

MILLIMAN RESEARCH REPORT

# Milliman

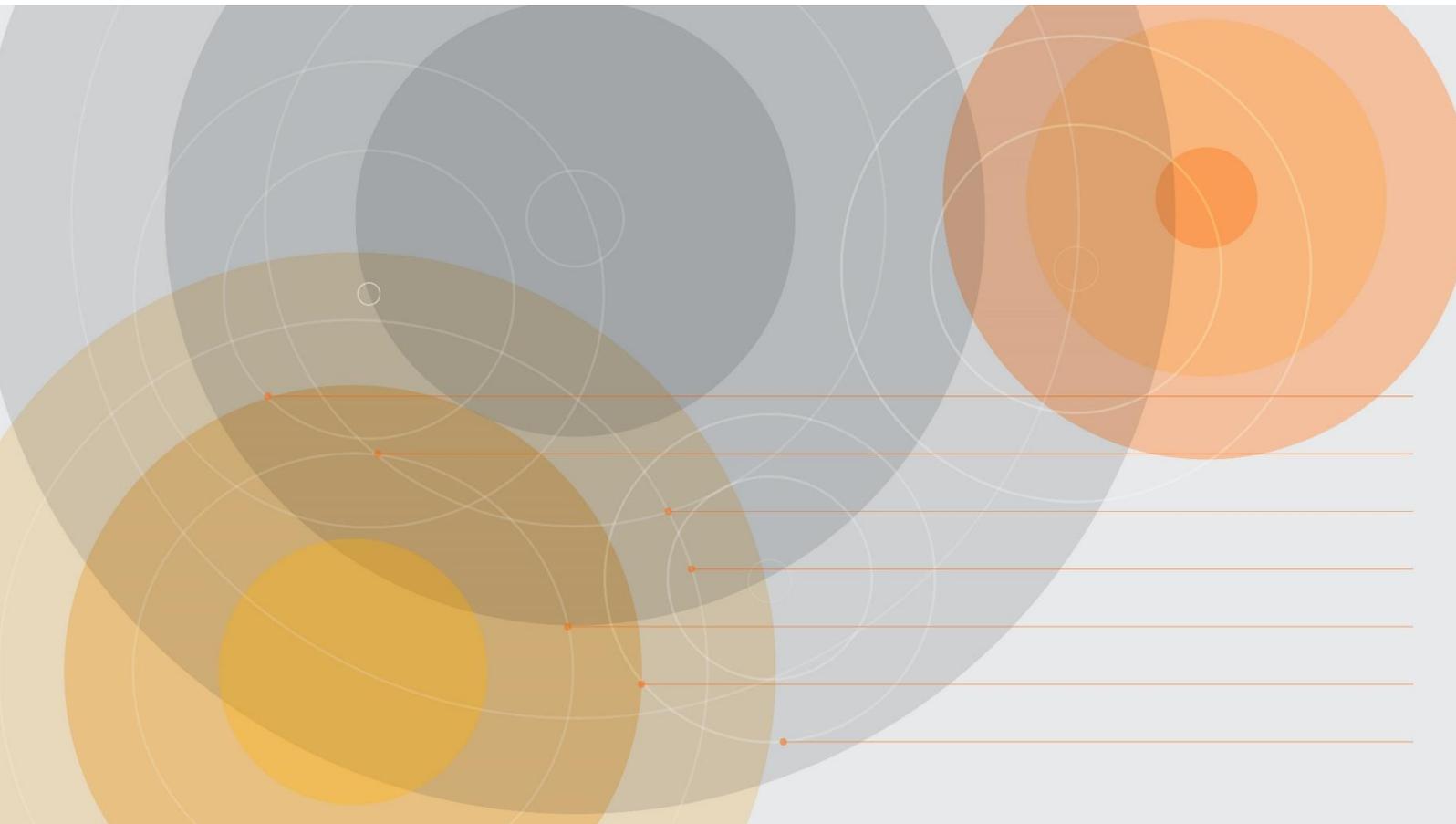
# Derivatives

# Survey 2020

Key findings

November 2020

Neil Dissanayake, FIA FRM  
Victor Huang, FIAA  
Ram Kelkar, CFA  
Peter Lin, FIA FRM  
David Schreiner, FRM  
Nima Shahroozi, PhD FRM  
Brendan Tease



# Milliman Derivatives Survey 2020

*A global survey of derivatives usage in the life insurance industry*

This report sets out a summary of key findings from the 2020 update to Milliman's survey of derivative usage for risk management in the global Life Insurance industry.

