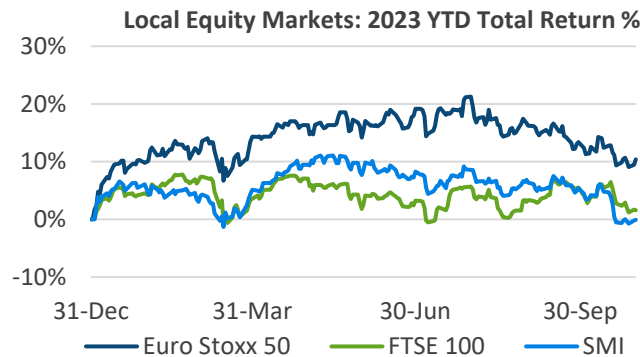
- The performance of global equity markets was negative in October, as geopolitical tensions and uncertainties weighed on risk sentiment.
- The Euro Stoxx 50 index was down 2.6% in October, returning 10.4% year-to-date.
- The FTSE 100 index lost 3.7% in October, returning 1.6% year-to-date.

**Global Equity Markets**

- The S&P 500 ended the month down 2.1%, and the Topix index lost 3.0%.
- The MSCI Emerging Markets index declined by 3.9%.

**Bond/FX Markets**

- European government and corporate bond indices both advanced, each gaining 0.4%.
- The Euro had a positive performance in October, gaining 1.5% against the Japanese Yen and 0.4% against the British Pound. The Euro ended the month flat against the US Dollar.



Total Returns as of October 31, 2023												
	Euro Stoxx 50	FTSE 100	SMI	US (S&P)	Japan (Topix)	Em/Mkts (MSCI)	€ Govt	€ Corp	CHF in EUR	USD in EUR	JPY in EUR	GBP in EUR
1 Month	-2.6%	-3.7%	-5.2%	-2.1%	-3.0%	-3.9%	0.4%	0.4%	0.6%	0.0%	-1.5%	-0.4%
3 Month	-9.0%	-3.8%	-8.0%	-8.3%	-2.1%	-12.1%	-1.8%	-0.3%	-0.5%	4.1%	-2.4%	-1.7%
1 Year	16.0%	7.2%	-1.0%	10.1%	19.8%	11.3%	-1.7%	4.0%	2.9%	-6.5%	-8.3%	-1.0%
YTD	10.4%	1.6%	-0.1%	10.7%	21.9%	-1.8%	0.4%	2.9%	2.9%	1.2%	-12.4%	1.7%

## Milliman Financial Risk Management

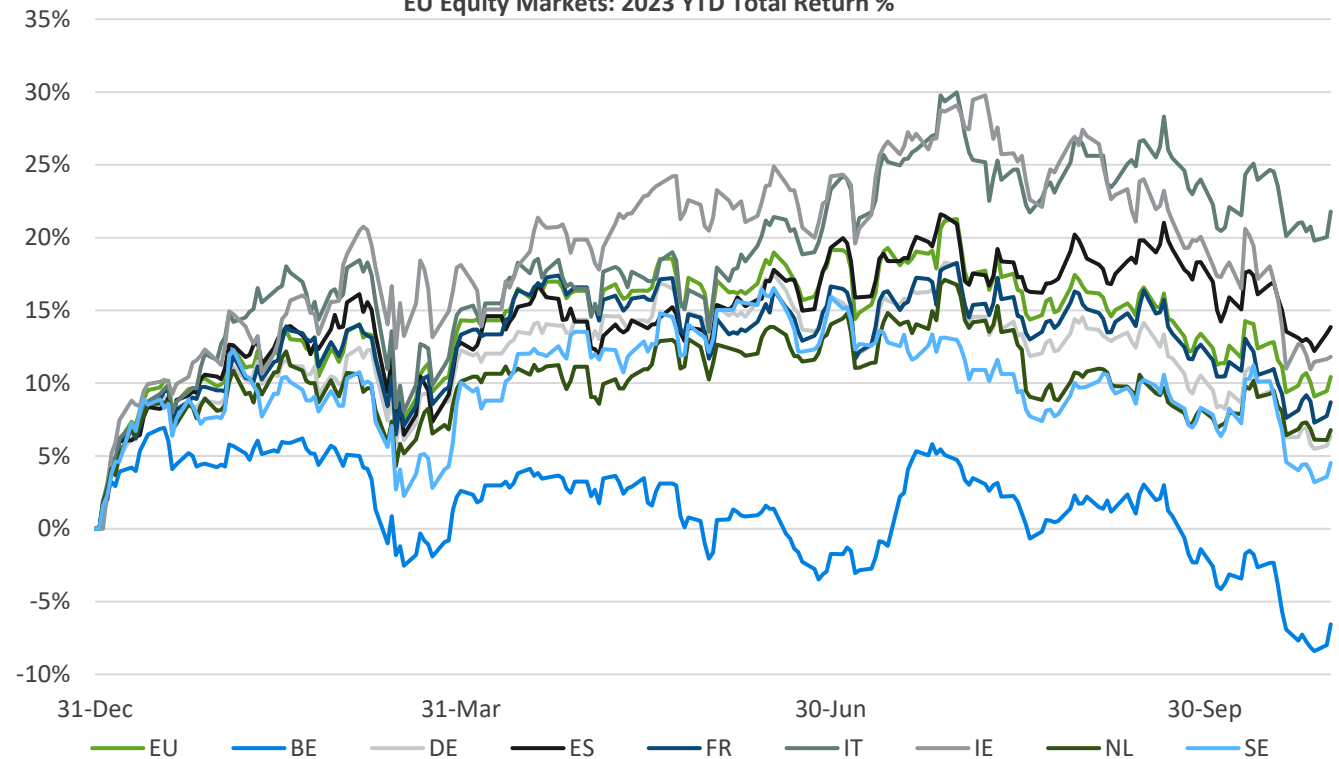
EuroZone Market Monitor – 31 October 2023

