

Indexed product: Product and hedging considerations

Julian Man
Reggie Xu
Clement Bonnet
Joshua Ho
Jaden Chiu



Following our recent publications regarding the development of index universal life (IUL) and fixed indexed annuity (FIA) products across Asia, this paper focusses on some of the key investment and hedging considerations relevant to these indexed products.

Based on our ongoing observations of the evolution of indexed products across Asian markets, several key issues have emerged concerning investment and hedging strategies:

- **Limited experience with equity hedging:** Prior to the advent of indexed products, insurers in certain Asian markets rarely engaged in systematic equity derivatives hedging, which meant they lacked extensive experience in integrating hedging strategies with product administration and liability management. As a result, most insurers have launched indexed products using straightforward crediting methods such as annual point-to-point or averaging, since implementing more sophisticated crediting types would necessitate advanced derivatives and hedging expertise. To bridge this skills gap, insurers are increasingly seeking external support through reinsurance arrangements, banking and independent hedging advisors solutions.
- **Hedging and counterparty risks considerations:** Insurers are actively evaluating various hedging solutions to determine which risks should be retained in-house and which risks should be transferred externally, as well as assessing the counterparty risks associated with each approach. For instance, decisions must be made regarding whether the entire asset portfolio backing the indexed products or only the management of the index account should be transferred to external parties. The availability of suitable counterparties is also a concern, as market capacity and risk appetite for these transactions may fluctuate.
- **Balancing risk and profit retention levels:** There is ongoing debate within insurance companies regarding the optimal level of risk and profit to be retained, with a key consideration being around the target level of investment spread for the index account to be kept in-house (for the index account, the investment spread is defined as the difference between the hedge budget [i.e. return from assets backing the portfolio] and the cost of hedging the index account).

In this paper, we first examine two key aspects of the indexed product design, namely the choice of the crediting rate strategy and the selection of the underlying index. We then discuss the various hedging frameworks available, as well as the role of risk reporting, and performance and attribution analysis. We finally compare and contrast various hedging solutions available for indexed products.

Crediting types

Annual point-to-point, which credits interest based on the change in the underlying index between two specific dates, and averaging methods (such as daily and monthly Asian averaging, where interest is determined by averaging index values over a set period) remain popular in Asia due to limited hedging capabilities. However, if we consider the broader global market, a wider variety of crediting types is being used outside Asia. Some examples include:

- **Monthly sum caps (cliquets):** Also known as cliquet or ratchet structures, this method sums monthly index returns, each subject to a cap, over the crediting period. It allows policyholders to benefit from positive monthly performance whilst limiting exposure to extreme market movements. The structure typically features a global floor (e.g., 0%) applied at the end of the term, but no local floor on individual monthly returns, meaning short-term losses can offset capped gains within the accumulation period.
- **Binary/digital/trigger:** In this structure, interest is credited if the index meets a specific condition or "triggers" a predefined event (e.g., if the index increases over the period). The credited amount is fixed and does not depend on the magnitude of the index change.

- **Rainbow:** A rainbow crediting strategy involves multiple indices, with returns based on the best-performing index or a combination thereof. This diversification can help optimise returns and manage risk across different market segments.
- **High-water mark:** With this approach, interest is credited based on the highest index value observed during the crediting period ("lookback"), rather than just the start and end dates. This can enhance returns in volatile markets by capturing peak performance. Observation frequency is typically quarterly, depending on the crediting term.

Globally, and based on our observations, the recent trend in crediting strategy design reflects a shift in priorities. Historically, many structures focussed on lowering hedge costs whilst preserving upside participation. More recently, however, there has been an increasing emphasis on improving the level of certainty to policyholders, even if that means sacrificing some upside potential. This shift is largely driven by the higher global interest rate environment, which expands option budgets and allows carriers greater flexibility to allocate value toward more protections and more stable payoff profiles whilst still offering competitive returns.