Milliman conducts periodic global surveys of life insurance companies, to explore trends in risk management practices and derivative usage. Since the last survey that was conducted in 2017, insurance company risk management and asset liability management (ALM) strategies have continued to evolve in the face of changing market conditions and regulations. In 2020 in particular, the impact of the COVID-19 pandemic has caused turbulence in financial markets and created unprecedented challenges for the industry. The aim of this survey is to explore the extent of the impact of these factors, to identify recent trends in derivative usage, and to offer a perspective on how derivative usage is likely to change in the future.

This year's survey received responses from 54 insurance companies based in North America, Europe, and Asia, including many of the largest companies in the industry. In this report we provide a breakdown of responses by region, to illustrate the many meaningful variations based on the local economic and regulatory environments. North America provided 54% of responses, followed by 28% from Europe, 15% from Asia, and the balance from the rest of the world.

## KEY FINDINGS

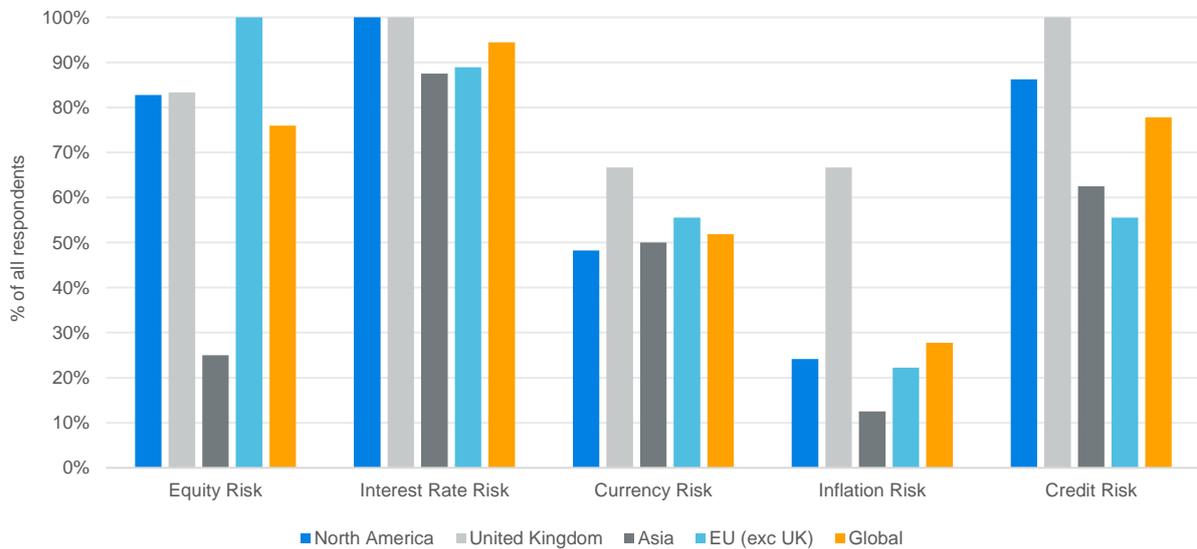
- Hedging programs have largely performed as expected and achieved objectives during the market turbulence in the first quarter of 2020. The vast majority of respondents report hedge program effectiveness in excess of 90% for hedged risks.
- Respondents see a negative outlook on the growth in sales for many traditional insurance products, including guarantee based products such as variable annuities.
- Stable value and Registered Indexed Linked Annuities (RILAs) were the two products where the outlook was the most positive going forward, with most respondents seeing an increase in future sales for these product lines.
- In the context of the impending discontinuation of LIBOR, sovereign bond curves were the most cited choice as replacement risk-free rate (RFR), outside of the EU where a single domestic bond curve does not exist. This could reflect legacy views and the current state of uncertainty about the new benchmark rates, and the situation could change over time as SOFR, €STR, and other replacement RFRs become more established. However, we do note that in practice most companies are using LIBOR or overnight curves for risk-free valuation discount rates, with overnight rates now being the predominant choice for asset valuations.
- In 2020, around 15% to 20% of respondents for USD, EUR, and GBP, and 5% for JPY are discounting their liabilities using an overnight rate curve. Thirty-three percent of respondents for USD, and between 8% to 18% in other currencies, are discounting using an IBOR curve.
- For legacy IBOR swaps, most respondents indicated a preference for relying on the ISDA fallback methodology for existing positions. However, in the UK there is a stronger preference to unwind IBOR swaps and replace them with the new benchmark.
- While most insurers report modelling negative rates, there is a meaningful proportion for all currencies that still exclude negative interest rates, likely due to legacy modelling systems that are not yet able to cope with negative rates.
- Many survey respondents expect to be subject to the uncleared margin rules (UMR) in 2021, with a few as early as this year. For segregation of margin under UMR, "Triparty" agreements are preferred over "Third Party" agreements, and AcadiaSoft, Numerix, and internal systems are the three main choices as technology solutions.
- Amongst respondents subject to reporting under Solvency II, an equal number reported using the Standard Formula as compared to a partial or full internal model calculation for Solvency II Capital.
- We see a mix of hedging objectives when breaking down by Solvency II balance sheet items. Twelve out of the 18 firms responding include the Solvency II best estimate liability (BEL) as a hedging objective, and five of these consider this to be fully explicit. Life Risk SCR is the least likely capital item to be included as a hedge objective, with only seven firms including, and two firms saying this is fully explicit. Although more firms include the Risk Margin, only one firm says this is fully explicit as a hedge objective.

