

Market Price Monitor

Local Equity Markets

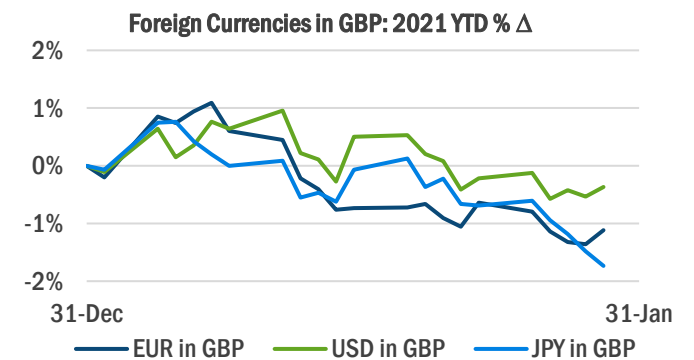
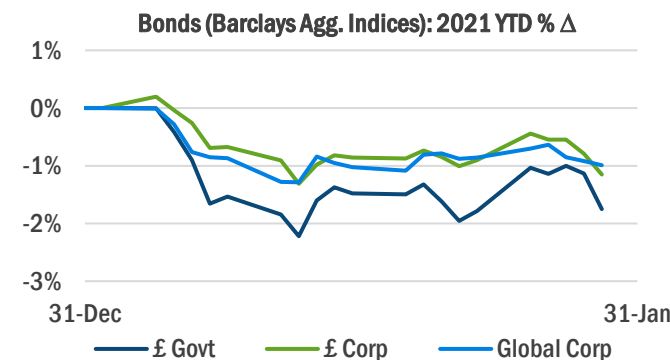
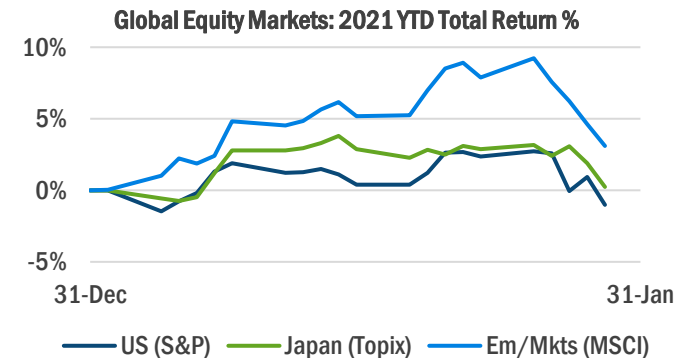
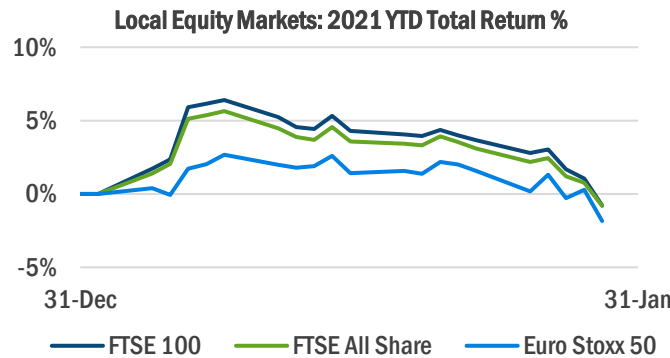
- Equity markets started the year on a positive note, however ended the month negative. This is on the back of concerns over the pace of vaccinations in Europe, and heightened volatility from friction between retail investors and hedge funds.
- Both the FTSE 100 and the Euro Stoxx 50 indices ended the month down, losing 0.8% and 1.8%, respectively.

Global Equity Markets

- Emerging markets continued to outperform their developed counterparts for the second consecutive month, with the MSCI Emerging Markets index returning 3.1%.
- In contrast, the S&P 500 lost 1% during the month. Meanwhile, the Japanese Topix gained 0.2%.

Bond/FX Markets

- The British government bond index was down 1.7% at month-end.
- Both the British and global corporate bond indices suffered losses for the month, down 1.2% and 1%, respectively.
- The British Pound had a strong performance, gaining 1.7% and 1.1% against the Japanese Yen and the Euro, respectively. The pound was 0.4% stronger against the US Dollar by month-end.



