

## Hong Kong: Indexed Universal Life and its key considerations

Indexed Universal Life (IUL) is seen by some market observers as a flexible, relatively liquid and transparent product proposition that provides a death benefit along with a cash value (or account value) that accrues interest based on the performance of an index or several indices. It has historically been popular in the U.S. and has recently gained traction in Asia, particularly in Singapore and in the international space (i.e. offshore companies selling into local Asian markets), where companies have introduced products specifically targeting High Net Worth (HNW) individuals. In Hong Kong, “pseudo IUL” products, sold as Class A (Life assurance other than annuities) universal life products but generally regarded as not as transparent to customers as typical IULs, which have disclosed charges, and these pseudo IULs have been sold by some companies to specific customer segments. Recently, the Hong Kong Insurance Authority (HKIA) has offered practical guidance to ensure policyholder protection and fair treatment of customers with regard to IUL. The HKIA is proposing for IULs to be classified under Class C (Linked long-term plans) that can only be sold to professional investors as defined by the Securities and Futures Ordinance.

Although we understand the regulatory approval for the sale of a Class C IUL has not yet been granted, the IUL product proposition could be beneficial to customers by addressing some of their wealth management and protection needs and could help companies diversify their balance sheet by ensuring an appropriate balance between traditional life insurance products and fee income products.

In this e-alert, we examine the mechanics of IULs and some of the key considerations for companies preparing to offer such products in Hong Kong.

### IUL product design

Similar to traditional universal life insurance, IUL offers flexible premium payments but distinguishes itself with an account value that earns interest based on the performance of an external index. Most IUL products provide a range of index options in addition to a fixed crediting rate option, which is similar to traditional UL.

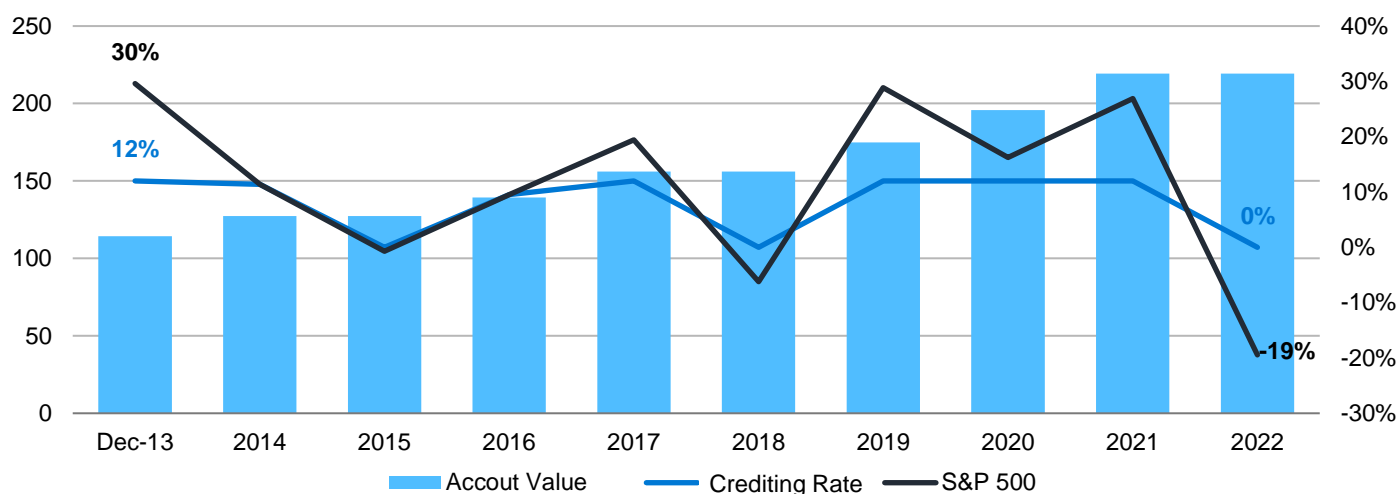
The Annual Point-to-Point crediting rate option is particularly popular, as it typically includes a floor on index crediting to offer downside protection, but also a cap on the crediting rate. The product can appeal to customers seeking exposure to equity markets while also desiring some level of downside protection. The caps, which can be adjusted based on the prevailing economic environment, may be seen as attractive to those willing to trade off some upside potential to safeguard against market downturns. The payoff to policyholders resembles that of a collar position with underlying equity exposure.

Although there are many different variations of IULs available in practice, Figure 1 offers a high-level overview of key common IUL features, while Figure 2 demonstrates how the Annual Point-to-Point crediting option work.