Underlying index choices

BENCHMARK INDICES (E.G., S&P 500, NASDAQ)

Benchmark indices such as the S&P 500 and Nasdaq are transparent, widely recognised and supported by very liquid option markets, which makes hedging and pricing more straightforward. The challenge is that their volatility can be high and unstable, and in a low-interest-rate environment, insurers have less budget for option purchases, so the high cost of hedging often leads to lower participation rates and less competitive products.

CUSTOMISED VOLATILITY-CONTROL INDICES

Customised volatility-control indices are rules-based strategies that dynamically adjust exposure to equities, bonds, or cash to maintain a target level of volatility.

Many indexed product indices are structured on an excess-return basis, meaning their performance reflects only the return generated by the underlying risky assets above the prevailing risk-free rate. By excluding the risk-free accrual that would otherwise be earned on collateral or cash holdings, this structure isolates the pure market-risk component of returns. It helps stabilise option costs and reduces sensitivity to interest-rate movements.

Through volatility-control features, these indices enable insurers to offer more consistent and competitive participation rates. The trade-off is that the methodologies are often complex, embedded fees and rebalancing frictions can weigh on long-term performance and transparency is generally lower than with traditional benchmarks.

- **Competitive trading indices:** These are licensed from an index provider and can be hedged with multiple banks. They provide insurers with flexibility and allow competitive dealer pricing, though they still involve methodology complexity and are often hard to differentiate in a crowded market.
- **Bespoke indices:** These are designed with and hedged exclusively through a single bank. They offer a strong marketing story and product differentiation for carriers, but also create dependency on one counterparty and reduce flexibility if terms or pricing change. In addition, some bespoke indices may lack transparency in their construction and ongoing management, making them harder to evaluate and explain.

In the US market, benchmark indices, such as the S&P 500, remain the most commonly used underlyings. Volatility-control indices saw much higher adoption during the low-interest-rate environment, at times almost representing close to 50% of new product premiums. As interest rates increased and option budgets improved, policyholders have shifted back toward benchmark indices and moved to higher volatility target equity-based indices. In Japan, however, volatility-control indices are far more prevalent, as the indexed market is largely driven by the bancassurance channel and investment banks have played a central role in promoting them.

Across both markets, experience suggests that a balanced product offering which combines well-known benchmark indices with transparent, rules-based volatility-control indices tends to be more resilient across market cycles. In particular, clarity and transparency in volatility-control index construction have proven important for risk management and long-term product viability.

Hedge frameworks

When evaluating hedging strategies, insurers need to assess the trade-offs between different approaches. Each framework differs in terms of cost, operational complexity, hedge effectiveness and sensitivity to market conditions.

- **Static hedging**

Static hedging involves setting up a portfolio of hedging instruments at the outset of each crediting period (e.g., one year for annual point-to-point) with little to no rebalancing. This approach is straightforward and easy to implement, making it attractive for products with simpler crediting types and stable liability profiles. The profit and loss (P&L) associated with static hedging is generally less volatile than with dynamic hedging programs, as positions are not frequently adjusted in response to market movements. However, static hedging can be less flexible in managing policyholder behaviour, such as lapses, surrenders, or other policy options, which may deviate from initial assumptions and impact the effectiveness of the hedge. Additionally, other than for simple crediting rate options, static hedging relies heavily on the availability and pricing of over-the-counter (OTC) dealer markets for customised derivatives. This reliance can present operational and cost challenges, especially if market conditions change and dealer markets become expensive or illiquid.
- For volatility-control indices, static hedging is a common approach. However, effective implementation requires a clear understanding of how dealers price the hedge positions, which typically include embedded assumptions around volatility premiums, rebalancing costs, financing costs and gap risk. Limited transparency in hedge pricing can lead to incremental costs being embedded in option premiums, which may not be immediately visible but can materially reduce product profitability and competitiveness over time. Careful review of hedge economics and dealer pricing is therefore critical to maintaining the cost efficiency of volatility-control indexed products.
- **Dynamic hedging**

