

Market Price Monitor

Local Equity Markets

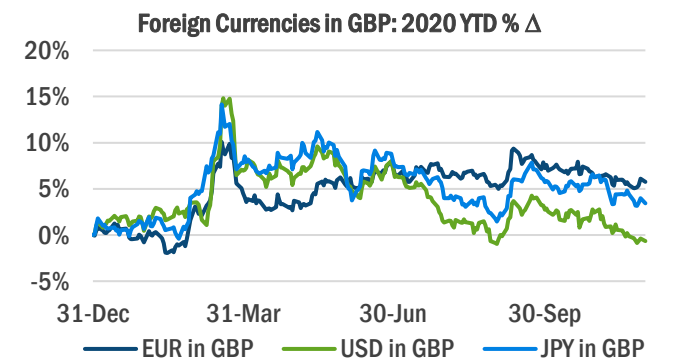
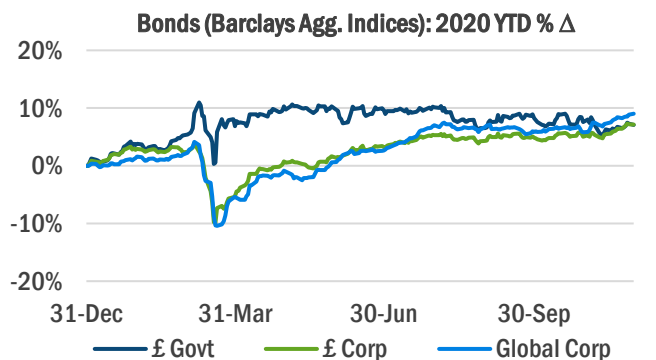
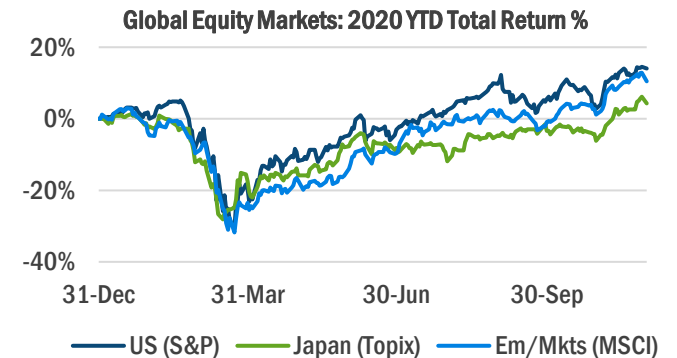
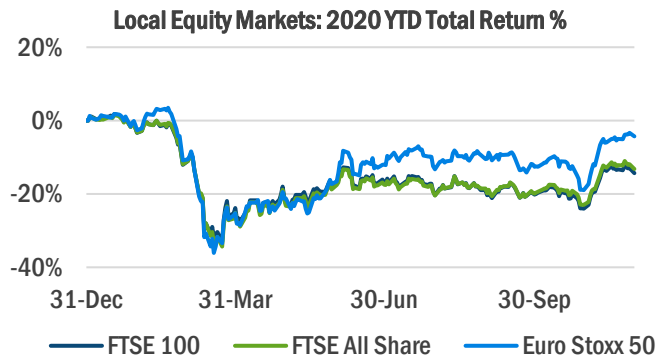
- Equity markets had a very strong performance in November, as investor confidence grew on the back of the announcement of three effective vaccines against COVID-19 and increased political certainty following the US election.
- The FTSE 100 ended the month up 12.7%, but remains 14.4% down year-to-date, with the Brexit deadline fast approaching.
- The Euro Stoxx 50 index outperformed most other major indices, returning 18.1% in the month. The index is now only down 4.3% year-to-date.

Global Equity Markets

- The S&P 500 and Japanese Topix indices were up 10.9% and 11.1% by month-end, respectively. The former is now up 14% year-to-date.
- The MSCI emerging markets index ended the month up 9.3%.