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

### Eurozone Equity

- All major European equity markets saw losses in October.
- The Irish equity market saw the largest losses in the month, down 6.9%.
- The Dutch equity market saw the smallest losses, losing 1.4%.
- The Belgian equity market remains the worst performer year-to-date, being the only major equity market in the region with a negative return in the ten months, down 6.6%.
- The Italian equity market is the best performing market year-to-date, having returned 21.8% thus far.

EU Equity Markets: 2023 YTD Total Return %

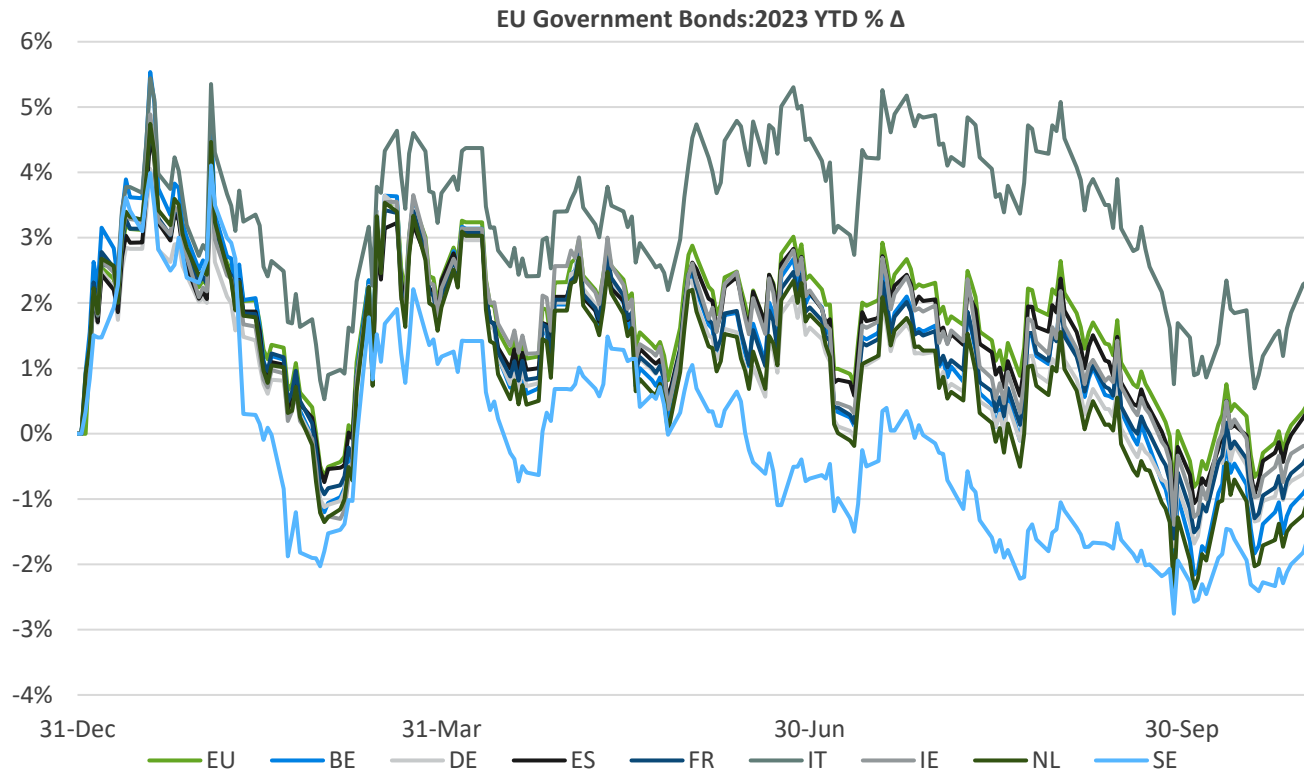


Equity Returns as of October 31, 2023

	EU	Belgium	Germany	Spain	France	Italy	Ireland	Netherlands	Sweden
1 Month	-2.6%	-5.2%	-3.7%	-3.8%	-3.5%	-1.8%	-6.9%	-1.4%	-3.5%
3 Month	-9.0%	-10.8%	-10.0%	-5.8%	-8.1%	-6.3%	-13.4%	-8.6%	-7.5%
QTD	-2.6%	-5.2%	-3.7%	-3.8%	-3.5%	-1.8%	-6.9%	-1.4%	-3.5%
YTD	10.4%	-6.6%	6.4%	13.9%	8.7%	21.8%	11.8%	6.8%	4.5%

