BARCLAYS

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INVESTMENT STRATEGIES

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QIS Insights

Structured Annuities compared to Bonds

- Innovation in the fixed index annuity ("FIA") space has markedly improved the offering and this provides a very important distinction to bonds. We find that examples of this innovation in FIAs have outperformed bonds on a consistent basis over the last 21 years

- Both FIAs and bonds are principal protected, however bonds are exposed to yields whereas FIAs can participate in a wide range of exposures other than yields

  - Yields are near historical lows, and past bond performance has been driven partly by decreasing yields
  - Past bond performance might not be repeatable, and increasing yields will act as a headwind to bond performance

- FIAs offer flexible exposures to a diverse range of investments, including the latest equity smart betas and dynamic multi-asset portfolios

- Note that the same performance analysis contained herein applies for a Registered Index Linked Annuity ("RILA") with a zero floor

CUNA MUTUAL GROUP

Introduction

FIAs represent a balance between participation in interesting equity exposures and downside protection. This balance becomes more important as retirement nears.

In this paper, we compare traditional investment alternatives to popular types of crediting methods found in FIA products. We simulate historical performance going back 21 years and compare performance characteristics, with respect to average returns, drawdowns and the probability of beating a simple rolling bond exposure.

We include recent innovations in the FIA space that improve performance characteristics, including multi-asset portfolios that offer higher risk adjusted returns and volatility targeted indices that allow for higher rates associated with the FIA crediting method.

Our results for the period indicate that these innovations may result in a significant improvement in performance. We find that the Barclays Risk Balanced Cap outperformed a Single A Bond portfolio in 84% of the periods that we analysed.

What is an FIA?

- A fixed index annuity is a tax-deferred, long-term savings option that provides principal protection* and an opportunity for growth
- FIAs are principal guaranteed* up to the "high-water mark" (initial principal plus accumulated credits)
- FIAs participate in the upside performance of an underlying index (e.g. S&P 500). The participation is a function of a number of factors.
- Performance is credited on the policy anniversaries or term end dates by the greater of zero and the result of the crediting method (e.g. participation rate multiplied by the index return, subject to a cap).

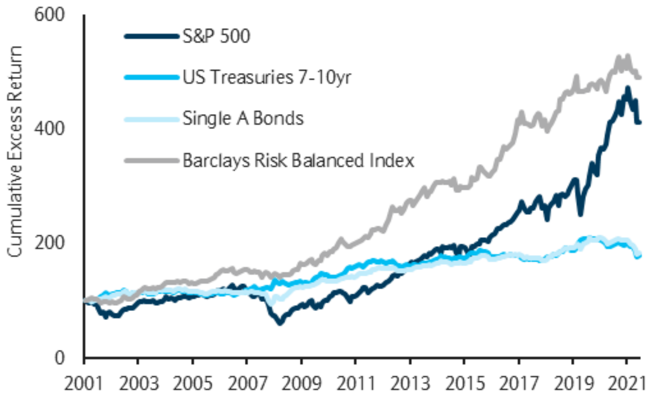
**subject to credit risk of the carrier*

Finally, we consider the impact of decreasing yields on performance and the possibility of rising yields in the future.

Indices and Innovation

Since ~2013, most insurance carriers have introduced volatility controlled indices that combine equities and bonds using a recognized optimization methodology. In our analysis, we consider traditional market betas, including S&P 500, US treasury bonds and Single A bonds, as well as a dynamic portfolio of equities and bonds, represented by the Barclays Risk Balanced Index.

Graph 1: Performance of underlying components (December 2001 to May 2022)[1]



Source: Barclays, Bloomberg

The Barclays Risk Balanced Index

The index was launched in March 2021 and comprises a portfolio of 50 "low volatility" stocks combined with 2y, 5y and 10y US Treasury bond futures.

A "mean-variance optimization" is used to find the optimal weights for the components under certain assumptions and constraints.

The index is volatility targeted at 10%.

For more information: **indices.barclays/RB10**

Key observations include the large drawdowns associated with equites and the improvement to risk adjusted returns when equities are combined with bonds in an optimized format. The Sharpe Ratio of the Barclays Risk Balanced index is double that of the S&P 500 for the period.

Table 1: Component performance (December 2001 to May 2022)

	S&P 500	UST 7-10y	Single A Bonds	Barclays Risk Balanced
Total Return p.a.	8.59%	4.25%	4.36%	9.52%
Excess Return p.a.[1]	7.18%	2.89%	3.01%	8.10%
Volatility	14.78%	6.34%	6.01%	8.30%
Sharpe Ratio	0.49	0.46	0.50	0.98
Worst Drawdown	-50.95%	-14.91%	-17.53%	-7.36%

Source: Barclays, Bloomberg

FIA innovations

FIA providers have embraced multi-asset indices along with equity smart betas, e.g. value investing, low volatility, momentum and thematic investing, to broaden the scope of return sources available in FIAs.

