Milliman Financial Risk Management

Eurozone Market Monitor – 28 February 2018

Data sources: Bloomberg; Barclays; EuroStat; Oxford-Man Institute; Milliman FRM

Asset Price Monitor

Local Equity Markets

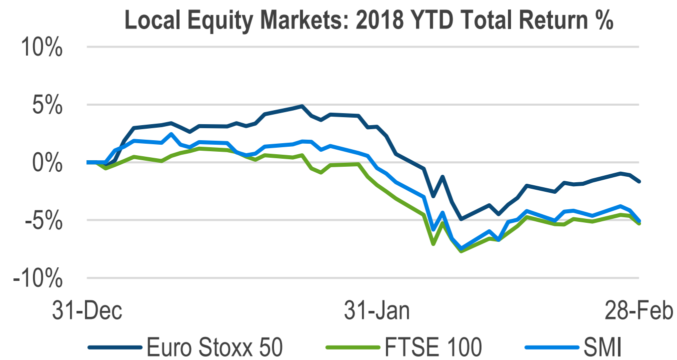
- February was a volatile month for equity markets, as all major equity indices posted losses for the month.
- The main Eurozone and Swiss benchmarks lost just over 4.5%, while the main UK equity benchmark lost just under 3.5%.

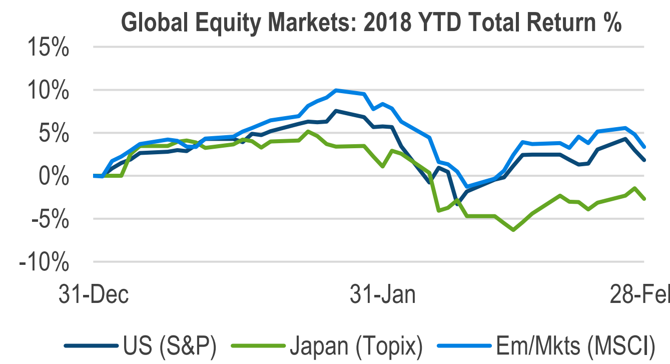
Global Equity Markets

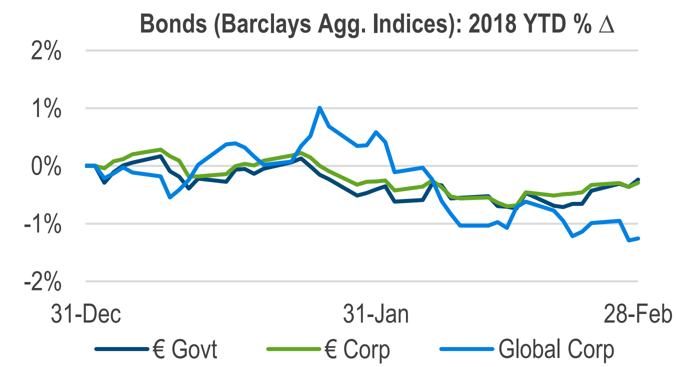
- International equity markets also posted losses of between 3% and 5% during February. For the S&P 500, this was the first monthly loss since October 2016.
- US and Emerging Markets equity still however remain in positive territory for the year to date, having recovered slightly during the second half of the month.

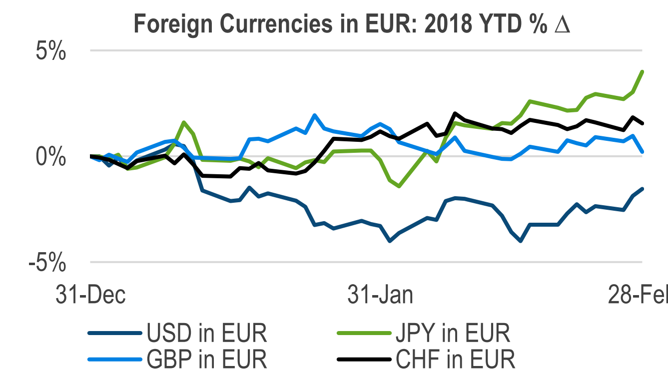
Bond/FX Markets

- Global corporate bond markets lost ground in February. Whilst Eurozone bonds (both government and corporate) changed marginally.
- The Euro saw a reversal of fortunes compared to last month. It made gains against £ Sterling, however it declined against the US Dollar. The Japanese Yen was the strongest major currency in February, gaining over 4% against the Euro.