- With regards to hedging beyond the Last Liquid Point (LLP), for those that have material risk, the majority is fully focused on hedging economic risk exposures, either in full or partially. Only two respondents chose to focus fully on hedging the Solvency II risk exposure only, which are both UK insurers, where in practice the impact of extrapolation is in any case limited.
- Considering benchmark reform for GBP, the switch from GBP LIBOR to reformed SONIA will result in a switch in benchmark for the underlying Solvency II curve, and a question mark as to whether the Credit Risk Adjustment (CRA) should be applied to make it more representative of risk-free. All UK respondents to this question both prefer and expect the new GBP Solvency II curve to be without a CRA. In terms of switching, most prefer a phased switch with a single weight across all terms. Although, most expect an instant switch to occur.
- For the EUR benchmark reform, we asked about three possible Solvency II curves: (1) EURIBOR based with a CRA; (2) €STR based with a CRA; and (3) €STR based without a CRA. Results were spread across all three choices. The EURIBOR curve with an €STR-based CRA, was the curve most expected. Although, there is less consensus over the preferred choice of EIOPA curve. In terms of switching, an instant switch is generally preferred for EUR.
- Derivatives usage is expected to increase in coming years as a result of market volatility and its impact on valuations, plus lower interest rates and regulatory changes.
- For FIA hedging there has been an increase in use of exchange traded options (ETOs) for dynamic hedging, which are now almost as popular as over-the-counter (OTC) options.
- More insurance companies are managing risk on an intra-day basis, with 60% of the respondents opting to do so either during cash market hours or on a 24-hour basis up from 44% in 2017.
- Economic P&L volatility continues to be the most important objective for hedging programs, while GAAP volatility and regulatory capital are also key objectives for a significant proportion of firms. However, for many regulatory environments, management is likely to optimize across multiple measures, particularly in Europe where solvency regulation has become more market-consistent.
- The survey indicates a definite shift from a negative duration gap to positive duration since the last survey in 2017, suggesting heightened concerns around interest rates continuing to fall.
- There has been an increase in the usage of cleared interest rate swaps globally and these instruments are becoming more common as compared to bilateral swaps.
- Bloomberg, Numerix, MathWorks, Murex, Sungard, and QuantLib are the most commonly used systems for front-office, middle-office, and back-office applications.