Dynamic hedging utilises liquid, standardised market instruments, such as index futures and vanilla options, to adjust hedge positions in response to changes in liability exposure and market conditions. This approach is well-suited to more complex indexed products, particularly those with features such as path dependency features or varying market sensitivities. By systematically rebalancing the hedge portfolio, insurers can more accurately track actuarial experience, such as actual policyholder behaviour and market movements, leading to improved risk mitigation over time. Dynamic hedging offers the flexibility to support any product design, regardless of the availability or pricing of OTC markets, which can be particularly valuable in volatile or stressed market environments. In addition, dynamic hedging enables diversification benefits across crediting strategies, and by managing the net aggregate exposure rather than hedging each strategy in isolation, insurers can reduce overall execution costs and improve capital efficiency. Although dynamic hedging has the potential to achieve long-term cost savings compared to static approaches, it requires significant expertise and operational resources to manage the complexity and computational demands of frequent rebalancing. Additionally, the P&L for dynamic programs can be more volatile, as the hedge positions are sensitive to short-term market fluctuations.
- **Hybrid hedging**

Hybrid hedging strategies combine the strengths of both static and dynamic approaches to create a more adaptable and resilient risk management framework. In a hybrid program, a static backbone is established mainly using one-year hedging instruments, whereas a dynamic overlay is added to adjust the overall hedge profile in response to changing market conditions, relative value opportunities and evolving risk appetite. Furthermore, hybrid hedging is better equipped to handle unpredictable policyholder behaviour, such as lapses and benefit elections, by dynamically adjusting the overlay as needed. This flexible approach enables insurers to maintain effective hedges whilst managing operational complexity and market risks.

The role of risk reports in static and dynamic hedging

A critical component of effective hedging for indexed products is the ongoing illustration and management of asset and liability exposures across the main market sensitivities—commonly referred to as the Greeks: Delta (which measures sensitivity to value due to 1 percentage change in equity index), Gamma (which measures sensitivity to the delta due to 1 percentage change in equity index) and Vega (which measures sensitivity to value due to 1 percentage change in the level of volatility). By incorporating these metrics, the risk report offers a quantitative framework for assessing how well the hedging instruments match the underlying liabilities. This approach supports effective risk management as market conditions and policyholder behaviours change, making it valuable for both static and dynamic hedging strategies.

- **Static hedging:** In static hedging programs, hedging trades are established at inception and generally held constant throughout the hedging period. However, as market variables shift and policyholder behaviours—such as surrenders or withdrawals—materialise, the exposures of both assets and liabilities to Delta, Gamma and Vega might diverge. This makes ongoing monitoring of Greek mismatches essential. By regularly assessing these sensitivities, insurers can identify when it may be appropriate to adjust the hedge positions. Such monitoring helps maintain the effectiveness of the hedge over time, despite the fixed nature of the original trades.
- **Dynamic hedging:** Dynamic hedging strategies, in contrast, are characterised by the ongoing tracking of Greek exposures. Hedge positions are frequently rebalanced—often daily and even intraday—to ensure that asset positions remain closely aligned with the changing liability profile. The continuous monitoring of Delta, Gamma and Vega exposures provides actionable trading triggers; for example, rebalancing is initiated when these sensitivities move outside predefined tolerance ranges. This approach enables insurers to respond swiftly to market movements and shifts in policyholder behaviour, helping to preserve hedge effectiveness and manage risk more proactively.