FIGURE 1: KEY COMMON IUL FEATURES

ITEM	DESCRIPTION
<b>CHARGES</b>	<ul style="list-style-type: none"> <li>▪ Premium loading (percentage of premium)</li> <li>▪ Policy fee (fixed dollar amount)</li> <li>▪ Expense charge (per 1,000 face amounts; usually front-loaded)</li> <li>▪ Cost of Insurance (per 1,000 face amount)</li> <li>▪ Surrender charge (a percentage of account value)</li> </ul>
<b>CREDITING RATE METHODOLOGY</b>	<ul style="list-style-type: none"> <li>▪ Separate for fixed account and index account</li> </ul>
<b>INDEXED ACCOUNT METHODOLOGY</b>	<p>Annual Point-to-Point:</p> <ul style="list-style-type: none"> <li>▪ The crediting rate = participating ratio x annual return rate of underlying indices, subject to a cap and floor of 0</li> <li>▪ Underlying exposure can be traditional indices such as S&amp;P 500, NASDAQ, MSCI or other volatility-controlled excess return indices</li> </ul>
<b>GUARANTEED MINIMUM ANNUAL INTEREST RATE</b>	<ul style="list-style-type: none"> <li>▪ Fixed account: usually above 0% p.a., e.g. 2% p.a.</li> <li>▪ Index account 0% p.a.</li> </ul>
<b>ADDITIONAL CREDITING RATE ENHANCEMENT</b>	<ul style="list-style-type: none"> <li>▪ Usually in the form of persistency bonus or loyalty bonus payable on index or fixed account</li> </ul>

FIGURE 2: ANNUAL POINT-TO-POINT CREDITING OPTION

**Annual Point-to-Point with Cap (12%), and guaranteed return of 0%**

\* The illustration shows the index account earns interest based on an annual point-to-point crediting option with 100% participation ratio in the S&P 500, with a cap of 12% p.a. and a floor of 0% p.a.

## IUL investment strategy and crediting mechanism

Although insurers provide downside protection to policyholders, they themselves face downside risk when managing the index accounts. Various investment strategies may be employed by different companies, but one common method used for IULs is illustrated below. For the sake of the example, we assume a crediting rate based on a floor set at 0% p.a., a cap set at 12% p.a. and assume S&P 500 is used as the underlying index i.e.

**Index crediting rate (p.a.)** =  $100\% \times \text{Max} \{ \text{Min} [12\%, \text{S\&P 500 annual return}], 0\% \}$

To fully hedge the liabilities of the underlying index account, the following asset portfolio is typically considered:

- A basic portfolio of physical assets, usually supported by fixed income assets, equaling 100% of the notional value of the index account; and
- A hedge portfolio consisting of a hedging position that has exposure to the underlying tracking indices, amounting to 100% of the notional value of the index account.

The hedge portfolio is typically composed of a bull call spread option, i.e.

- Buying a one-year at-the-money call option (where the strike price is equal to the current market price, serving as the "floor option" for the lower crediting rate limit of zero); and
- Selling a one-year out-of-the-money call option with a strike price that is set based on the cap (i.e., strike price = current market price  $\times$  (1 + declared cap rate)) - this is referred to as the "cap option".

The cost of the bull call spread option can also be viewed as the hedge cost for the index account. The concept of hedge budget is also typically defined, often derived from the interest earned by the physical assets (e.g. fixed income) backing the basic index account. The difference between the hedge cost and the budget represents the investment surplus. For example, the cost of a bull call spread with a 12% p.a. cap would be approximately 4.6% of the notional when priced using a simple Black-Scholes model with a fixed implied volatility of 20% and an annual interest rate of 2%. Therefore, to cover the hedge cost of 4.6%, the physical assets must yield a comparable return to break even (assuming no other expenses). In practice, companies may set a target investment spread to achieve profitability from this hedge position.

One of the key factors influencing the hedge cost is the cap rate, making the setting of the cap rate crucial for managing the index account. The cap rate for IUL products is generally not guaranteed, allowing companies to adjust the cap level over time. In practice, companies typically follow a structured process when adjusting the cap rate:

- Work out the basic portfolio return (hedge budget) and subtract the target spread to determine the hedge cost that can be covered, then set the corresponding cap rate by looking at the options available.
- Based on the actual performance of asset returns, decide whether to share the gains or losses with policyholders (by adjusting the cap rate to modify the hedge cost and control the spread).
- Companies may take into account competitors' adjustments to potentially reduce the spread and maintain a higher cap rate if necessary.

Figure 3 illustrates how the payoff of the index account can be replicated using options, while Figure 4 demonstrates how different cap rates correspond to varying hedge costs (based on a simple pricing using the Black Scholes model).