Bond/FX Markets

- The British government bond index lost 0.5%.
- The British and global corporate bond indices were up 2% and 3.1%, respectively.
- The British Pound had a positive performance in November, gaining 3% and 2.7%, against the US Dollar and the Japanese Yen, respectively.
- The British Pound ended the month 0.5% stronger against the Euro.



	Total Returns as of November 30, 2020											
	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	12.7%	12.7%	18.1%	10.9%	11.1%	9.3%	-0.5%	2.0%	3.1%	-0.5%	-3.0%	-2.7%
3 Month	5.7%	6.6%	7.0%	3.9%	9.4%	9.8%	0.5%	2.7%	2.2%	0.3%	0.2%	1.7%
1 Year	-12.0%	-10.3%	-3.1%	17.5%	5.8%	18.8%	5.5%	7.2%	10.0%	5.1%	-3.2%	1.6%
YTD	-14.4%	-13.2%	-4.3%	14.0%	4.3%	10.5%	7.1%	7.1%	9.0%	5.7%	-0.7%	3.4%

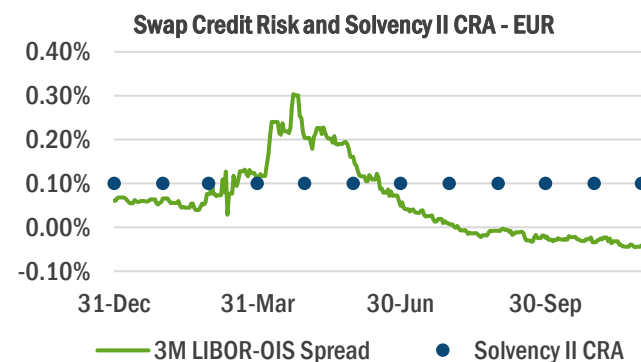
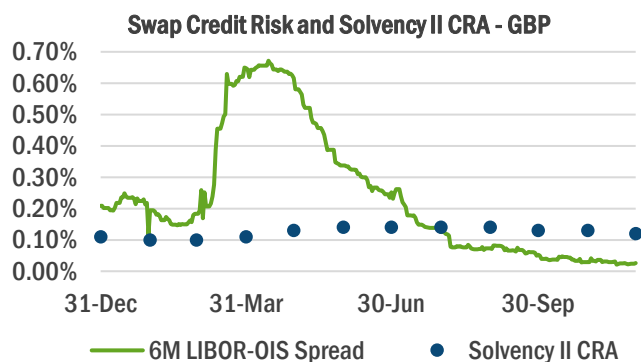
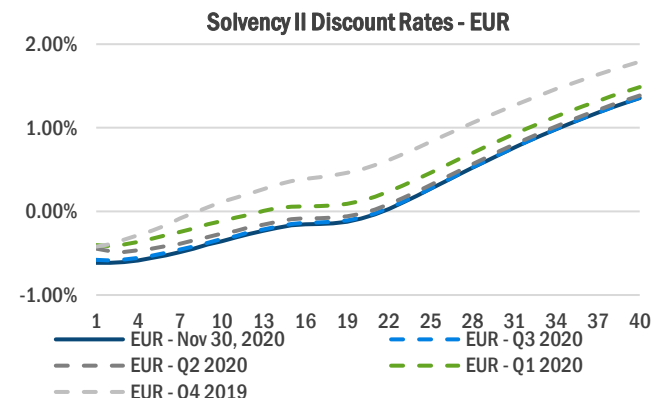
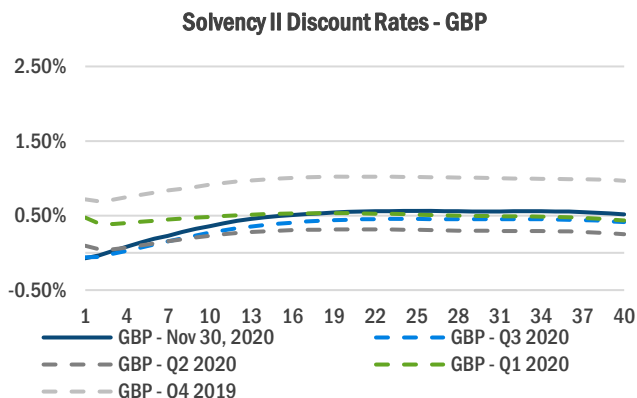
Solvency II Monitor - Rates

Risk Free Rates

- GBP risk-free rates increased at all terms in November, with the 5, 10, 20 and 30-year terms all increasing by 5 basis points.
- EUR risk-free rates also increased marginally at all terms. The biggest increase was at the 5, 20 and 30-year terms, all rising by 3 basis points.