**Eurozone Government Bonds**

- All major European government bond indices had a positive performance in October.
- The Italian government bond index saw the largest monthly increase, up 0.6% in October, outperforming all the other major European government bond indices, returning 2.3% year-to-date.
- The Belgian government bond index saw the smallest monthly increase, up 0.1%.
- The Swedish government bond index remains the laggard performer for the year, having lost 1.6% year-to-date.



**Bond Returns as of October 31, 2023**

	EU	Belgium	Germany	Spain	France	Italy	Ireland	Netherlands	Sweden
1 Month	0.4%	0.1%	0.3%	0.5%	0.3%	0.6%	0.2%	0.2%	0.3%
3 Month	-1.8%	-2.4%	-1.7%	-1.7%	-1.9%	-2.4%	-2.1%	-2.3%	-1.5%
QTD	0.4%	0.1%	0.3%	0.5%	0.3%	0.6%	0.2%	0.2%	0.3%
YTD	0.4%	-0.8%	-0.5%	0.3%	-0.3%	2.3%	-0.2%	-1.0%	-1.6%

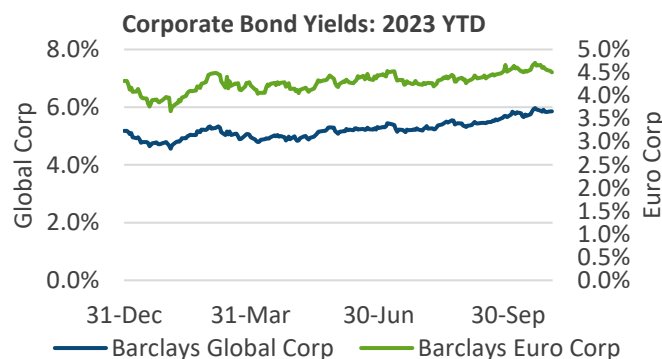
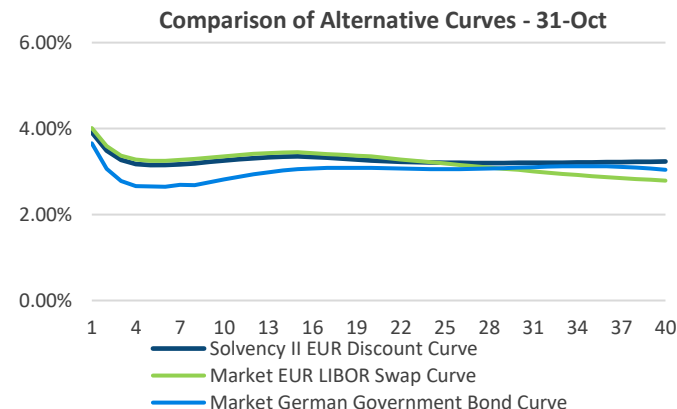
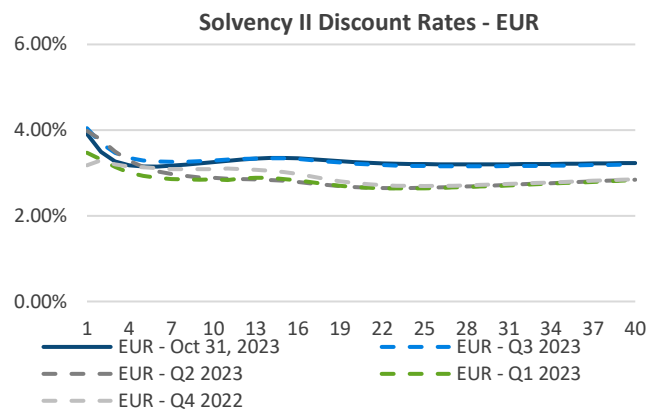
Liability Valuation Monitor