Total Returns as of January 29, 2021

	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	-0.8%	-0.8%	-1.8%	-1.0%	0.2%	3.1%	-1.7%	-1.2%	-1.0%	-1.1%	-0.4%	-1.7%
3 Month	15.5%	16.1%	18.0%	14.0%	14.7%	21.0%	-0.6%	2.7%	3.3%	-1.6%	-5.5%	-5.6%
1 Year	-9.2%	-7.5%	-1.8%	17.2%	10.0%	28.3%	3.1%	4.7%	7.6%	5.4%	-3.6%	-0.3%
YTD	-0.8%	-0.8%	-1.8%	-1.0%	0.2%	3.1%	-1.7%	-1.2%	-1.0%	-1.1%	-0.4%	-1.7%

Milliman Financial Risk Management

London Market Monitor – 29 January 2021

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

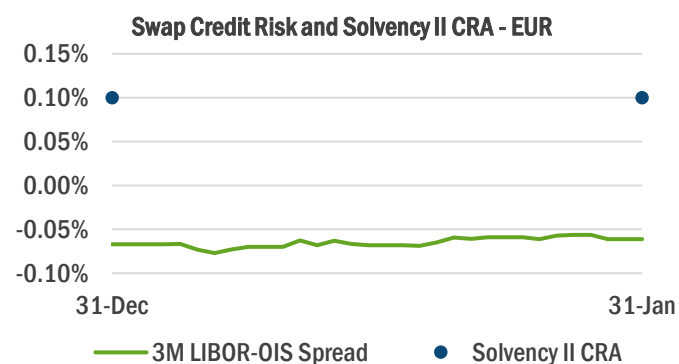
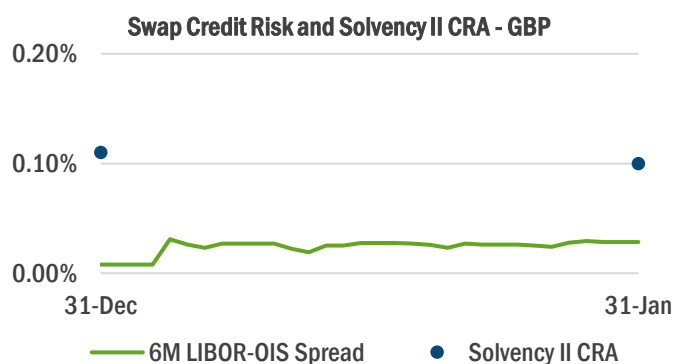
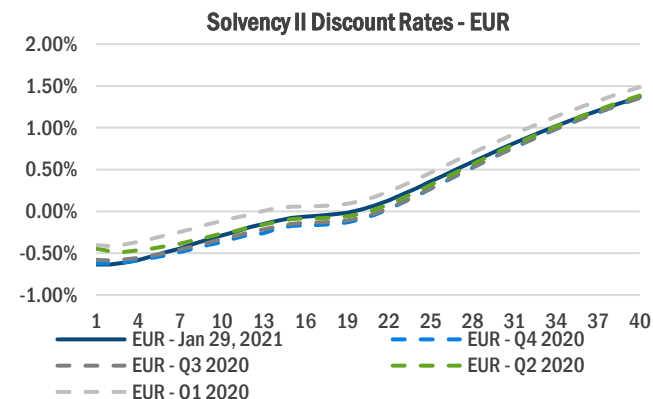
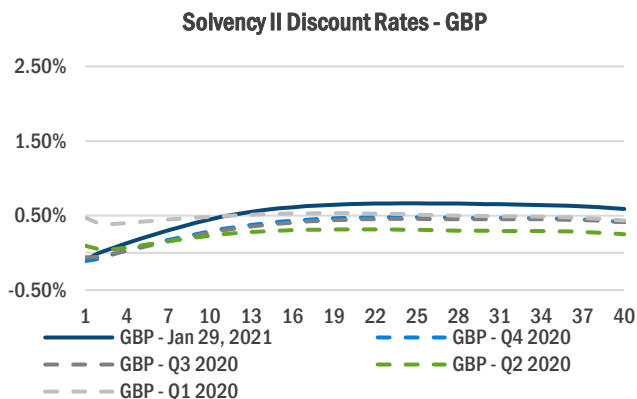
Solvency II Monitor - Rates