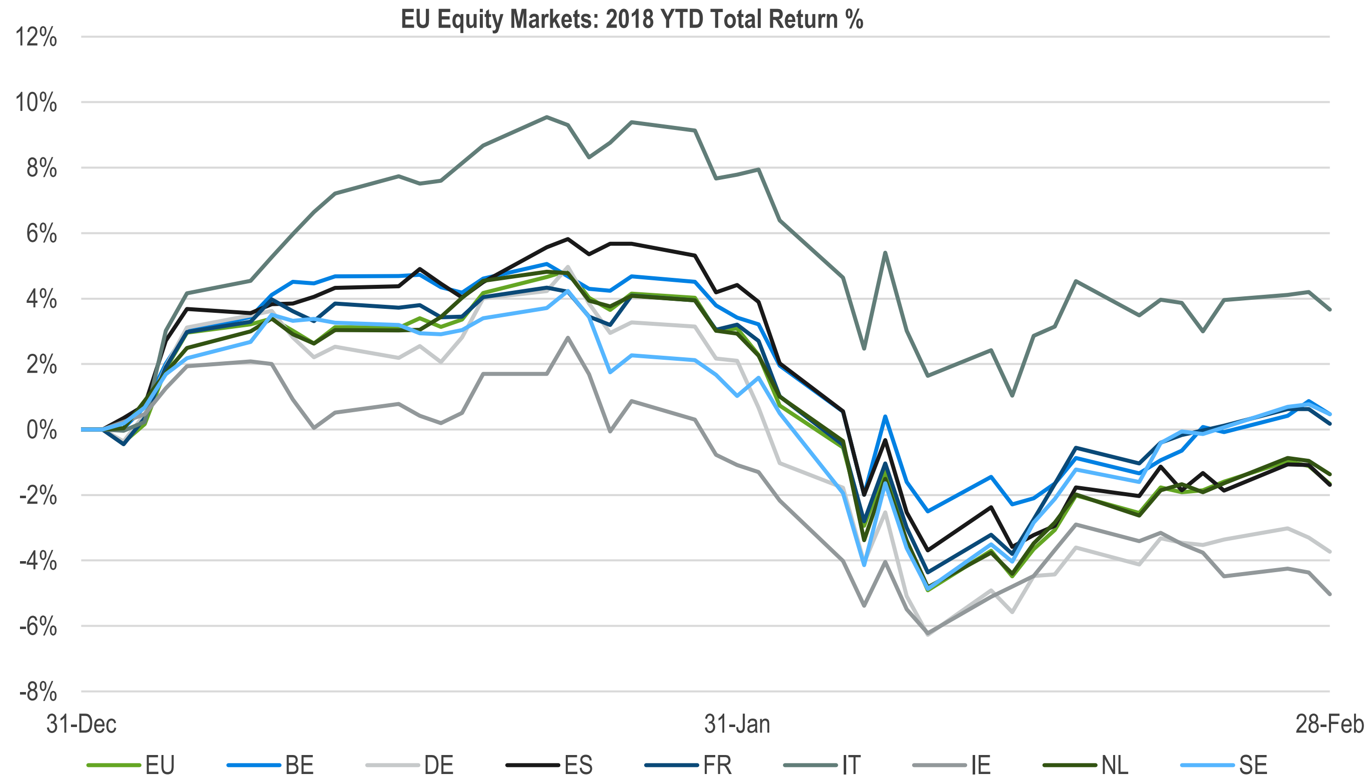


Total Returns as of February 28, 2018

	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	-4.6%	-3.4%	-4.6%	-3.7%	-3.7%	-4.6%	0.2%	0.0%	0.4%	1.8%	4.2%	-1.3%
1 Year	6.2%	3.4%	7.7%	17.1%	17.6%	30.5%	0.8%	1.5%	-7.6%	-13.3%	-8.3%	-3.6%
YTD	-1.7%	-5.3%	-5.1%	1.8%	-2.7%	3.3%	-0.2%	-0.3%	1.6%	-1.5%	4.0%	0.2%

Eurozone Equity

- All Eurozone equity markets posted losses during February. Spain and Germany saw the heaviest losses, whilst Sweden saw only a marginal loss for the month.
- Ireland continues to be the main laggard of the Eurozone equity markets, down 5% for the year-to-date. This being at a similar level to the main UK benchmark.