## Profile of Survey Respondents

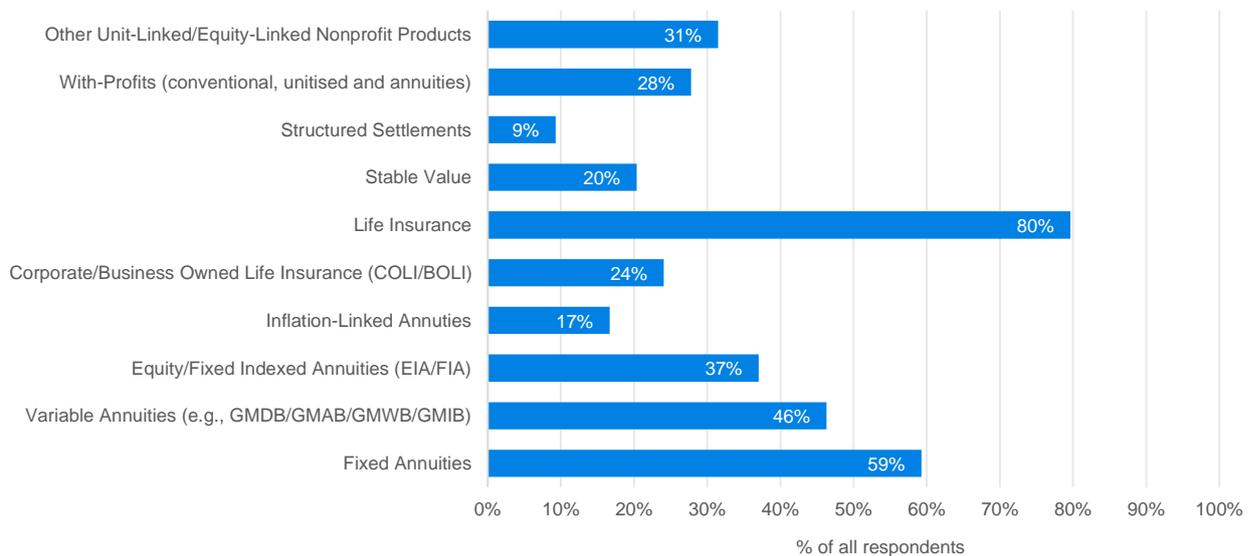
Globally, interest rates, equity, and credit are the key market risks that insurance companies face (Chart 1), followed by currency risk and inflation risk. Regionally, we see that equity risk is viewed as less material in Asia, while inflation risk is considered more material in the UK, compared to the global averages.

**CHART 1: BREAKDOWN OF MATERIAL MARKET RISKS**



Respondents report a diverse mix of product offerings, with Life Insurance and Fixed Annuities representing the two most common products across all geographies (Chart 2).

**CHART 2: BREAKDOWN OF PRODUCTS OFFERED (GLOBAL)**

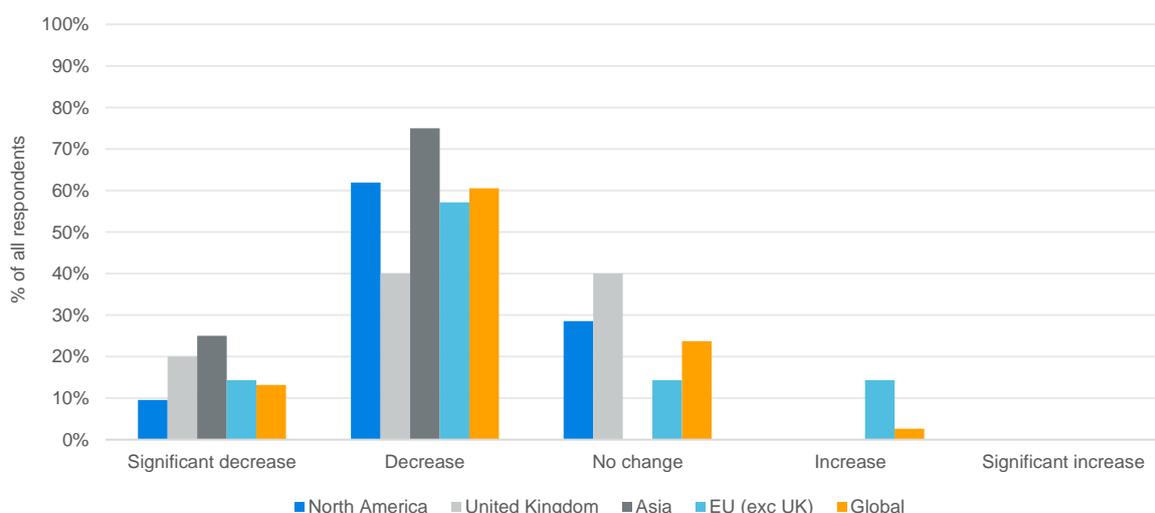


## Hot Topics

### PANDEMIC CRISIS

The first half of 2020 saw an unprecedented level of market turmoil as the world began to deal with the far-reaching implications of the coronavirus pandemic. Such extended periods of elevated market volatility put a spotlight on insurers' ability to remain solvent and profitable. Hedging the guarantees embedded in insurance products such as variable annuities has become a core competency for insurance companies for whom an effective hedging program is critical from a standpoint of both solvency and earnings stability. With regard to prospects for new business, many have a pessimistic view on new business growth for the second half of 2020 (Chart 3). There is some degree of resilience in North America, UK, and EU, but the Asian markets are particularly pessimistic.