Credit Risk Adjustment

- GBP CRA decreased by 1 basis points to 12 basis points.
- EUR CRA remained unchanged at the floor of 10 basis points.



Change in GBP Discount and CRA (bps)						
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q3 2020	-1	7	9	10	11	-1
Since Q2 2020	-17	4	13	23	26	-2
Since Q1 2020	-55	-28	-13	2	6	1
Since Q4 2019	-79	-64	-56	-47	-45	1

Change in EUR Discount and CRA (bps)						
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q3 2020	-4	-3	-3	-1	0	0
Since Q2 2020	-17	-11	-9	-6	-4	0
Since Q1 2020	-21	-23	-24	-21	-17	0
Since Q4 2019	-19	-33	-47	-59	-52	0

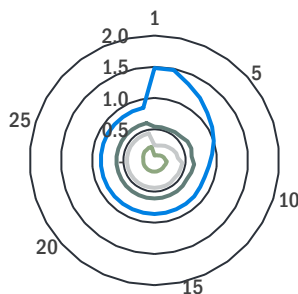
Solvency II Monitor - Spreads

Fundamental Spreads

- There were no material changes since the last report.

Fundamental Spreads %

GBP - Financial

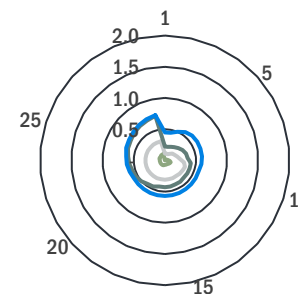


— AAA — AA — A — BBB

GBP Financial Fundamental Spread %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.08	0.12	0.19	0.18	0.22
AA	0.24	0.31	0.44	0.44	0.44
A	0.54	0.57	0.62	0.61	0.61
BBB	1.48	1.14	0.85	0.86	0.86

GBP Financial 'Before Floor' %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.04	0.08	0.16	0.22
AA	0.03	0.06	0.11	0.19	0.26
A	0.06	0.13	0.20	0.33	0.45
BBB	0.15	0.25	0.35	0.50	0.61

GBP - Non-Financial



— AAA — AA — A — BBB

GBP Non-Financial Fundamental Spread %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.01	0.10	0.08	0.10
AA	0.11	0.16	0.34	0.31	0.31
A	0.22	0.29	0.42	0.50	0.73
BBB	0.45	0.59	0.57	0.57	0.74

GBP Non-Financial 'Before Floor' %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.01	0.04	0.07	0.10
AA	0.00	0.04	0.08	0.16	0.24
A	0.03	0.14	0.26	0.50	0.73
BBB	0.11	0.22	0.34	0.56	0.74

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 and as of 30/11/20.

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.