WHY IT MATTERS

The quantitative analysis of asset and liability exposures across Delta, Gamma and Vega delivers several important benefits:

- **Assessment of hedge effectiveness** provides an objective basis to evaluate how well the hedge is performing relative to the underlying liabilities
- **Early identification of mismatches** enables insurers to detect potential imbalances, such as excessive Vega or Gamma risk, before they result in significant deviations from expected performance
- **Informed, risk-based decision-making** supports strategic decisions regarding the adjustment of trading strategies, the unwinding or restructuring of hedges and the optimisation of hedging costs

By rigorously monitoring key sensitivities and understanding how exposures evolve, insurers can better manage the complex risks associated with indexed products, ultimately safeguarding both company capital and policyholder value. Figure 1 below presents the structure and typical contents of a standard risk report for an index account, featuring two portfolios with distinct crediting rate strategies.

FIGURE 1: SAMPLE RISK REPORT FOR HEDGING OF INDEXED PRODUCTS

			HEDGE GREEK						
USD	NOTIONAL	VALUE	DELTA	GAMMA	VEGA	VOLGA	VANNA	RHO	THETA
Assets									
PTP - Cap	50,000,000	1,200,000	80,000	(5,000)	(3,000)	(20)	(100)	120	10
PTP - Par	30,000,000	900,000	60,000	(4,000)	(2,000)	(10)	(100)	100	5
Subtotal	80,000,000	2,100,000	140,000	(9,000)	(5,000)	(30)	(200)	220	15
Liabilities									
PTP - Cap	47,500,000	1,140,000	76,000	(4,750)	(2,850)	(19)	(95)	114	10
PTP - Par	28,500,000	855,000	57,000	(3,800)	(1,900)	(10)	(95)	95	5
Subtotal	76,000,000	1,995,000	133,000	(8,550)	(4,750)	(29)	(190)	209	14
Difference	4,000,000	105,000	7,000	(450)	(250)	(2)	(10)	11	1

Note: The point-to-point participation rate strategy (PTP-Par) determines the crediting rate by modifying the participation rate applied to the final crediting calculation. In contrast, the point-to-point cap rate strategy (PTP-Cap) sets the crediting rate by adjusting the cap applied to the final crediting rate. Volga (measures sensitivity of Vega to a 1% change in volatility), Vanna (measures sensitivity of Delta to a 1% change in volatility), Rho (measures sensitivity of value to a 1% change in interest rates), Theta (measures sensitivity of value to the passage of time, i.e., time decay).

Performance and attribution analysis

The comprehensive breakdown of hedge performance allows insurers to identify the key factors influencing valuation changes in both liabilities and assets within the index accounts of indexed products, thereby providing transparency into the portfolio's financial dynamics. The performance and attribution analysis plays a crucial role in detecting instances where the hedging strategy may have deviated from expectations, referred to as hedge slippage. Such insights enable insurers to implement timely corrective measures and continuously enhance their risk management processes. By distinctly attributing value changes to specific market factors and actuarial drivers, the report deepens understanding of how both external economic conditions and internal actuarial assumptions affect the overall financial position.

CAPITAL MARKET IMPACT

Value changes driven by capital market factors—including index levels, volatility, interest rates, dividend yields and the passage of time—are rigorously analysed. This helps them understand whether a hedge is responding appropriately to market shifts and supports timely adjustments when discrepancies arise.

ACTUARIAL IMPACT

Changes in liabilities are also influenced by actuarial factors such as new business inflows, policy renewals, lapses, partial withdrawals and the expiry of options. This insight is essential for assessing whether actuarial assumptions remain valid and for identifying areas where policyholder actions may be impacting hedge effectiveness.

In particular, the net impact of index credits and expiring options offers a useful measure of how well a static hedge program aligns with actual liability experience. Significant deviations between asset payoffs and liability credits may signal that the hedge notional is not fully consistent with realised policyholder behaviour, such as decrements or withdrawals. Similarly, analysing the net impact from new and renewing liabilities and options helps assess whether the hedge budgets assumed at pricing remain consistent with real-world hedge execution costs.

PRICING SPREAD

The pricing spread is the difference between actual market transaction prices and the model-based values used for rate setting. It serves as an indicator of market liquidity and trading efficiency. By monitoring spreads, insurers can evaluate whether trades are executed at favourable levels and identify potential costs from illiquidity or suboptimal execution.