Risk Free Rates

- Short- and medium-term EUR risk-free rates fell in October, whilst the longer-term rates rose.
- The 1 and 5-year EUR risk-free rates decreased by 13 and 14 basis points, respectively. In contrast, the 20 and 30-year EUR risk free rates both increased by 4 basis points.

Corporate Bonds

- Global corporate bond yields rose by 20 basis points in October, whereas European corporate bond yields decreased by 2 basis points.
- Both Global and European credit spreads widened by 7 basis points.
- The decline in short- and medium-term risk-free rates was partially offset by the widening in corporate bond spreads, resulted in marginal gains for the European corporate bond index.



	Change in Solvency II Discount (bps)						Change in Corporate Bond Yields (bps)		Change in Corporate Bond Spreads (bps)	
	1Y	Y5	Y10	Y20	Y30	Y40	Global Corp	Euro Corp	Global Corp	Euro Corp
Since Q3 2023	-13	-14	-3	4	4	4	20	-2	7	7
Since Q2 2023	-7	1	37	59	49	39	58	6	3	-3
Since Q1 2023	44	22	41	58	51	40	90	28	-11	-10
Since Q4 2022	74	2	16	49	47	38	68	18	-5	-7

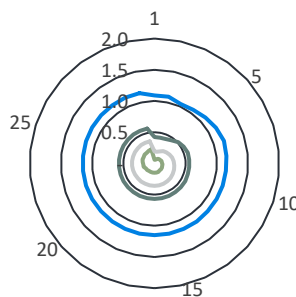
Solvency II Monitor - Spreads

Fundamental Spreads

- The fundamental spread data shown is for the end of September.
- There were no material changes since the last report.

Fundamental Spreads %

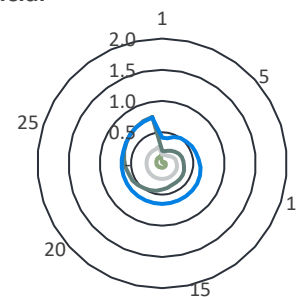
EUR: Financial



— AAA — AA — A — BBB

EUR Financial Fundamental Spread %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.06	0.10	0.13	0.16	0.23
AA	0.19	0.26	0.33	0.36	0.36
A	0.42	0.51	0.56	0.57	0.57
BBB	1.09	1.10	1.15	1.15	1.15
EUR 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	0.23	0.32	0.47	0.57

EUR: Non-Financial



— AAA — AA — A — BBB

EUR Non-Financial Fundamental Spread %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.01	0.02	0.06	0.08	0.12
AA	0.14	0.17	0.25	0.25	0.27
A	0.20	0.28	0.37	0.52	0.76
BBB	0.41	0.52	0.64	0.65	0.75
EUR Non-Financial 'Before Floor' %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.01	0.04	0.08	0.12
AA	0.00	0.04	0.09	0.17	0.27
A	0.04	0.15	0.28	0.52	0.76
BBB	0.11	0.22	0.34	0.55	0.75