CHART 3: OUTLOOK FOR OVERALL NEW BUSINESS GROWTH IN H2 2020, COMPARED TO PRE-PANDEMIC FORECASTS

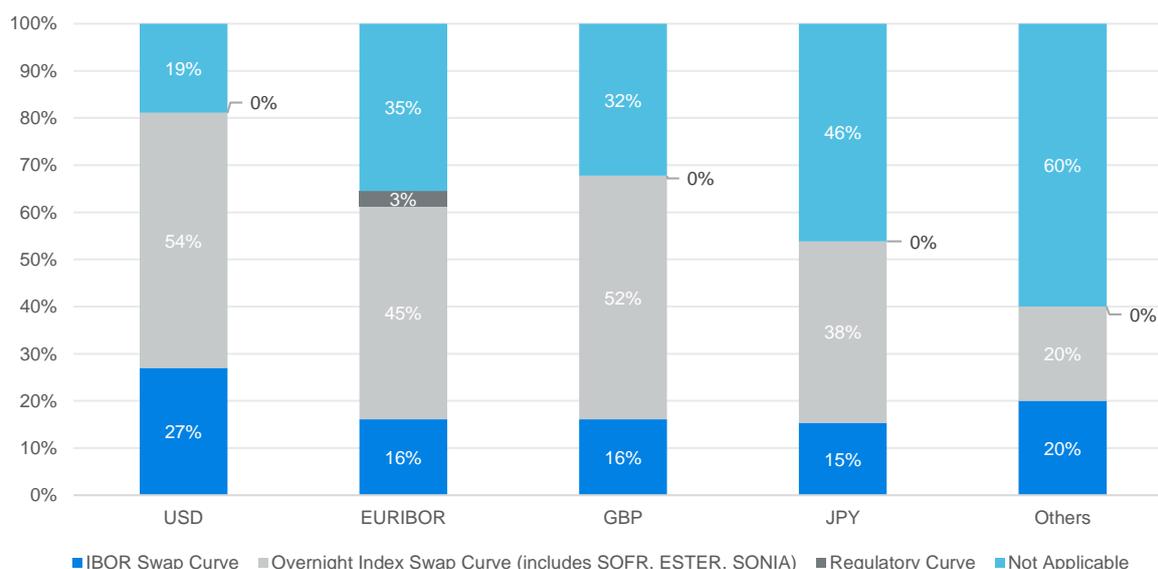


### BENCHMARK REFORM

In the context of the impending discontinuation of LIBOR, sovereign bond curves were the most commonly cited choice as a replacement risk-free rate (RFR). This could be a reflection of legacy views and the current state of uncertainty about the new benchmark rates, and the situation could change over the next year as SOFR, €STR, and other replacement RFRs become more established. The Solvency II discount curve is the preferred curve in use for EU based insurers, and it is also used by many UK and Asian insurers. We do note that a small proportion of respondents did believe there was no such thing as risk-free — i.e., every asset, counterparty or funding approach comes with a degree of risk. The “big bang” switch to €STR discounting as of July 2020 and SOFR discounting as of October 2020 at the major CCPs (LCH and CME) for margining of cleared derivatives is prompting many insurers to reconsider their choice of risk-free curves for valuation. In the case of uncleared derivatives, there is additional complexity since the discounting would depend on underlying ISDA and CSA terms, and post-LIBOR terms and conditions would have to be negotiated on a bilateral basis.

Respondents to the 2020 survey indicated that many have now switched to using the OIS curve instead of IBOR for valuing interest rate derivatives (Chart 4), which is a change from the survey findings in 2017 when only 38% used OIS discounting for asset valuations and 14% were planning to switch, with 48% having no plans to change. In 2020, only 27% of respondents for USD and between 15% to 20% in other currencies are discounting using an IBOR curve.