## IUL SAA and risk management

### KEY SAA AND ALM CONSIDERATIONS

Within the physical asset portfolio, the strategic asset allocation (SAA) aims to meet the hedge budget and generate a spread. However, additional criteria also need to be considered, e.g. the asset and liability management (ALM) position of physical assets backing the liabilities. While the primary ALM considerations, such as duration and cash flow matching,

may be similar to those for other traditional universal life products, the presence of a dynamic cap rate and associated hedging adds complexity. This makes evaluating the ALM implications more dynamic, especially when considering different economic scenarios. For instance, during periods of high implied volatility, option prices tend to rise, leading to increased hedge costs. Simultaneously, yields are compressed, which reduces the hedge budget and complicates the usual hedging strategies. As a result, there may be a need to seek yield enhancement through duration extension and increased credit spreads to offset the shortfall. However, all these can significantly impact the underlying ALM practices.

FIGURE 3: REPLICATING THE RETURNS OF INDEX ACCOUNT

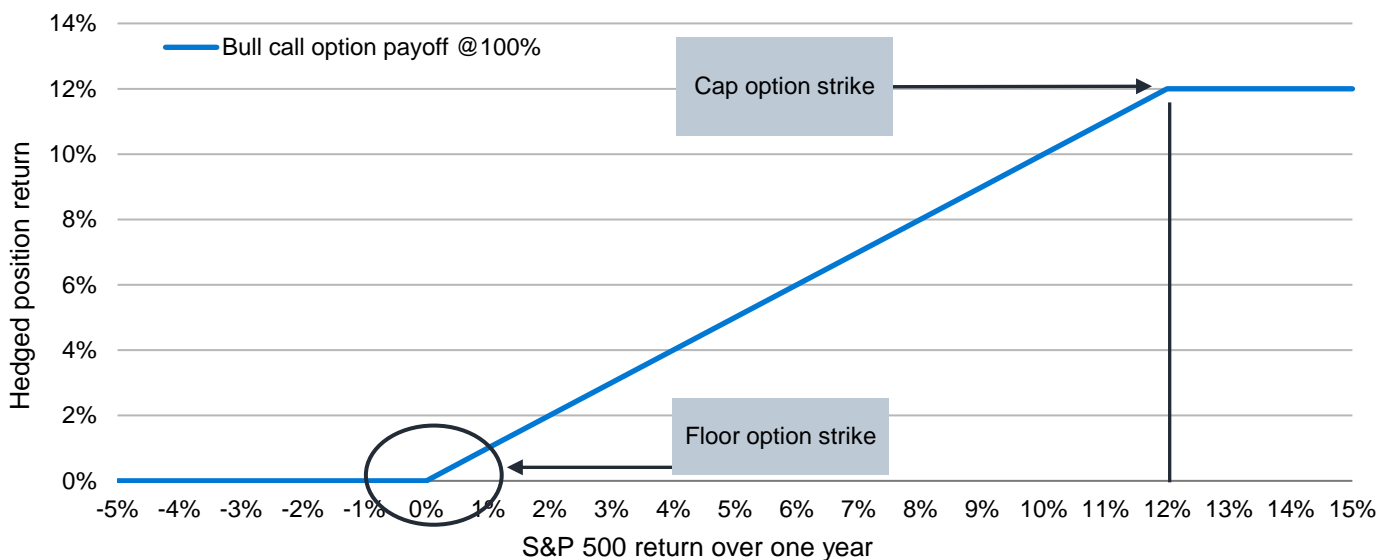
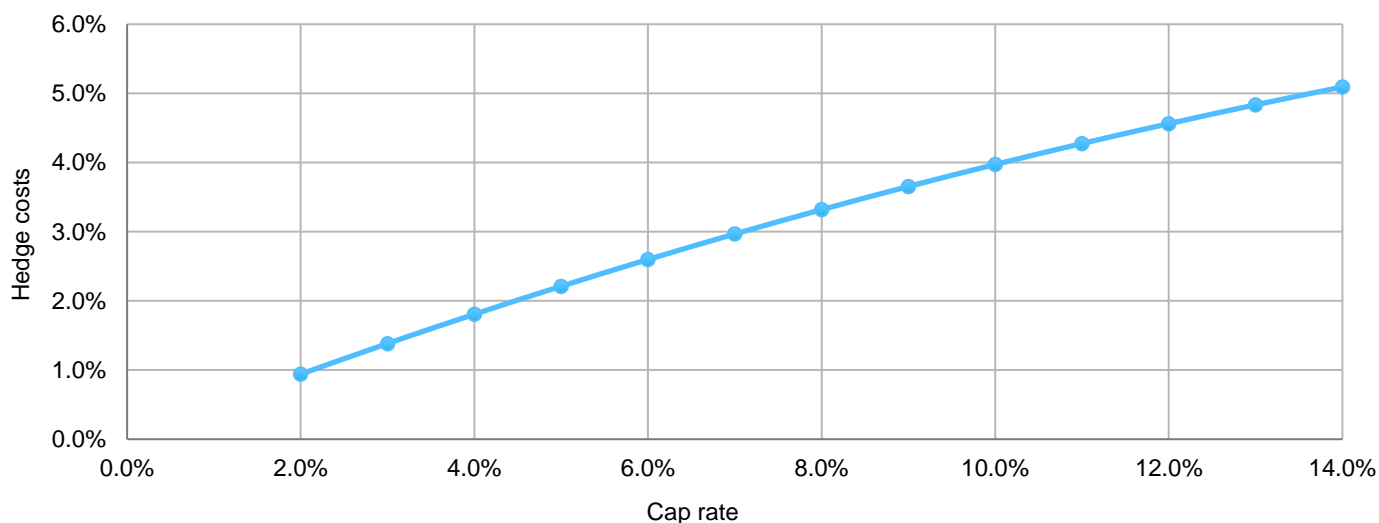