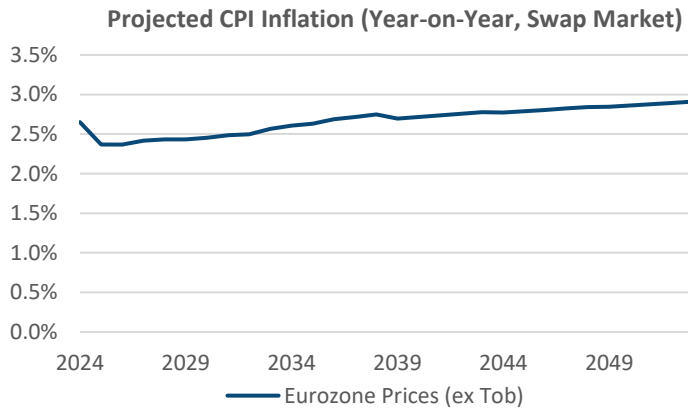
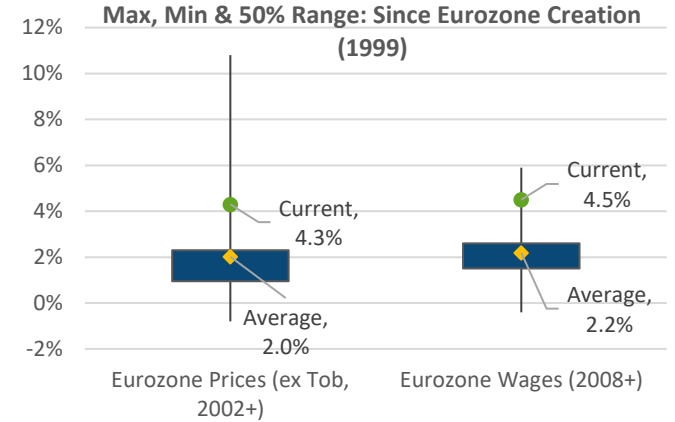
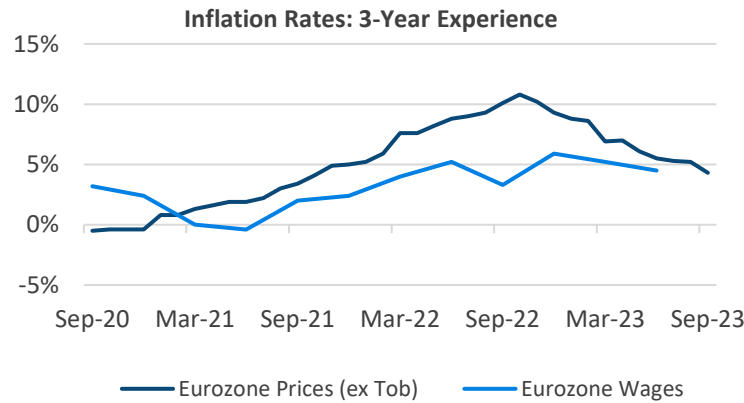
The **Solvency II risk-free discount rates** are based on applying the Smith-Wilson Extrapolation to LIBOR swap rates sourced from Bloomberg (current curve is for 31/10/23) and applying the Credit Risk Adjustment as defined in the Technical Specs. For the official published curves please refer to the [EIOPA](#) website.

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 30/09/23. **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.

**Inflation Monitor**

- Eurozone price inflation decreased by 90 basis points to 4.3% in September.
- The Eurozone projected CPI curve had a small downward shift in comparison to the previous month.
- Eurozone Q3 2023 GDP growth figure came in at 0.1%, a decline of 40 basis points from the previous quarter.
- There were no updates to the wage inflation figures this month.