**CHART 4: VALUATION DISCOUNT RATE FOR INTEREST RATE DERIVATIVES**



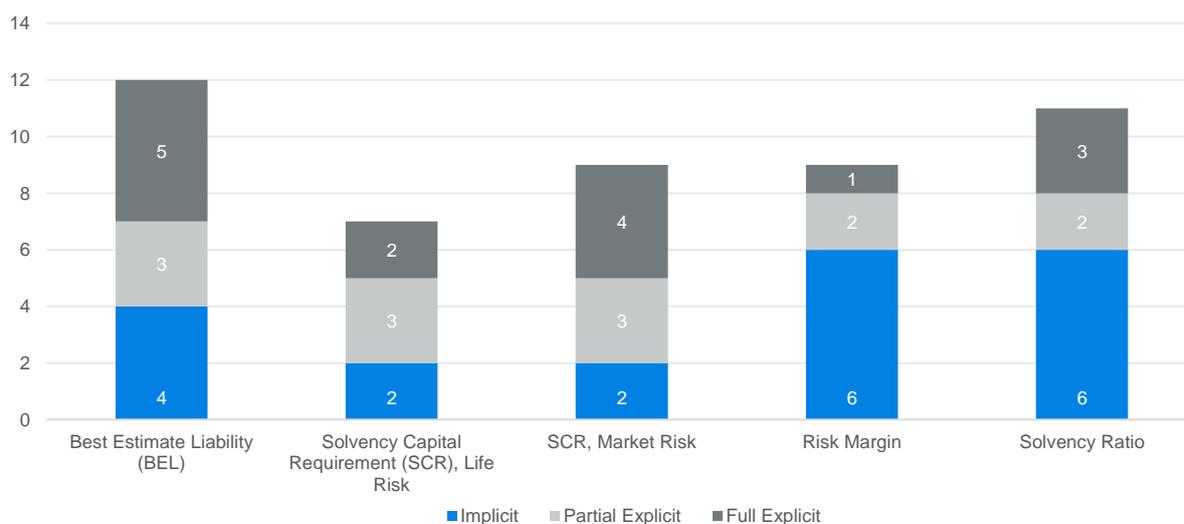
The survey results were compiled in Q2 of this year. Two-thirds of the global industry have commenced LIBOR transition planning. Progress is most advanced in North America and the UK, where most have commenced internal discussions and a fifth have made a plan and/or allocated budget and resources. Progress is least advanced in the EU and Asia where most have yet to start internal discussions.

**SOLVENCY II**

Of the 18 respondents that report under Solvency II, five of which were outside the EU, seven companies reported using the Standard Formula, two the partial internal model (PIM), four the full internal model (FIM), and three specified other basis for calculation of their Solvency II capital.<sup>1</sup> One-third of respondents considered Solvency II to be extremely important in their hedging decisions (with a strong UK bias), with three-quarters of respondents considering Solvency II to be at least moderately important.

We see a mix of hedging objectives when breaking down by Solvency II balance sheet items (Chart 5):