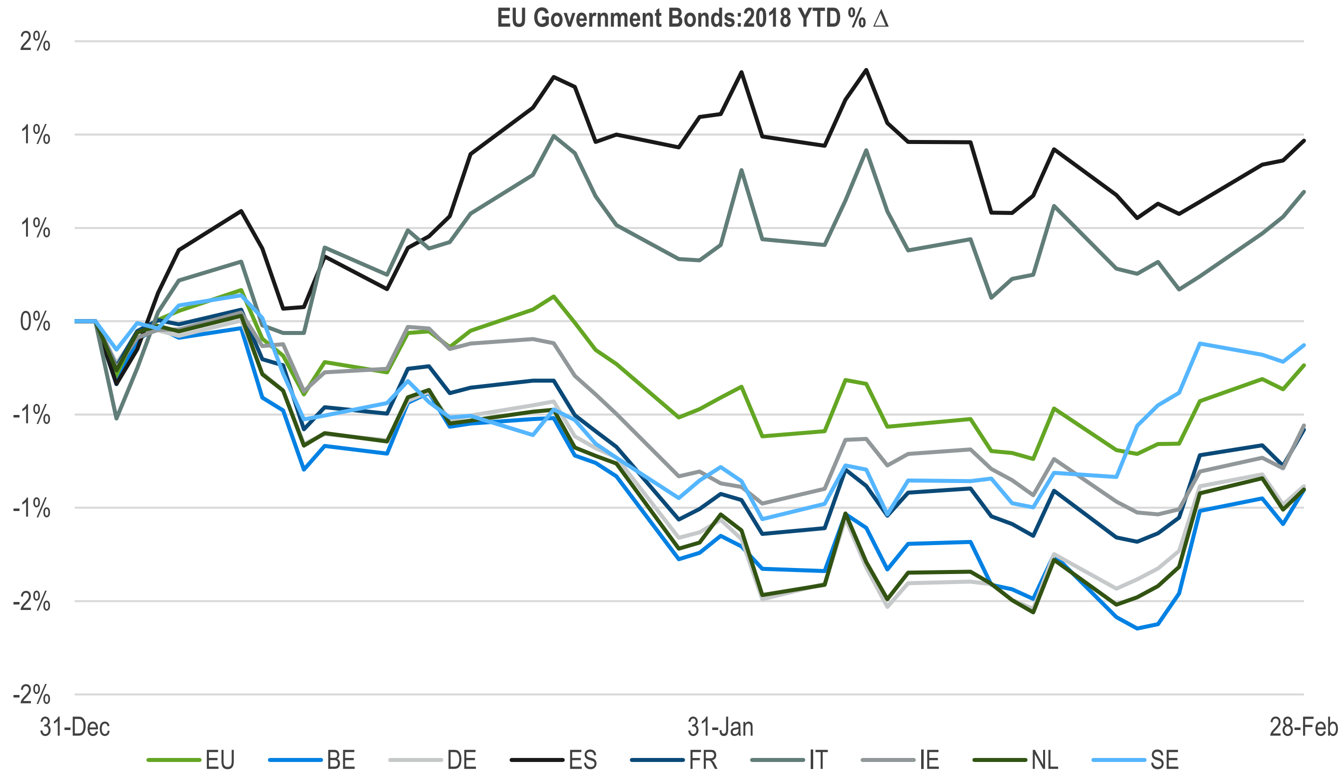


Equity Returns as of February 28, 2018

	EU	Belgium	Germany	Spain	France	Italy	Ireland	Netherlands	Sweden
1 Month	-4.6%	-2.9%	-5.7%	-5.8%	-2.9%	-3.8%	-4.0%	-4.2%	-0.6%
QTD	-1.7%	0.5%	-3.7%	-1.7%	0.2%	3.7%	-5.0%	-1.4%	0.5%
YTD	-1.7%	0.5%	-3.7%	-1.7%	0.2%	3.7%	-5.0%	-1.4%	0.5%

Eurozone Government Bonds

- Most Eurozone government bonds made marginal gains during February.
- Swedish government bonds were the best performing, seeing a 0.7% return for the month.
- Spain was the only Eurozone country to see a decline in the government bond benchmark.
- Spain and Italy continue to have the best performing government bond benchmarks year-to-date.



