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RILA Upside – Reality or Mirage

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Background

Over the past several years, an undeniable trend has been the rapid growth of the Registered Index-Linked Annuities (RILAs). In a few short years, this product category has grown to surpass the once dominant traditional variable annuity category. In this paper we delve into one common crediting strategy offered on RILAs to bring a greater understanding of where the upside comes from and what the potential downside is. We look at how the impact of interest rates can add risk to future renewal rates and limit the upside potential. These factors must be considered by advisors and policyholders to understand how the product might perform during changing market conditions.

RILAs are often designed around a 5–6-year chassis and have a wide variety of crediting strategies and indexes. In a 6-year design, there is a contingent deferred sales charge ("CDSC") that applies over that 6-year period. The CDSC is effectively a surrender penalty that helps the insurance company recoup the cost of upfront commission should the policyholder decide to surrender before the end of the term. The CDSC helps give the insurance company some certainty around how long of an investment portfolio to use to fund the product. The insurance company uses the returns from the investment portfolio to set a budget or target cost of crediting. In a RILA or FIA design, the actual cost of crediting comes, effectively, in the form of a basket of options that have a net cost in the ballpark of their target cost of crediting.

As we consider the risk that future renewal rates and upside are limited by the impact of interest rates, we will consider Q3 2021 where interest rates were quite low and then began to rise. This period will serve as a case study of what can and did happen to some RILA products to shine a light on the importance of uncovering hidden risks and/or setting realistic expectations when evaluating product design. The chart below shows the yield by credit quality of senior unsecured fixed rate bonds issued by US companies. These are meant to be representative of the type of yield an insurance company might be considering when calculating their target cost of crediting. In Q3 2021, with fixed income yielding only roughly 1.4% at A quality and 1.7% at BBB quality, we might expect option budgets below 1%. Even in this market environment, some RILA products were able to offer attractive rates. However, as interest rates increased, this did not persist over the life of the product and many advisors and policyholders wondered what had happened. This paper explains where the ability to afford attractive rates during a low rate-environment stems from and how that evaporated as rates started to rise.

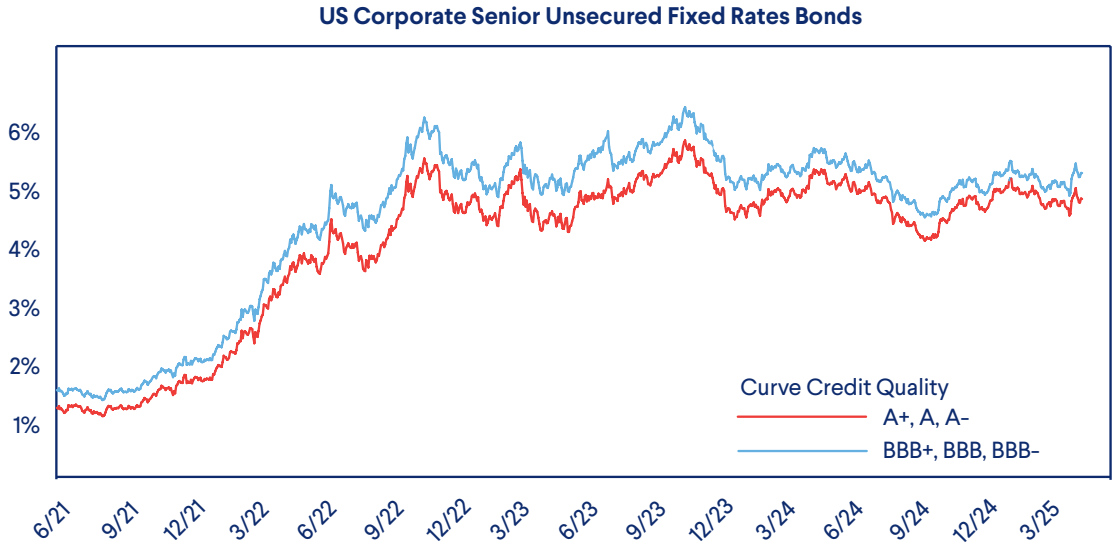

Figure 1 - Corporate Bond Yields

Payoff Profile

While each carrier may have their own unique features and crediting strategies on the product, one common crediting strategy is a one-year 10% buffer with cap. Let's look at an example where this design offers a 12% cap. Here the crediting rate for the year can be negative if the S&P return is less than -10%, 0% if the return is -10% to 0%, and will be limited at 12% if the return is positive. The payoff profile will look like this:

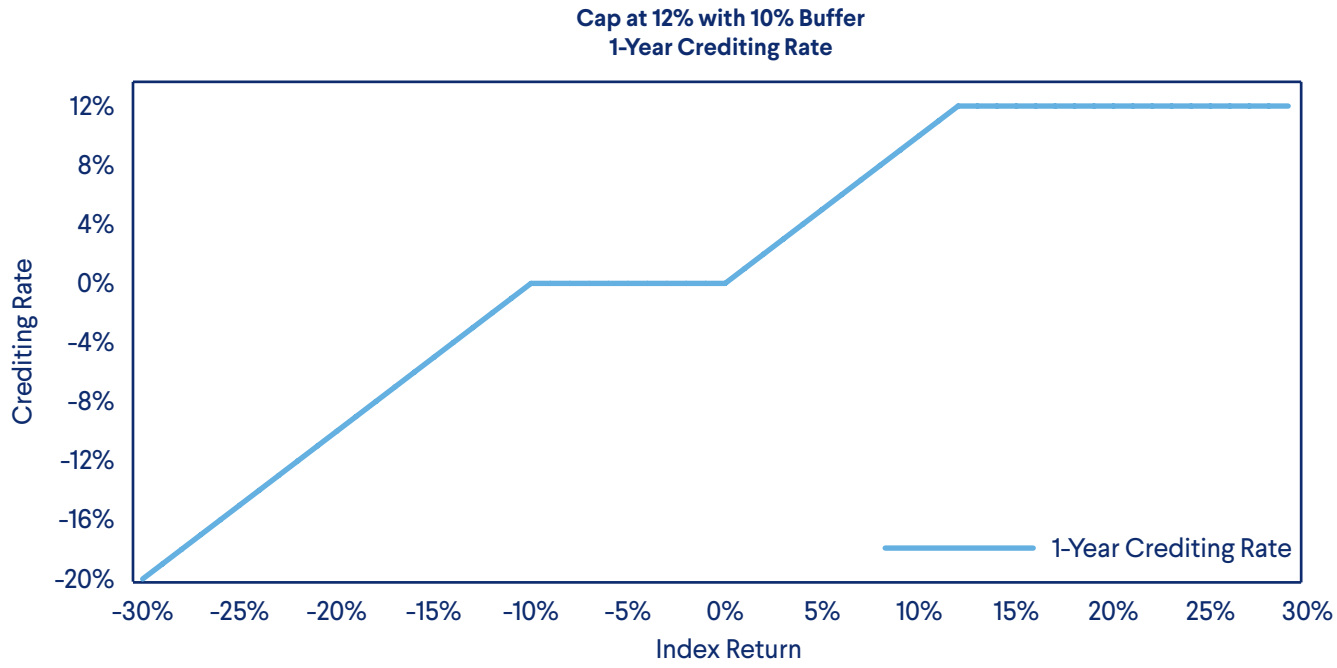

Figure 2 - RILA: Cap with Buffer Payoff

This design has become popular because it contains a better upside picture as compared to other products like fixed indexed annuities (FIA). However, you might note that here the policyholder has the potential of a negative crediting rate. Yes, the policyholder can and will lose money over the course of the year if the S&P price return is down more than 10%! That downside risk is exactly what the carrier uses to fund a slightly larger amount of upside as compared to an FIA.

We can think about this design as a basket of options that is owned by the policyholder. In this case, the basket of options includes purchase of an at-the-money (ATM) call, sale of a 12% out-of-the-money (OTM) call, and sale of a 10% OTM put. The option that is purchased has an upfront cost while the other two provide an upfront premium.

Disclaimer: technically, the insurance company buys the options and that return is what they use to back the policy.

How are the costs and premiums calculated?

The standard for computing European options is Black-Scholes:

$$C = N(d_1)S - N(d_2)Ke^{-rt}$$

$$\text{where } d_1 = \frac{\ln \frac{S}{K} + (r + \frac{\sigma^2}{2})t}{\sigma\sqrt{t}}$$

$$\text{and } d_2 = d_1 - \sigma\sqrt{t}$$

C = call option price

N = cumulative distribution function of the normal distribution

S = current price of an asset

K = strike price

r = risk-free interest rate

t = time to maturity

σ = volatility of the asset

How is the cap rate determined?