WHY IT MATTERS

- **Identifies sources of hedge slippage:** Pinpoints where and why asset–liability mismatches occur, whether due to market movement, policyholder behaviour, or execution issues.
- **Improves actuarial assumptions:** Provides feedback on the accuracy of actuarial models, enabling timely updates to assumptions and product design.
- **Enhances trading efficiency:** Supports the evaluation of trading processes and market conditions, helping optimise transaction costs and liquidity management.
- **Strengthens risk management:** Enables comprehensive risk attribution, offering a clear view of how different factors affect overall portfolio performance and helping guide corrective actions.

Through detailed attribution of asset and liability value changes, insurers gain deeper insights into hedge performance drivers, supporting more effective and informed risk management for indexed products. Figure 2 presents the structure and typical contents of a performance and attribution analysis for an index account, featuring two portfolios with distinct crediting rate strategies.

FIGURE 2: SAMPLE PERFORMANCE AND ATTRIBUTION ANALYSIS FOR HEDGING OF INDEXED PRODUCTS

USD	LIABILITY			ASSET OPTIONS			NET P&L
	PTP - CAP	PTP - PAR	TOTAL	PTP - CAP	PTP - PAR	TOTAL	
Beginning Value (a)	1,140,000	855,000	1,995,000	1,200,000	900,000	2,100,000	
Market Movement							
Index	50,000	45,000	95,000	43,000	47,300	90,300	(4,700)
Volatility breakdown							
Initial volatility	(3,000)	(2,700)	(5,700)	(2,400)	(1,600)	(4,000)	1,700
Long-run volatility	(6,700)	(6,030)	(12,730)	(6,100)	(3,000)	(9,100)	3,630
Volatility of volatility	(1,800)	(1,620)	(3,420)	(1,500)	(1,500)	(3,000)	420
Correlation	(500)	(450)	(950)	70	(1,160)	(1,090)	(140)
Volatility Total	(12,000)	(10,800)	(22,800)	(9,930)	(7,260)	(17,190)	5,610
Interest rates	(20)	800	780	(40)	860	820	40
Dividend yield	(280)	80	(200)	(290)	90	(200)	-
Time (decay)	38,000	18,000	56,000	35,410	17,600	53,010	(2,990)
Capital markets impact (b)	75,700	53,080	128,780	68,150	58,590	126,740	(2,040)
Actuarial drivers							
New liabilities/options	26,830	62,000	88,830	102,200	105,600	207,800	118,970
Renewing liabilities	88,530	41,600	130,130	-	-	-	(130,130)
Index credits / expiring options	(86,530)	(64,500)	(151,030)	(132,515)	(62,000)	(194,515)	(43,485)
Decrements	(3,000)	-	(3,000)	-	-	-	3,000
Total actuarial impact (c)	25,830	39,100	64,930	(30,315)	43,600	13,285	(51,645)
Dealer pricing spread (d)	-	-	-	(1,200)	7,100	5,900	5,900
Ending Value (a) + (b) + (c) + (d)	101,530	92,180	193,710	37,835	102,190	140,025	(53,685)

Note: The point-to-point participation rate strategy (PTP-Par) determines the crediting rate by modifying the participation rate applied to the final crediting calculation. In contrast, the point-to-point cap rate strategy (PTP-Cap) sets the crediting rate by adjusting the cap applied to the final crediting rate.

Hedging solutions for indexed products

EVOLUTION OF EQUITY HEDGING NEEDS AND INDUSTRY RESPONSE

Historically, the use of systematic hedging using derivatives was limited for most Asian life insurance companies. Given the introduction and growing popularity of indexed products, many insurers may now face the challenge of aligning derivative hedging strategies with the administration and liability management of these innovative products. For most, this represents a significant departure from established risk management practices, and the learning curve can be steep. Internal experience with the design, implementation and ongoing management of equity hedging programs is often limited, increasing the risk of misalignment between hedging activities and actual liability profiles.