Bond Returns as of February 28, 2018

	EU	Belgium	Germany	Spain	France	Italy	Ireland	Netherlands	Sweden
1 Month	0.2%	0.2%	0.2%	-0.1%	0.3%	0.3%	0.3%	0.1%	0.7%
QTD	-0.2%	-0.9%	-0.9%	1.0%	-0.6%	0.7%	-0.6%	-0.9%	-0.1%
YTD	-0.2%	-0.9%	-0.9%	1.0%	-0.6%	0.7%	-0.6%	-0.9%	-0.1%

Data sources: Bloomberg; Barclays; EuroStat; Oxford-Man Institute; Milliman FRM

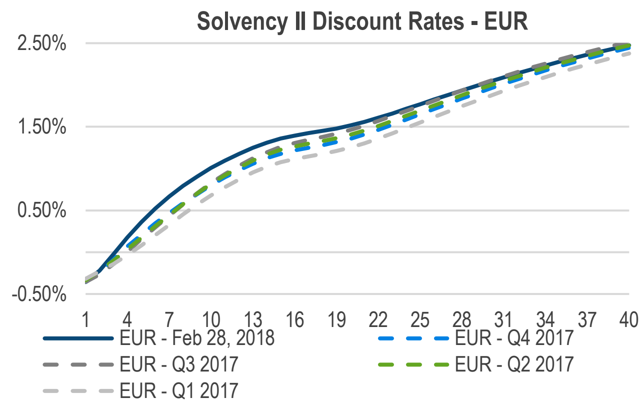
Liability Valuation Monitor

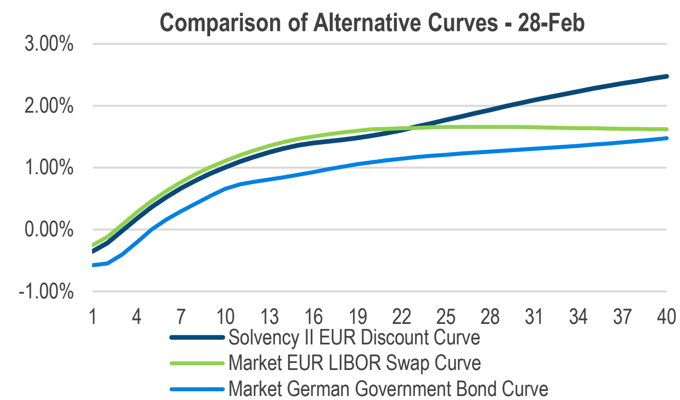
Risk Free Rates

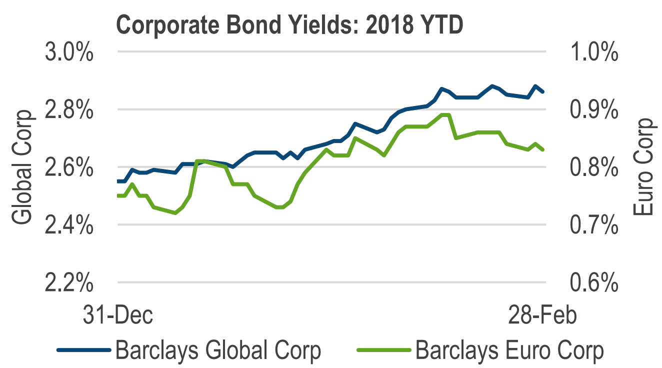
- The EUR Solvency II discount curve continues to be significantly higher than the 2017 year-end curve, at short- to mid-terms. There is less of a difference at the longer end of the curve, due to the impact of a 0.15% reduction in the UFR on 1st January (and the shorter last liquid point for EUR).