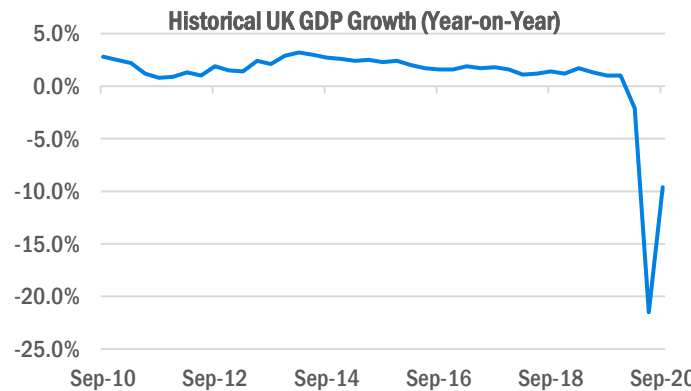
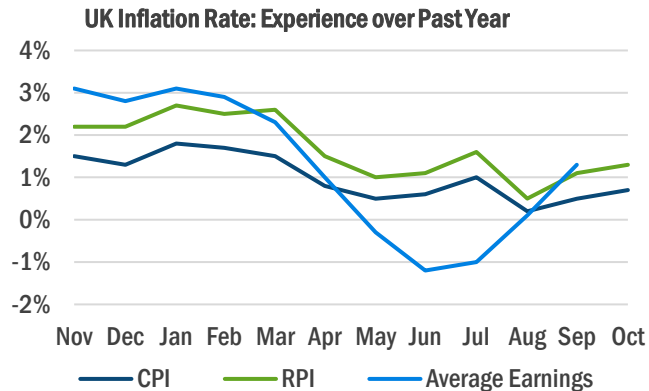
EIOPA fundamental spreads show the credit spread corresponding to the risk of default or downgrading of an asset. This is shown here across financial and non-financial assets, credit quality steps 0-3 and durations of 1-30 years. The data is provided by EIOPA and as of 30/11/20. **Fundamental spread** = 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

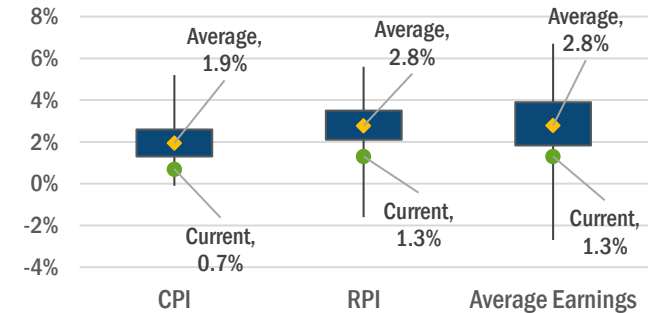
- Both CPI and RPI inflation measures rose by 20 basis points in October to 0.7% and 1.3%, respectively.
- According to the ONS: "Clothing; food; and furniture, furnishings and carpets made the largest upward contributions... These were partially offset by downward contributions... from the recreation and culture, and transport groups."
- UK's average earnings increased by 120 basis points in September, posting a headline figure of 1.3%, after the August reading was revised higher by 10 basis points.
- UK's Q3 2020 GDP growth was -9.6%. The British economy continued to contract year-on-year for the third consecutive quarter, although with some signs of recovery.
- The projected RPI curve was broadly unchanged from the previous month. However, we do notice a sharper drop past the 2029 point in comparison to previous month. This is likely due to the government response to the consultation on the timing of the RPI reform that was published this month.

House of Lords' Report

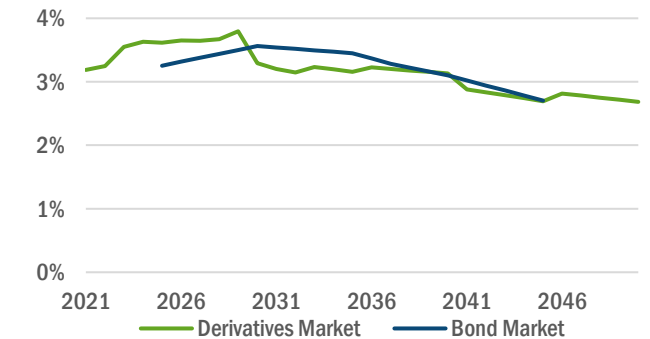
- The government and UKSA have published their responses to their joint consultation on the reform to the RPI methodology.
- The chancellor concluded that the changes should not be implemented before February 2030. The full response can be found [here](#).



Max, Min and 50% Range: Since BoE Independence



Projected UK RPI Inflation (Year-on-Year)



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.