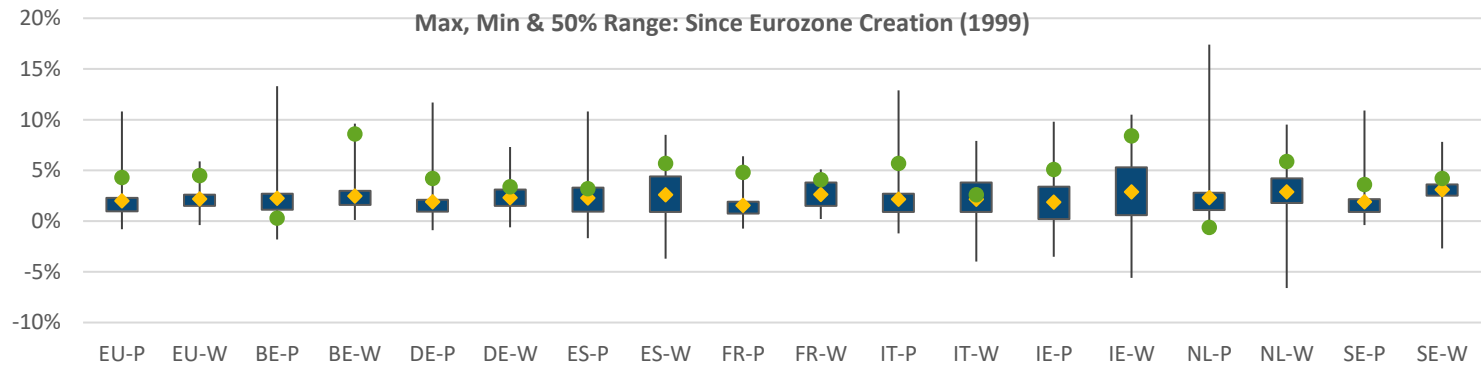
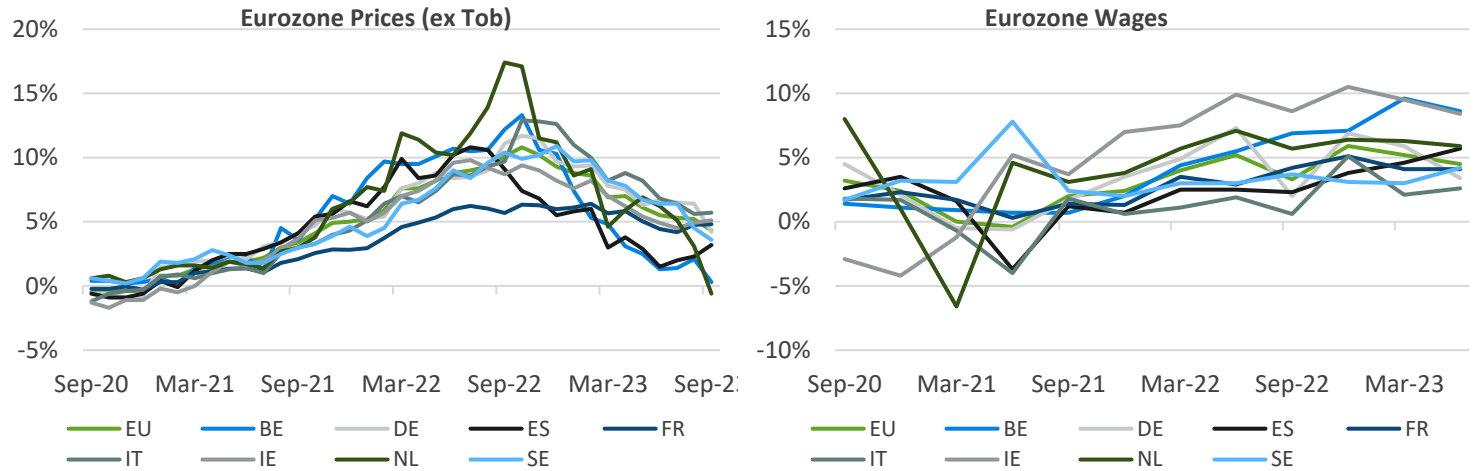
# Milliman Financial Risk Management

EuroZone Market Monitor – 31 October 2023

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

## Inflation Monitor

- Price inflation movements were mixed for major European economies in September.
- Spanish prices increased the most, rising by 90 basis points to 3.2%.
- Dutch price inflation decreased the most, falling by 370 basis points to -0.60%. Consequently, the Netherlands showed the lowest level in the region.
- Italian price inflation was the highest level in the region in September, at 5.7%, up by 10 basis points compared to the previous month.
- There were no updates to wage inflation figures this month.