This is a one-year strategy, but likely sold on a 5- or 6-year product chassis. That means there is likely a surrender charge or CDSC that will apply if the policyholder surrenders the policy earlier than that. As the insurance company expects the funds to be invested for 5-6 years, they will purchase investments of a similar tenor. Those investments are generally bonds or other fixed income and may have a yield, according to Figure 1 - Corporate Bond Yields, of around 1%-2% as they did during 2021 or 5%-6% as we see from 2023 and beyond, over that time horizon. To pay for commission, expenses, cost of capital, and profit to the insurer, they may establish a target cost of crediting for this policy, that in a low-interest rate environment like 2021, may be close to 0%. That means the company will look to spend (on a net basis) around 0% on this basket of options. For this crediting strategy, the pricing of the following pieces might look like this (as a percent of the initial premium) where an option budget of .3% is sufficient to fund a cap of 12%.

ATM call option: 7%

OTM call option: -1.9% (strike is set to align the net cost with the target crediting cost)

OTM put option: -4.8% (strike is 10% below current price in this example)

Net cost: .3% where the strike on the OTM call, which is also the cap rate, is found to be 12%

What happens next year?

Next year, the insurance company will establish a new cap rate which will be dependent on market prices for the options. We can get a good expectation of the option prices using Black-Scholes along with market inputs. If the net cost of the basket shown before is more than the option budget, assumed to be .3% in this case, then it is likely the carrier will decide to reduce the cap rate offered. We have recently seen this occur as shown in the chart below.

This chart shows how the affordable cap rate has changed over recent years and that there have been periods where the 0% and 1% budget, plus the premium collected from the 10% out-of-the-money put option, was sufficient to fund caps near 12%-15% and 15-21% respectively. In later years, as interest rates increased, the story started to change.