**CHART 5: SOLVENCY II HEDGE OBJECTIVES**

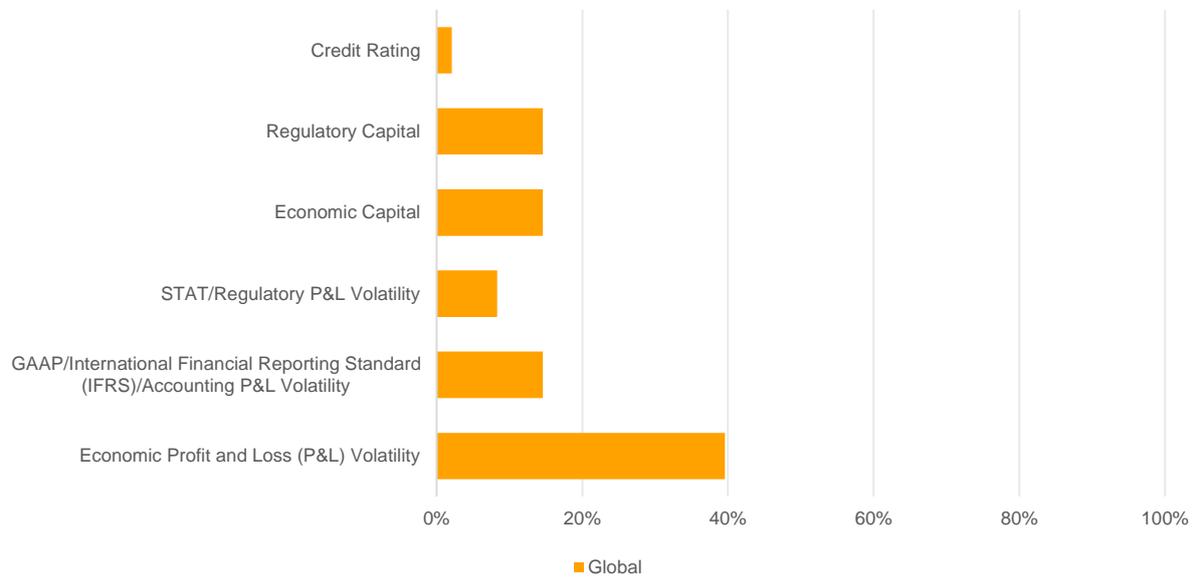


<sup>1</sup> One respondent indicated the use of partial internal model for counterparty and spread risk. One other indicated a SII ratio based on local statutory RBC under equivalence, in parallel to running a full internal model to manage their economic risk appetite.

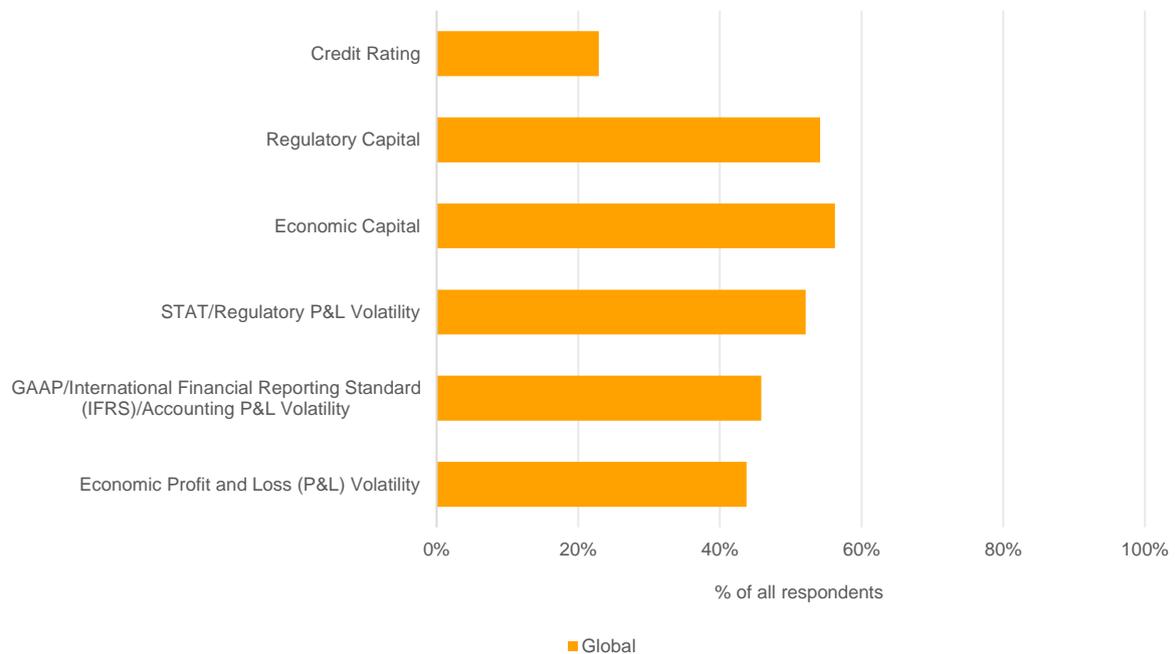
## Hedging Strategies

Economic P&L volatility continues to be the most important objective for most hedging programs as expected (Chart 6 and 7). GAAP volatility and regulatory capital are also key objectives for a significant proportion of firms.