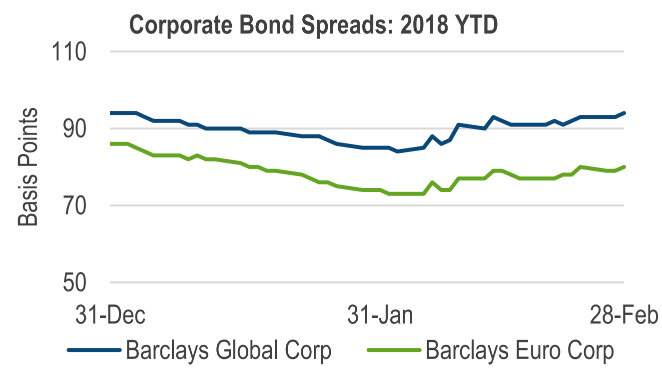
Corporate Bonds

- Corporate spreads widened in both global and European corporate bond markets during February.
- The Euro corporate bond index has remained flat during February despite the widening of spreads. This is in part due to the offsetting impact of the fall in risk-free rates at the terms that are typical of corporate bond issues, as well as the offsetting impact of the running yield for a total return 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 Q4 2017	1	15	21	16	8	3	31	8	0	-6
Since Q3 2017	0	20	18	5	-1	-4	36	5	-8	-16
Since Q2 2017	-2	19	19	11	5	0	30	-10	-15	-22
Since Q1 2017	-3	28	33	26	17	10	20	-7	-26	-38

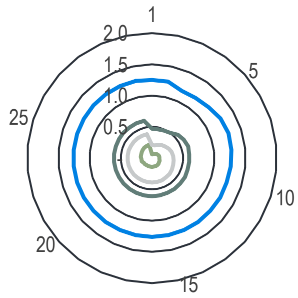
Solvency II Monitor - Spreads

Fundamental Spreads

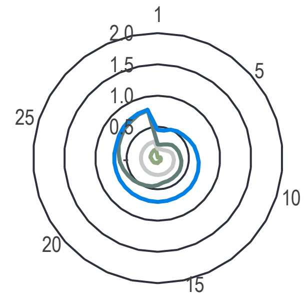
- The fundamental spread data shown is for end of January.
- There were some marginal changes compared to the end of December.

Fundamental Spreads %

EUR: Financial



EUR: Non-Financial



EUR Financial Fundamental Spread %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.06	0.10	0.13	0.15	0.22
AA	0.21	0.28	0.36	0.39	0.39
A	0.47	0.56	0.60	0.61	0.61
BBB	1.25	1.22	1.26	1.26	1.26

EUR Financial 'Before Floor' %					
	1Y	*Y5*	*Y10*	*Y20*	*Y30*
AAA	*0.00*	*0.04*	*0.08*	*0.15*	*0.22*
AA	*0.03*	*0.07*	*0.11*	*0.19*	*0.27*
A	*0.07*	*0.14*	*0.22*	*0.36*	*0.49*
BBB	*0.17*	*0.28*	*0.39*	*0.56*	*0.69*

EUR Non-Financial Fundamental Spread %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.01	0.02	0.05	0.09	0.14
AA	0.15	0.18	0.26	0.27	0.27
A	0.22	0.31	0.39	0.53	0.78
BBB	0.45	0.55	0.68	0.70	0.79

EUR Non-Financial 'Before Floor' %					
	1Y	*Y5*	*Y10*	*Y20*	*Y30*
AAA	*0.00*	*0.02*	*0.04*	*0.09*	*0.14*
AA	*0.00*	*0.04*	*0.09*	*0.18*	*0.27*
A	*0.03*	*0.15*	*0.28*	*0.53*	*0.78*
BBB	*0.11*	*0.23*	*0.36*	*0.59*	*0.79*