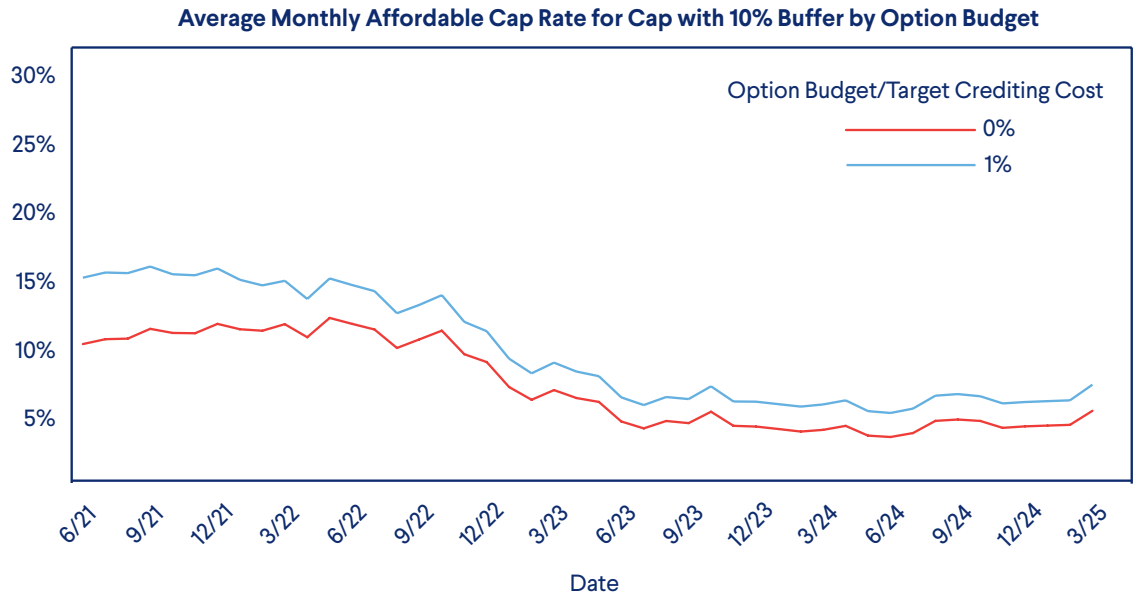

Figure 3 - Average Monthly Affordable Cap Rates

In looking back at the Black-Scholes formula from above, we see that one of the inputs is the level of interest rates. A deeper analytical dive would help us understand that the three pieces in the above basket behave somewhat differently as it relates to interest rates. First, the ATM call is likely to become materially more expensive with higher interest rates. This is primarily driven by what is referred to as equity drift, meaning equities are expected to return the risk-free rate under a Black-Scholes option pricing model. This higher drift increases the probability of a positive payout and increases the cost. The OTM option will increase in value for similar reasons, but given it is out-of-the-money, it has a lower probability of payoff and therefore will be impacted somewhat less than the at-the-money option. This means on a net basis, the two call options become more expensive as interest rates rise. The put option is impacted similarly. The higher equity drift makes the put option less valuable as the probability of a downside event declines. This is also a bad guy for the price of the option basket since we are using the premium from this put to try to fund some of the upside. Now we see the combined price of the two calls goes up, the premium collected from the put goes down, and we have an amplified impact on the option basket.

The chart below demonstrates these option pricing dynamics in different interest rate environments holding all else constant.

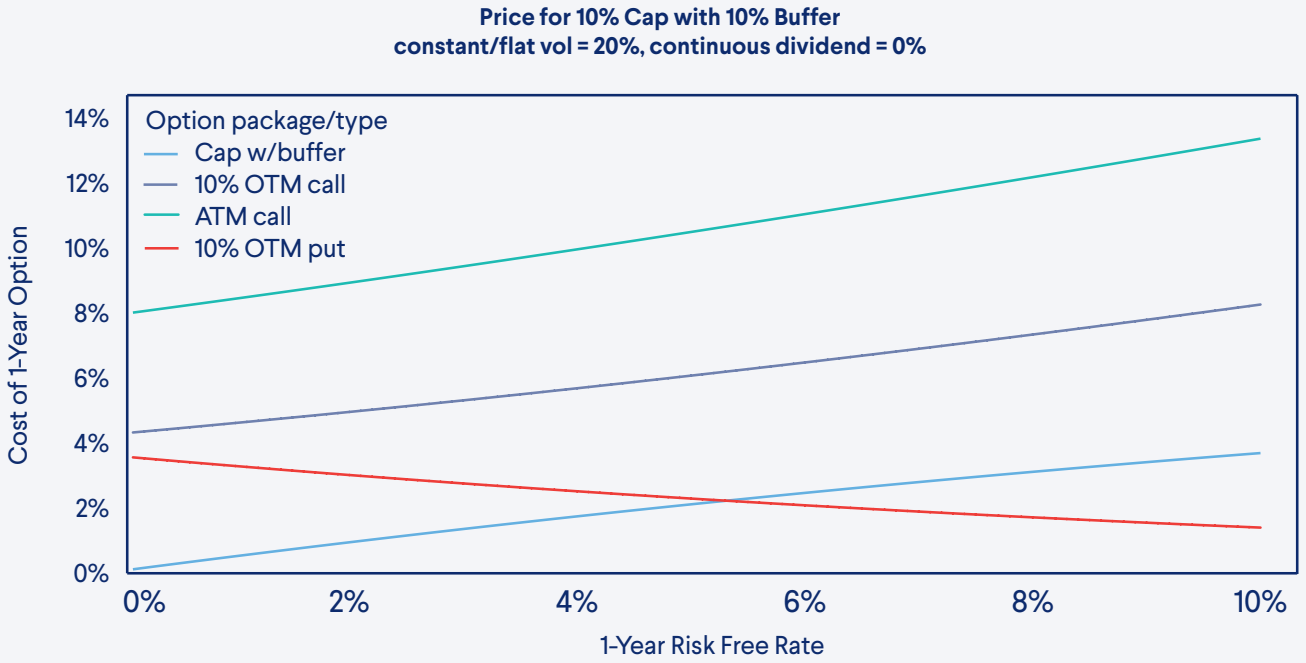

Figure 4 - Price for 10% Cap with 10% Buffer in different interest rate environments

The next chart shows how the affordable cap rate declines as interest rates increase under the same conditions.