FIGURE 4: HEDGE COSTS AND CAP RATE



\* The illustration is based on a simple Black-Scholes model with an implied volatility of 20% and an annual interest rate of 2%.

## HEDGING AND RISK MANAGEMENT

When employing hedge instruments to manage the index account, IUL writers are also exposed to risks associated with using derivatives. To align with the crediting rate mechanism, such as annual point-to-point, the typical approach involves using options with a one-year expiry. These positions are continually rolled forward to ensure the index account remains fully hedged. A key risk when rolling these positions forward is that market volatility can make these options expensive and more advanced investment strategies exist to mitigate such risk (e.g. volatility control hedge solutions).

Due to the complexity of managing hedge programs, some IUL writers might seek external support to manage their index accounts. While external vendors can assist with derivative management, certain reinsurance solutions offer a complete swap of the index account through coinsurance or risk-based reinsurance contracts. However, these options often result in reduced control over the hedge cost and also may be too costly to insurance companies.

## HKRBC consideration for IUL

### RISK-NEUTRAL AND STOCHASTIC MODELLING

One of the key technical aspects under the Hong Kong Risk-based Capital (HKRBC) framework is to assess the IUL liabilities using a risk-neutral approach. Similar to fixed income assets, additional adjustments are required to evaluate existing options so that the overall valuation is carried out on a market consistent and risk neutral basis. As with traditional universal life and participating products, the non-guaranteed components are projected forward based on actual management practices and with reference to the underlying HKRBC discount rate. This includes elements such as the crediting rate for universal life or the dividend scale for participating products, and similarly, the dynamic cap rate for IUL products.

However, modelling the dynamic cap rate dynamically is complex and the complexity is further increased by the need for stochastic calculations across a wide range of economic scenarios. Consequently, sophisticated yet practical models are necessary to achieve a balance between run-time efficiency and accuracy in these evaluations.

## PRESCRIBED CAPITAL REQUIREMENT

The assets backing the IUL policies are composed of two main components: the basic portfolio and the hedge portfolio.

The basic portfolio primarily consists of fixed income assets, which are subject to interest rate risk and credit spread widening risk under the calculation of the HKRBC Prescribed Capital Requirement (PCR). The level of PCR of these fixed income assets depends on several factors, including the duration and credit quality of the underlying assets. Longer-duration assets and those with lower credit ratings generally have a higher yield but require higher PCR due to their increased risk. Hence, the budget allocated for hedging is a critical factor in determining the overall risk profile and capital requirements of the IUL portfolio.

On the other hand, the hedge portfolio is exposed to interest rate risk and equity downturn risks, as the market value of the bull call spread is influenced by these factors. Ideally, calculating the option price movement from first principles would provide an accurate assessment of the PCR for the hedge portfolio. However, this approach necessitates the development of a complex option pricing mechanism. In practice, simplifications can be employed to estimate this amount.

## Conclusion

While the IUL product proposition can offer significant benefits to both customers and insurance companies, the development and management of a newly implemented IUL product — including pricing, in-force management, and corresponding financial reporting - is complex and requires careful considerations. Moreover, identifying and managing key risks is critical to success. These risks include market risks (such as interest rate, credit spread and equity market movements), policyholder behavior risks (such as lapses and partial withdrawals), and operational risks (such as system failures and data inaccuracies). A comprehensive risk management strategy should be in place to mitigate these risks and ensure the long-term sustainability of the IUL product offering.

An initial operational and financial impact assessment is, therefore, crucial when preparing to launch IUL products. This assessment should identify potential gaps in the company's capabilities, such as the need for advanced actuarial expertise, robust risk management frameworks, and sophisticated financial reporting systems. Understanding each of the key aspects is essential to ensure the successful implementation and management of IUL products.

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