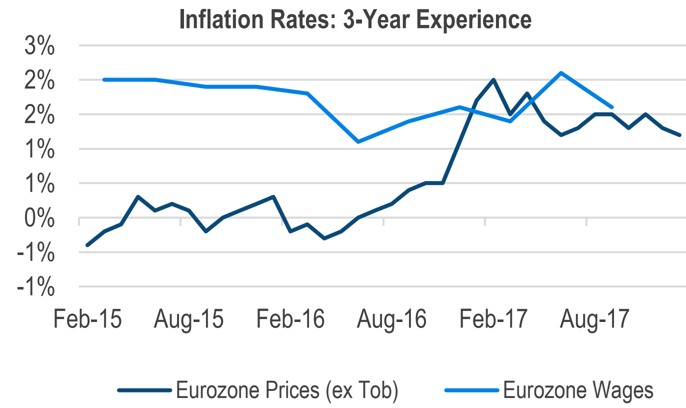
The **Solvency II risk-free discount rates** are based on applying the Smith-Wilson Extrapolation to LIBOR swap rates sourced from Bloomberg (current curve is for 28/02/18) and applying the Credit Risk Adjustment as defined in the Technical Specs.

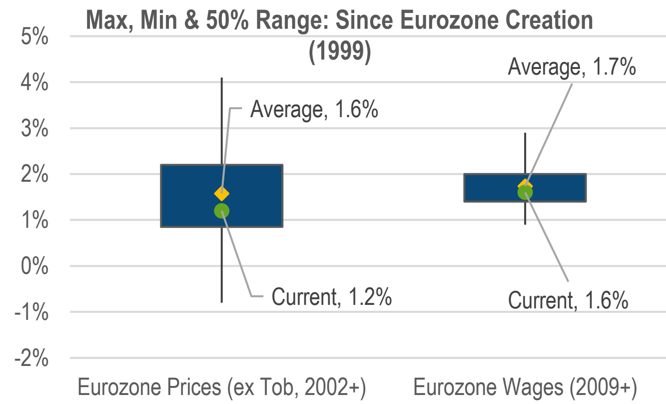
The **Credit Risk Adjustment** is a component of the risk-free discount curve defined by EIOPA. It is calculated from actual experience in the 'LIBOR-OIS' spread (3 months for EUR, 6 months for GBP), and is bounded between 0.10 and 0.35. We show actual LIBOR-OIS spread levels and the defined CRA, for both GBP and EUR.

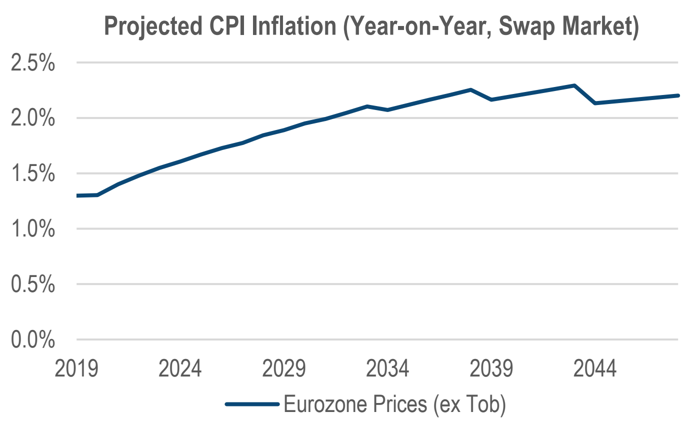
EIOPA fundamental spreads show the credit spread corresponding to the risk of default or downgrading of an asset. This is shown here across financial and non-financial assets, credit quality steps 0-3 and durations of 1-30 years. The data is provided by EIOPA and as of 31/01/18. **Fundamental spread** = 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

- The Eurozone's price inflation rate decreased by another 10 basis points to 1.2% in January.
- There is no update in wage inflation data this month.
- The market implied view of future inflation shows a marginal decline since January.