Another key innovation is the use of volatility targeted indices. In the case of the Barclays Risk Balanced index, the allocation is leveraged up or down to maintain a target volatility of 10%. Volatility targeting reduces the cost to hedge the options embedded in an FIA, allowing the policyholder to enjoy higher as well as more stable rates, associated with FIA crediting methods.

Analysis

Simulated FIA returns

We simulate investing in rolling 6 year FIAs with annual crediting. Crediting methods include:

1. S&P 500 call spread with 100% participation, solving for ***the cap***[2]
2. Barclays Risk Balanced call spread with 100% participation*, solving for ***the cap***

   ** Note that where the available option budget is large, such that there is no cap, then the participation rate is allowed to be greater than 100%*

FIAs were simulated for the period from December 2001 to May 2022. For example, the last 6 year FIA tested was incepted in May 2016 and matured in May 2022. We solve for caps (and participation rates where applicable) based on available option budget at the time and other option pricing parameters.

What FIA terms were used in the analysis?

- 6 year term with annual crediting (1 year options)
- The annual option budget is assumed to be the yield on BBB bonds at inception of the FIA *less* 1.5% to cover the carrier's expenses and profitability, all floored at 50% of the BBB yield
- Option hedging costs are estimated using Bloomberg's market implied volatilities and financing rates where applicable
- For the Barclays Risk Balanced index, a volatility bid/offer of 10.6%/11% is used to price options

[1] Excess return is defined as total return less the Fed funds rate, i.e. "return in excess of the risk free rate". Returns were calculated using historical and, in some cases, hypothetical performance data. Historical and hypothetical performance is not indicative of future performance or results. Index tickers applicable: SPTR for S&P 500, LT09TRUU for US Treasuries 7-10yr, LCA1TRUU for Single A Bonds, BXIIRB10 for the Barclays Risk Balanced Index.

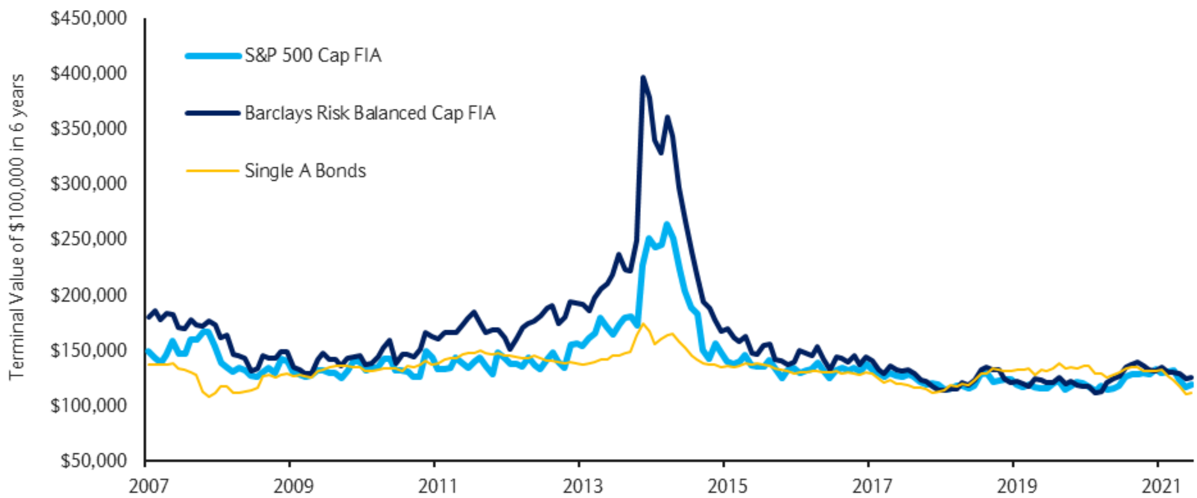
[2] S&P 500 references the price index (SPX). See appendix for example payouts.

Until more recently, cap levels had generally been decreasing. This is expected as option budgets are a function of the yields that the insurance carrier can earn when investing the initial premium. Higher yields mean higher option budgets. Volatility targeted indices generally have lower volatility than S&P 500 and correspondingly higher caps (and participation rates where applicable).

Graph 2: Historical annual crediting rates (December 2001 to May 2022)

Source: Barclays, Bloomberg

Graph 3: Rolling 6 year FIA performance compared to Single A Bonds (December 2001 to May 2022)



Source: Barclays, Bloomberg

Table 2: Performance Comparison (December 2001 to March 2022)

	S&P 500 Cap	Barclays Risk Balanced Cap	Single A Bonds
Average rolling 6 year return	40.25%	60.12%	33.43%
Best 6 year return	164.52%	296.29%	74.60%
Worst 6 year return	13.88%	11.25%	8.50%
Average annualized return	5.59%	7.65%	4.87%
Best annualized return	17.60%	25.80%	9.73%
Worst annualized return	2.19%	1.79%	1.37%
% of time returns beat Single A Bonds	61%	84%	n/a

Source: Barclays, Bloomberg

FIA performance is always flat or positive due to the downside protection.