Risk Free Rates

- GBP risk-free rates increased at all terms in January, with longer-term rates seeing the largest increase.
- The 30-year GBP risk-free rate increased by 19 basis points, meanwhile the 10 and 20-year rates rose by 16 and 18 basis points, respectively.
- EUR risk-free rates increased for most terms in January, with the exception of the 1-year rate which declined by 1 basis point.
- The 20-year EUR rate increased by 11 basis points. Meanwhile, the 30 and 10-year EUR risk-free rates increased by 6 and 8 basis points, respectively.
- The UFR for both the Euro and GBP was reduced by 15 basis points in January, to 3.60%.

Credit Risk Adjustment

- GBP CRA decreased by 1 basis point in January, meanwhile the EUR CRA remained unchanged. The CRA on both currencies is now floored at 10 basis points.



	Change in GBP Discount and CRA (bps)					
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q4 2020	1	11	16	18	19	-1
Since Q3 2020	-4	12	18	21	21	-3
Since Q2 2020	-19	9	22	34	36	-4
Since Q1 2020	-57	-23	-4	12	16	-1

	Change in EUR Discount and CRA (bps)					
	1Y	Y5	Y10	Y20	Y30	CRA
Since Q4 2020	-1	2	8	11	6	0
Since Q3 2020	-6	-1	4	10	6	0
Since Q2 2020	-19	-9	-2	5	2	0
Since Q1 2020	-23	-21	-17	-10	-11	0

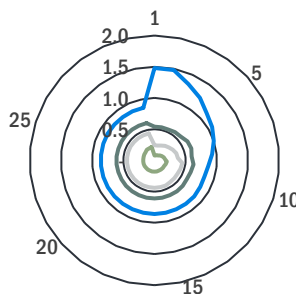
Solvency II Monitor - Spreads

Fundamental Spreads

- There was an increase of 1 basis points in some of the 30-year non-financial spreads.
- In contrast, there was a decrease of 1-3 basis points across some of the financial spreads.

Fundamental Spreads %

GBP - Financial

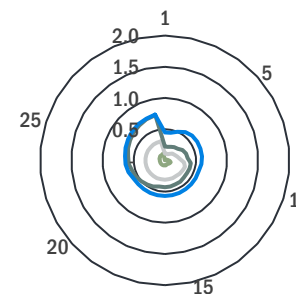


— AAA — AA — A — BBB

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	0.61	0.61	0.61
BBB	1.48	1.13	0.84	0.86	0.86

GBP Financial 'Before Floor' %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.04	0.08	0.15	0.22
AA	0.03	0.07	0.11	0.18	0.26
A	0.06	0.12	0.20	0.32	0.44
BBB	0.15	0.24	0.33	0.47	0.58

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	0.11
AA	0.11	0.16	0.34	0.31	0.31
A	0.22	0.28	0.42	0.50	0.74
BBB	0.45	0.59	0.57	0.57	0.75

GBP Non-Financial 'Before Floor' %					
	1Y	Y5	Y10	Y20	Y30
AAA	0.00	0.01	0.04	0.07	0.11
AA	0.00	0.04	0.08	0.17	0.25
A	0.03	0.14	0.26	0.50	0.74
BBB	0.11	0.22	0.35	0.56	0.75