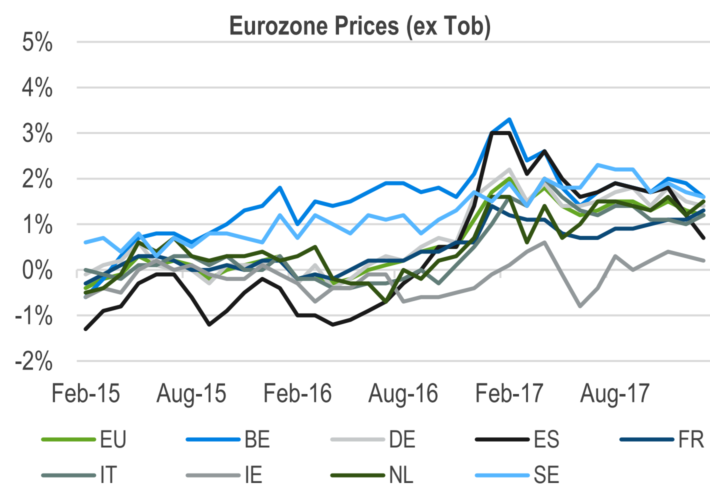


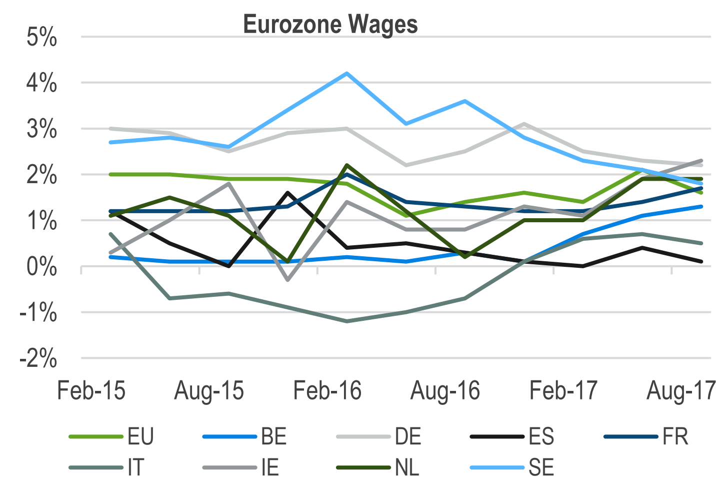


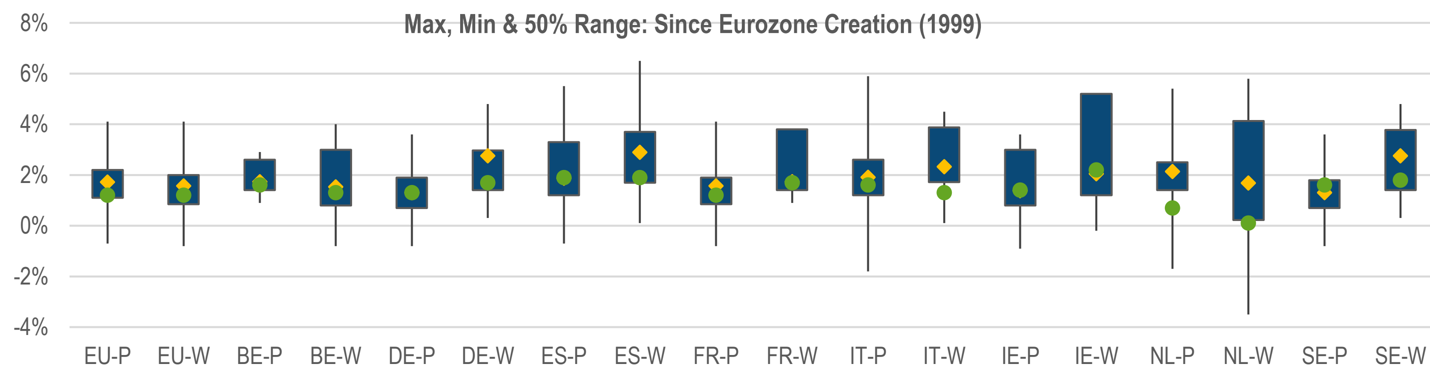
Data sources: Bloomberg; Barclays; EuroStat; Oxford-Man Institute; Milliman FRM

Inflation Monitor

- January was a mixed month for Eurozone price inflation, with most countries seeing a fall in inflation. Prices in Italy, France and the Netherlands did however rise in January.
- Spain saw a 0.5% dip in inflation during January, to take it to 0.7%. Ireland continues to have a comparatively low price inflation of only 0.2%.