	EU-P	EU-W	BE-P	BE-W	DE-P	DE-W	ES-P	ES-W	FR-P	FR-W	IT-P	IT-W	IE-P	IE-W	NL-P	NL-W	SE-P	SE-W
Avg.	2.0%	2.2%	2.3%	2.5%	1.9%	2.3%	2.3%	2.6%	1.6%	2.6%	2.2%	2.2%	1.9%	2.9%	2.3%	2.9%	1.9%	3.1%
Cur	4.3%	4.5%	0.3%	8.6%	4.2%	3.4%	3.2%	5.7%	4.8%	4.1%	5.7%	2.6%	5.1%	8.4%	-0.6%	5.9%	3.6%	4.2%

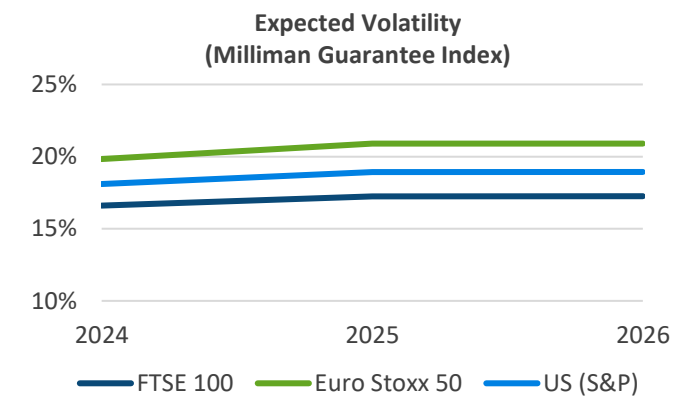
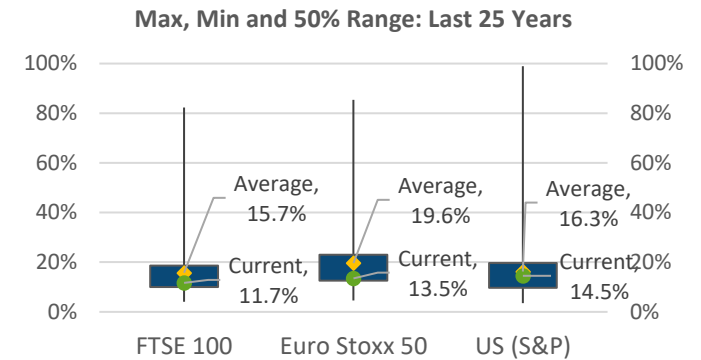
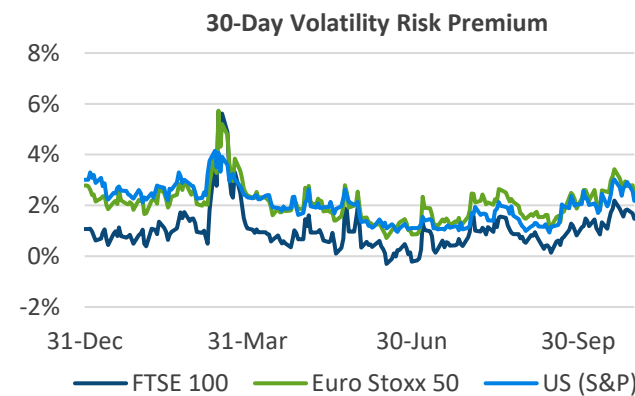
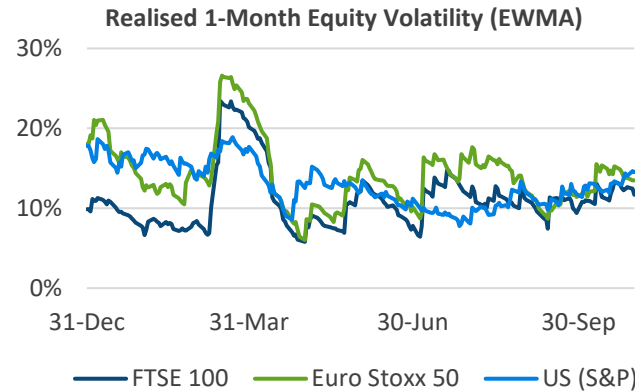


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**Volatility and Hedging Cost Monitor**

- Realised volatilities increased in October on the back of geopolitical uncertainties, however remained below historical long-term averages.
- The FTSE 100 ended the month with a realised volatility of 11.7%. The same measure stood at 13.5% and 14.5% on the Euro Stoxx 50 and the S&P 500, respectively.
- Volatility risk premiums on major indices increased in October. The FTSE 100 had a volatility risk premium of 1.5% at month-end. The volatility risk premium on the Euro Stoxx 50 and the S&P 500 was 2.5% and 2.2%, respectively.

*Please contact Milliman for more information on the basis and methodology used for these results.*



**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.



## Creating transformational improvement in the retirement savings industry.

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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.

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

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