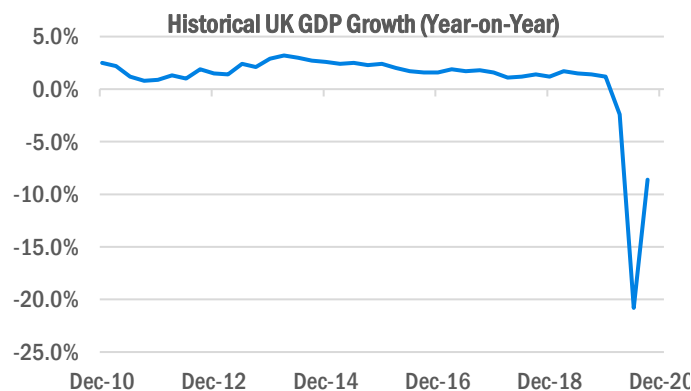
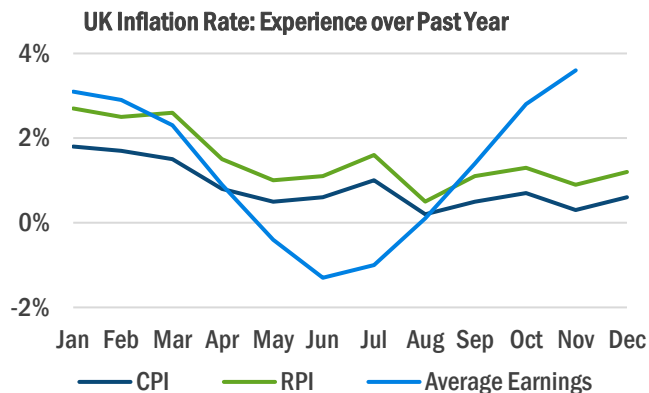
The **Solvency II risk-free discount rates** are based on applying the Smith-Wilson Extrapolation to LIBOR swap rates sourced from Refinitiv and applying the Credit Risk Adjustment as defined in the Technical Specs. The data is provided by EIOPA and as of 31/01/21.

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.

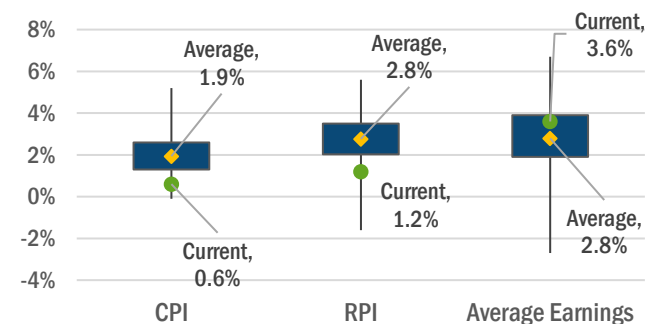
EIOPA fundamental spreads show the credit spread corresponding to the risk of default or downgrading of an asset. This is shown here across financial and non-financial assets, credit quality steps 0-3 and durations of 1-30 years. The data is provided by EIOPA and as of 31/01/21. **Fundamental spread** = 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

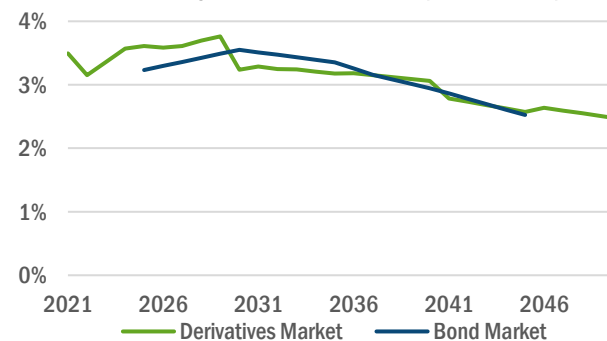
- UK's CPI and RPI inflation rose by 30 basis points in December, posting a reading of 0.6% and 1.2%, respectively.
- According to the ONS: "Rising transport costs, increasing prices for clothing, and recreation and culture items all contributed to help increase inflation; these were partially offset by a downward contribution from falling food and non-alcoholic beverage prices."
- UK's average earnings rose by 80 basis points to 3.6% in November, after the October figure was revised higher by 10 basis points to 2.8%.
- According to the ONS: "Current average pay growth rates are being impacted upwards by a fall in the number and proportion of lower-paid jobs compared with before the coronavirus (Covid-19) pandemic; it is estimated that underlying wage growth – if the effect of this change in profile of jobs is removed – is likely to be under 2%."
- The projected UK RPI curve was broadly unchanged from the previous month.