Recent performance has been decreasing, in line with decreasing option budgets due to decreasing yields (Single A bond yields reached historical lows of ~1.5% around July 2020), but is still in line with bond returns.

FIAs are often compared to bonds as both have principal guarantees. See table 2 for performance in the period from December 2001 to May 2022:

- Performance of S&P 500 Cap FIA is slightly higher than for Single A Bonds
- Performance of the Barclays Risk Balanced Cap FIAs is substantially better, outperforming Single A Bonds in 84% of rolling 6 year periods.

How do FIAs and bonds compare?

FIAs and bonds are both fixed term, income earning and principal protected instruments.

Bond returns depend on bond yields, which are just off historical lows, whereas FIA returns can be driven by a wide range of return sources, from large cap equities to the latest smart betas.

Tax on income is deferred until withdrawn in the case of FIAs. Corporate bond income is taxed at the ordinary rate. FIAs are less liquid than bonds prior to maturity due to their surrender charge, however 10% can be withdrawn for free each anniversary.

Risk mitigation with FIAs

Past bond performance has been driven in part by price appreciation from decreasing yields. The concern is that yields have less room to decrease and therefore past bond performance is not repeatable. If yields increase (e.g. due to inflationary pressures), this will act as a headwind to bond performance. Higher yields will lead to higher option budgets and improve the upside participation of future FIAs.

In addition, FIAs can reduce exposure to rising yields by judicious selection of an equity index. Bonds do not have that flexibility.

Conclusion

We often use average returns when comparing investments, but that has pitfalls. Would you cross a flowing river if I said the average depth is 3 feet? Or would you be more concerned about the maximum depth?

The same applies to core investments, especially nearing retirement when there is limited time to make back drawdowns and withdrawals crystalize the losses.

The S&P 500 suffered the worst drawdowns for the review period. FIAs provide upside participation while protecting against losses. When compared to bonds, FIAs offer a high degree of flexibility regarding the exposure type, negating the potential effect of future increases in yields.

Innovation in the FIA space over the last ~10 years has resulted in an improved offering that can access a diverse range of indices with intelligent techniques to maximize upside opportunities. Our analysis shows that the Barclays Risk Balanced index cap outperformed bonds in 84% of rolling 6 year periods from December 2001 to May 2022.

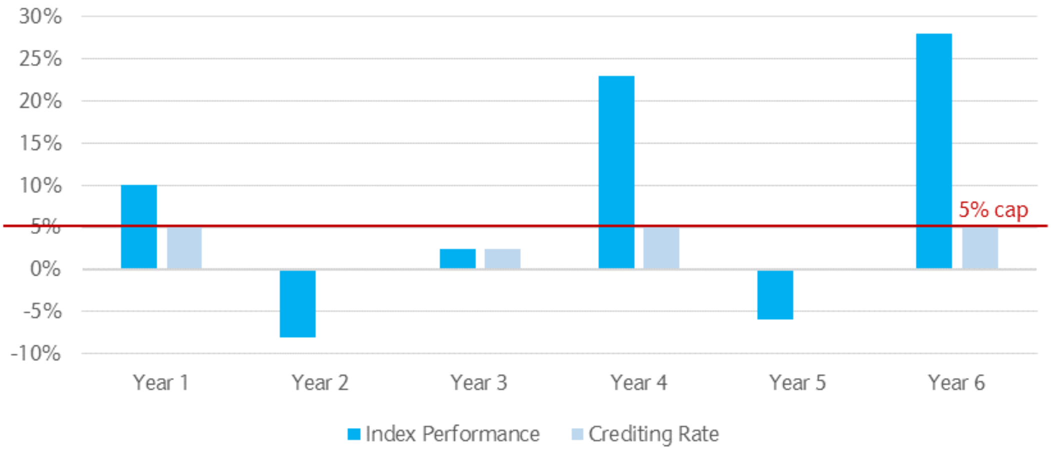
Risk factors related to Fixed Index Annuities include: (a) they are illiquid, due to their surrender schedule; (b) they are not FDIC insured and policyholders are exposed to creditworthiness of the insurance carriers; (c) they charge costs – we have assumed ~1.5% cost per year in our analysis, which is covered by the carrier from the bond portfolio they manage.

We assess that Fixed Index Annuities provide policyholders with "pre-packaged bonds" that are professionally managed by sophisticated insurance companies, combined with upside linked to equity markets that are less exposed to inflation than bonds.

Appendix

Example 1 year Cap FIA

- Assumed cap of 5%
- The crediting rate will be 1 for 1 upside with index performance until the 5% cap is reached, zero otherwise
- If index performance is 10%, then crediting rate will be 5%
- If index performance is less than 0%, then crediting rate will be 0%



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