In Asia, insurers employ a range of strategies to hedge risks, including reinsurance arrangements that transfer some or all of the equity risk to third parties and banking solutions that leverage capital market expertise. Larger insurers often opt to manage these risks internally. As companies look for ways to manage increasingly complex product features, we expect their reliance on external partners to persist and grow. In addition to the common solutions already mentioned, interest is rising in engaging independent hedging advisors who possess specialised expertise in handling complex equity exposures. Figure 3 provides a detailed comparison between hedging advisory services and in-house solutions.

FIGURE 3: HEDGING ADVISORY FOR INDEXED PRODUCTS

	IN-HOUSE	HEDGING ADVISORY
Management of fixed-income portfolio	<ul style="list-style-type: none"> ▪ In-house 	<ul style="list-style-type: none"> ▪ In-house
Management of hedging portfolio	<ul style="list-style-type: none"> ▪ In-house 	<ul style="list-style-type: none"> ▪ In-house
Investment spread earned by company	<ul style="list-style-type: none"> ▪ (+) Fixed income yield ▪ (-) Hedge cost ▪ (-) Operational cost 	<ul style="list-style-type: none"> ▪ (+) Fixed income yield ▪ (-) Hedge cost ▪ (-) Management fee as % of AUM
Mortality spread	<ul style="list-style-type: none"> ▪ Retained up to internal retention limits 	<ul style="list-style-type: none"> ▪ Retained up to internal retention limits
Risk or profit coming from under-/over-hedging	<ul style="list-style-type: none"> ▪ Retained 	<ul style="list-style-type: none"> ▪ Retained
Key counterparty risk	<ul style="list-style-type: none"> ▪ Derivatives counterparties ▪ Low risk: Exposure is mitigated by daily margining and collateral posting mechanisms. 	<ul style="list-style-type: none"> ▪ Similar to in-house
Key strength	<ul style="list-style-type: none"> ▪ Retains full spread within the company ▪ Direct control of internal resources and governance 	<ul style="list-style-type: none"> ▪ Integrates actuarial expertise with trading execution, aligning with policyholder behaviour ▪ Lower hedging cost due to global trading partnership and large hedging volume ▪ Transparent fee structure
Key constraint	<ul style="list-style-type: none"> ▪ Requires in-house derivatives management capabilities ▪ Limited trading counterparty relationship ▪ Needs integration of policyholder behaviour into hedging strategy 	<ul style="list-style-type: none"> ▪ Lack of distribution support compared to banking solutions ▪ Advisory fees are charged explicitly

Conclusions and outlook

As indexed products such as IUL and FIA continue to gain traction across Asia, insurers face rapidly evolving investment and hedging challenges. Limited historical experience with equity hedging, complex risk allocation decisions and the need to optimise retained risk and profitability have prompted many companies to reassess their risk management frameworks and seek external expertise. The choice of crediting types and hedging frameworks—ranging from static to dynamic and hybrid approaches—directly impacts the effectiveness of risk mitigation and operational efficiency.

To succeed in this dynamic environment, insurers must adopt robust risk reporting and performance attribution practices, leveraging advanced modelling techniques and continuous monitoring of key sensitivities. This enables timely identification of hedge slippage, improved actuarial assumptions, and more informed trading decisions. Ultimately, a tailored combination of internal capabilities and external solutions will be essential for insurers to manage the complexities of indexed products, safeguard capital and deliver sustained value to policyholders.

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milliman.com



CONTACT

Julian Man
Julian.man@milliman.com

Reggie Xu
Reggie.Xu@milliman.com

Clement Bonnet
clement.bonnet@milliman.com

Joshua Ho
joshua.ho@milliman.com

Jaden Chiu
jaden.chiu@milliman.com