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:

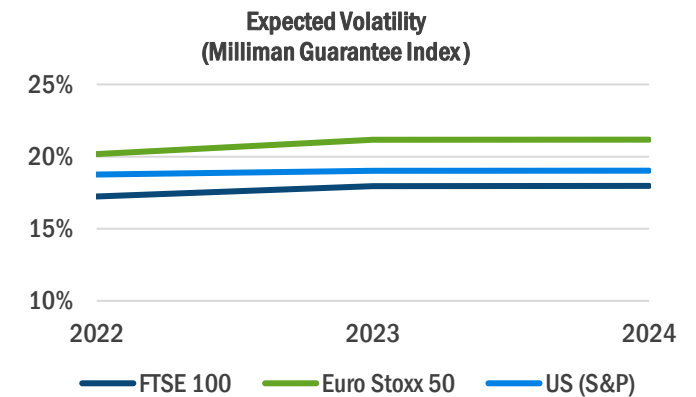
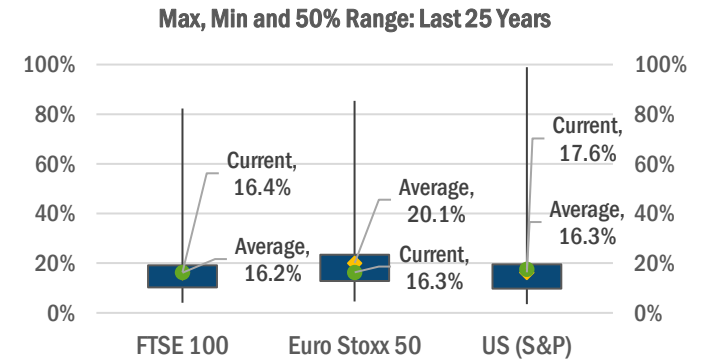
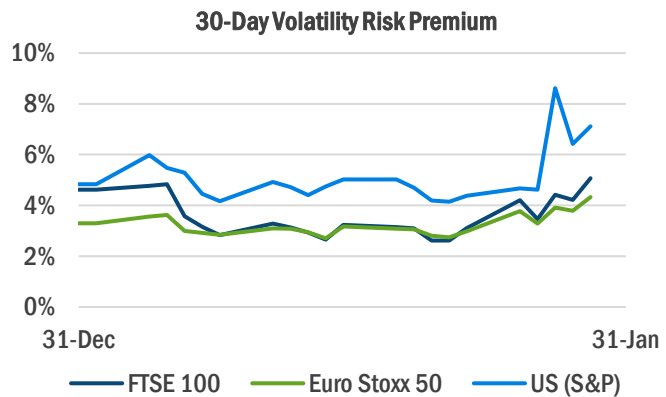
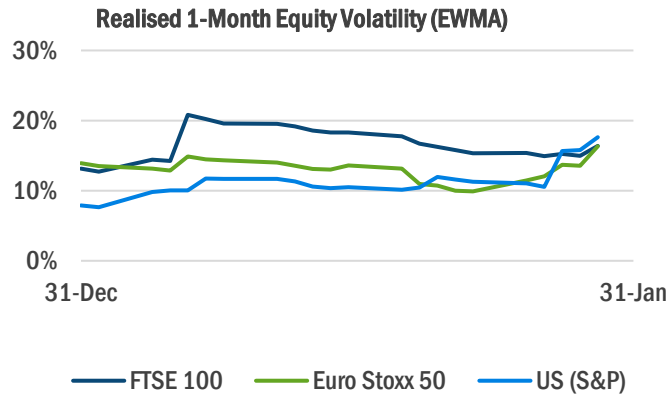
- **Consumer Price Index (CPI)** – measuring the monthly price of a basket of consumer goods and services
- **Retail Price Index (RPI)** – similar to CPI, but the main difference due the addition of mortgage payments, council tax and other housing costs
- **Average Earnings** – measuring the average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

Volatility and Hedging Cost Monitor

- Realised volatility on major indices increased towards the end of the month as markets declined.
- The realised volatility on the FTSE 100 was 16.4% at month-end. Meanwhile, the Euro Stoxx 50 and S&P 500 indices, had a realised volatility of 16.3% and 17.6%, respectively.
- Implied volatilities on major indices rose more than their realised counterparts, resulting in an increase in volatility risk premiums.
- The FTSE 100 had a risk premium of 5.1% by month-end. Meanwhile, the Euro Stoxx 50 and S&P 500 indices had risk premiums of 4.3% and 7.1% at month-end.



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.



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 \$150 billion USD in global assets (31 Dec 2020).

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 three trading platforms around the world (Chicago, London, and Sydney).

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

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

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