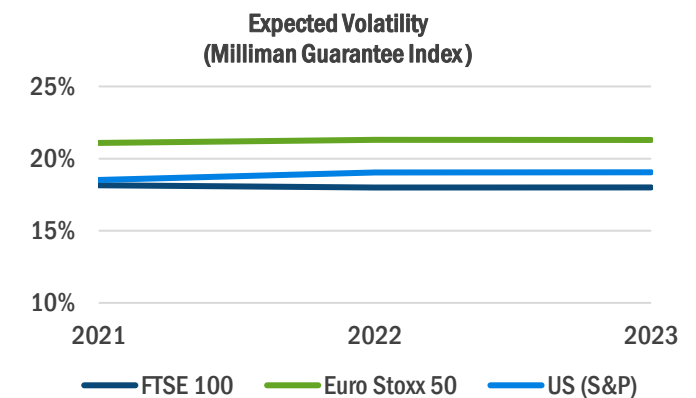
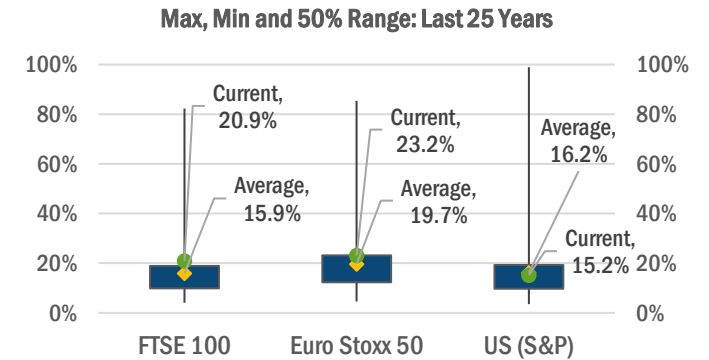
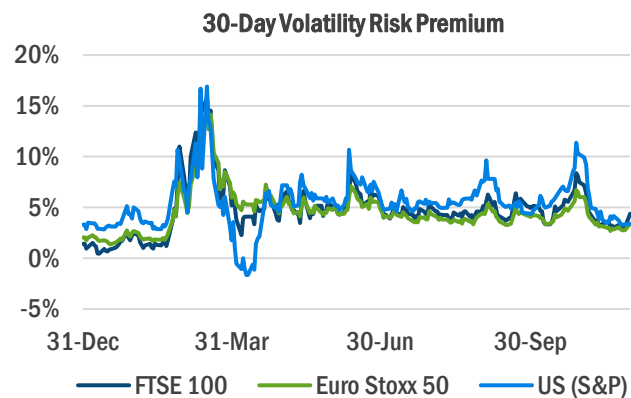
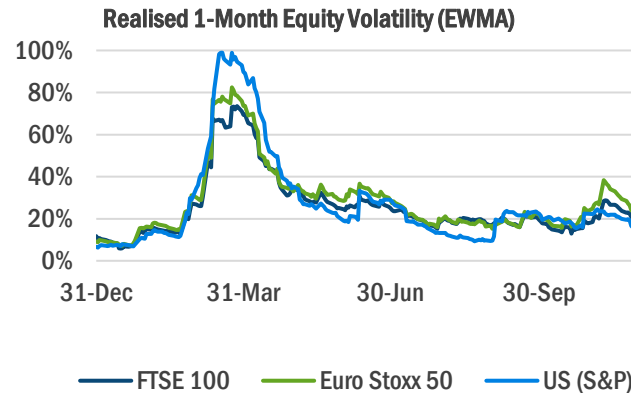
Milliman Financial Risk Management

London Market Monitor – 30 November 2020

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

Volatility and Hedging Cost Monitor

- Realised volatility of the FTSE 100 index increased in November, standing at 20.9% by month-end.
- In contrast, the Euro Stoxx 50 and S&P 500 indices saw a decline in their realised volatility, the former posting a realised volatility of 23.2% and the latter 15.2%. The realised volatility for the S&P is now close to long-term historical average level.
- Volatility risk premiums declined in November as implied volatilities declined sharper than realised volatilities. The FTSE 100 had a risk premium of 4.4% at month-end. Meanwhile, both the Euro Stoxx 50 and the S&P 500 indices posted risk premiums of 3.4%.



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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