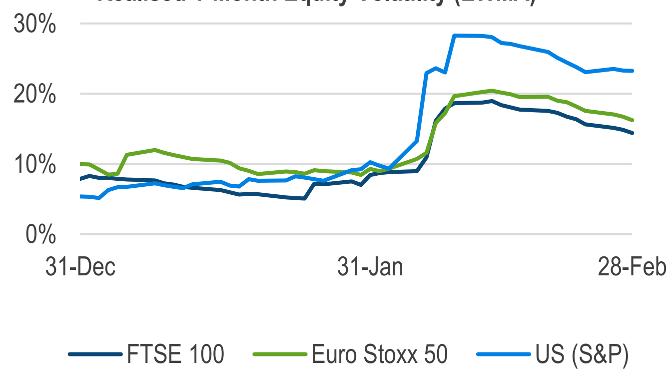
	EU-P	EU-W	BE-P	BE-W	DE-P	DE-W	ES-P	ES-W	FR-P	FR-W	IT-P	IT-W	IE-P	IE-W	NL-P	NL-W	SE-P	SE-W
Avg.	1.6%	1.7%	1.9%	2.3%	1.4%	2.1%	2.1%	1.7%	1.3%	2.8%	1.8%	2.3%	1.6%	3.1%	1.8%	2.9%	1.4%	3.2%
Cur	1.2%	1.7%	1.6%	1.3%	1.4%	2.2%	0.7%	0.1%	1.6%	1.8%	1.2%	0.5%	0.2%	2.3%	1.5%	1.9%	1.6%	1.8%

Volatility and Hedging Cost Monitor

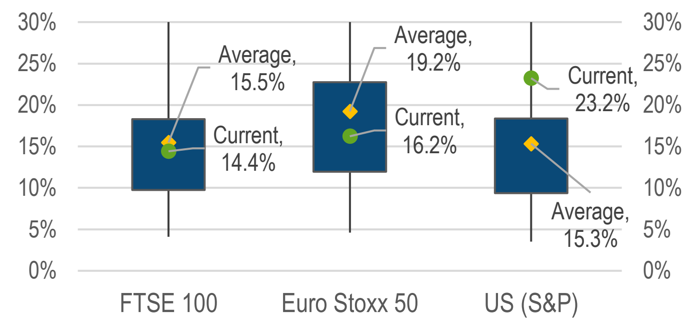
- After months of historically very low realised volatility levels, February saw a sharp rise in the volatility of equity markets.
- The biggest rise was for the S&P which saw realised volatility more than double from 10% in January to 23% in February – putting it at a high level compared to its historical average.
- The volatility risk premium increased sharply for the S&P in February, as the VIX spiked to its highest level since August 2015. This spike was exacerbated by the trading activity of some short-VIX products (some of which experienced price falls of 95%)
- The spikes in the implied FTSE and STOXX were slightly later, and coincided with the rise in realised volatility, and so volatility risk premiums were less impacted. In the case of the FTSE we see the volatility risk premium turn negative in February, as projected realised volatility falls less than implied volatility.
- Expected realised volatility has increased since last month. For the S&P projected short-term realised volatility is higher than for longer terms, given the severity of the recent market volatility.

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

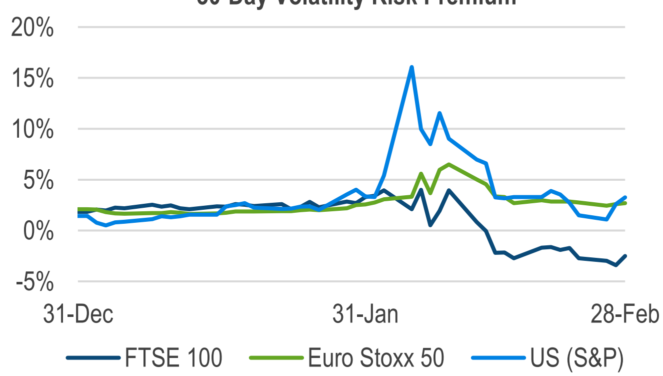
Realised 1-Month Equity Volatility (EWMA)



Max, Min and 50% Range: Last 25 Years



30-Day Volatility Risk Premium



Expected Volatility (Milliman Guarantee Index)