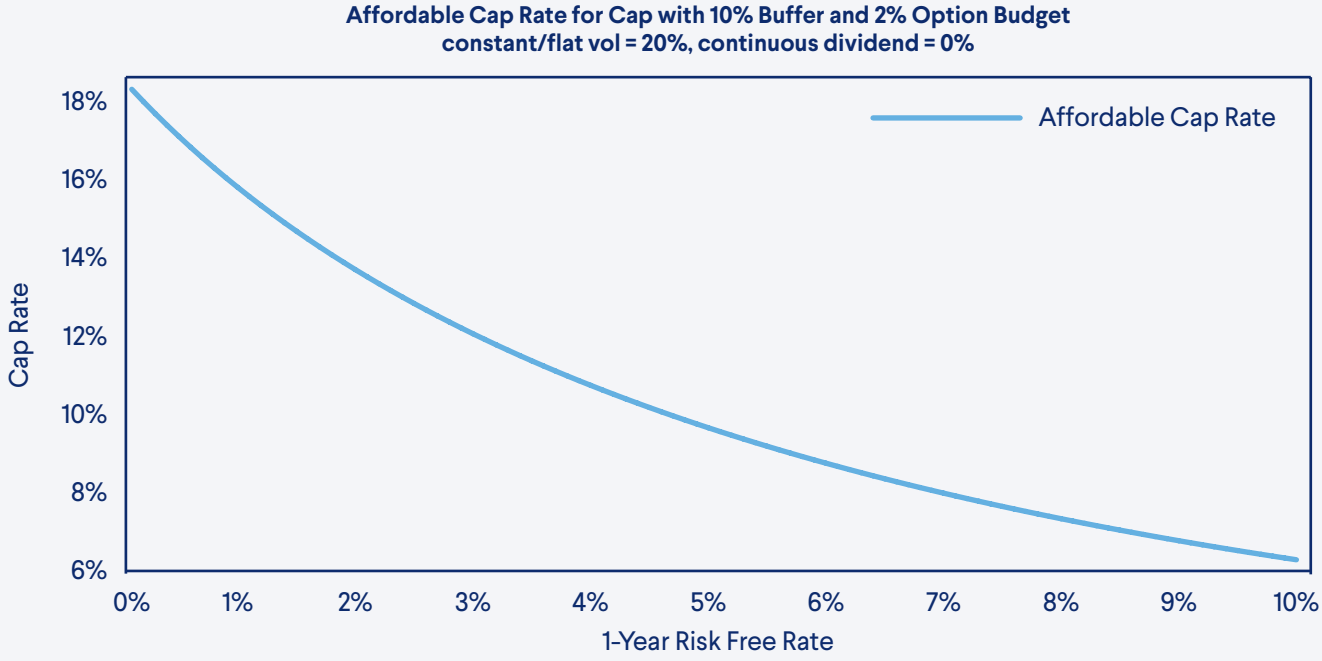

Figure 5 - Affordable cap rate by 1-year risk free in idealized market

With these dynamics and increasing interest rates, the insurer is left reducing the cap rate offered to the policyholder to meet their budget. The policyholder and advisor are left wondering why they now have a product with downside exposure and a cap that has fallen dramatically.

What have we actually seen in the market?

All of this talk of option budgets and option pricing may sound like theory, but we can confirm this by looking at what has happened over the past several years with some of the products that have been offered. Take for instance a RILA product (1 year S&P capped option with a 10% buffer) that was offered in 2021. We saw products of that generation offer caps of about 12%. This structure would have had a .3% cost at the time it was sold. Today, the cost of that same structure would be about 3.7%. If the carrier chose to manage to the original option cost or budget, the cap would be set to about 4.5%. Now imagine **Figure 2 - RILA: Cap with Buffer Payoff** with only 4.5% of upside and unlimited downside beyond the 10% buffer. In today's market- that is not a pretty picture!

Summary

While innovative products like RILAs are appealing, one should look carefully under the hood and ensure there is a thorough understanding of the potential risks. Sometimes these risks are fairly clear such as the downside risk associated with a buffer design. Other times, the risk of changing crediting parameters and declining upside potential in future renewal years (relative to the downside) is a risk that is not so obvious. Our analysis demonstrates that certain crediting strategies in RILAs may have more risk and fluctuation associated with their crediting parameters than clients and advisors expect.

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