**CHART 6: MOST IMPORTANT HEDGING OBJECTIVE**



**CHART 7: MEASURES INCLUDED IN HEDGING OBJECTIVE**

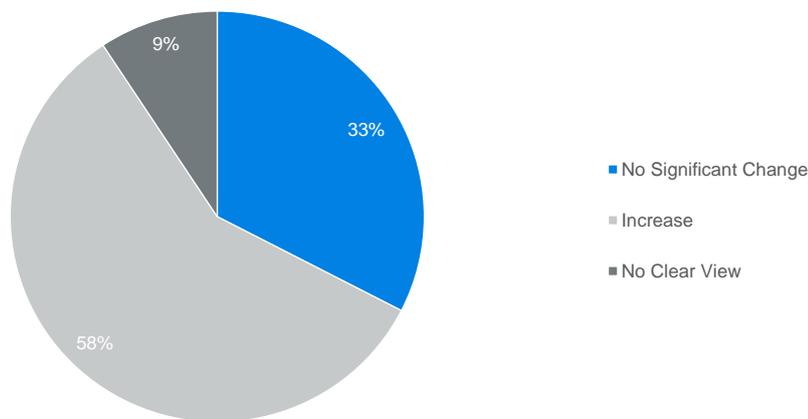


## Future Trends

With regard to views on derivatives usage over the next two years, we see that higher usage is projected as compared to the 2017 survey, with 58% of respondents expecting an increase in derivative usage over the next two years, and none seeing a reduction (Chart 8). This is an important finding, indicating that insurers see derivatives as a more valuable tool for hedging than they have done in past years. Around a third of the respondents, however, saw no significant change over the next two years.

We received many comments on the key reasons driving change in derivatives usage. One of the key drivers amongst insurers is market volatility, which is not surprising considering the events of 2020 and its impact on valuations. Lower interest rates, new business and sales, and regulatory purposes were also mentioned as some of the key drivers.

CHART 8: VIEWS ON TOTAL DERIVATIVES USAGE OVER THE NEXT TWO YEARS



**Important Note:** This document includes selected highlights of the Milliman Derivatives Survey findings and key conclusions based on survey data.

Please contact Milliman for more information about the survey findings, and to participate in this survey in future years. All survey participants receive a full copy of the survey report with additional information including detailed survey results and analysis of survey findings.

The information, products, or services described or referenced herein are intended to be for informational purposes only. This material is not intended to be a recommendation, offer, solicitation or advertisement to buy or sell any securities, securities related product or service, or investment strategy, nor is it intended to be to be relied upon as a forecast, research or investment advice.

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. Investment involves risks. 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. Investing in foreign securities is subject to greater risks including: currency fluctuation, economic conditions, and different governmental and accounting standards.

There are risks associated with investing in fixed income securities, including interest rate risk, and credit risk.

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. Information herein has been obtained from sources we believe to be reliable but neither Milliman Financial Risk Management LLC ("Milliman FRM") nor its parents, subsidiaries or affiliates warrant its completeness or accuracy. No responsibility can be accepted for errors of facts obtained from third parties.

The materials in this document represent the opinion of the authors at the time of authorship; they may change, and are not representative of the views of Milliman FRM or its parents, subsidiaries, or affiliates. Milliman FRM 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 FRM. Milliman Financial Risk Management LLC is an SEC-registered investment advisor and subsidiary of Milliman, Inc.

There are risks associated with futures contracts. Futures contract positions may not provide an effective hedge because changes in futures contract prices may not track those of the securities they are intended to hedge. Futures create leverage, which can magnify the potential for gain or loss and, therefore, amplify the effects of market, which can significantly impact performance.



Milliman is among the world's largest providers of actuarial and related products and services. The firm has consulting practices in life insurance and financial services, property & casualty insurance, healthcare, and employee benefits. Founded in 1947, Milliman is an independent firm with offices in major cities around the globe.

[milliman.com](http://milliman.com)

#### CONTACT

**Neil Dissanayake**  
[neil.dissanayake@milliman.com](mailto:neil.dissanayake@milliman.com)

**Victor Huang**  
[victor.huang@milliman.com](mailto:victor.huang@milliman.com)

**Ram Kelkar**  
[ram.kelkar@milliman.com](mailto:ram.kelkar@milliman.com)

**Peter Lin**  
[peter.lin@milliman.com](mailto:peter.lin@milliman.com)

**David Schreiner**  
[david.schreiner@milliman.com](mailto:david.schreiner@milliman.com)

**Nima Shahroozi**  
[nima.shahroozi@milliman.com](mailto:nima.shahroozi@milliman.com)

**Brendan Tease**  
[brendan.tease@milliman.com](mailto:brendan.tease@milliman.com)