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PutWrite: A Potentially Risk-Reducing Strategic Allocation for Non-Life Insurers

In early 2016 the Financial Accounting Standards Board (FASB) issued Accounting Standards Update 2016–01 (ASU 2016–01), changing how financial institutions account for unrealized capital gains and losses on their equity investments. The update eliminated the "available-for-sale" classification typically used to measure the value of equity holdings, requiring instead that equity holdings be measured at fair value and that any changes to fair value go through net income. With the aging bull market in stocks becoming more unpredictable, many insurers that hold equity investments are seeking to replace or supplement their portfolios with a less volatile strategy without sacrificing equity-like returns.

Executive Summary

In this paper we explore how the introduction of an equity index put-writing strategy to a strategic asset allocation has the potential to add value to a typical non-life insurance portfolio. Subsequently, we explore how such a strategy has the potential to reduce an insurer's net investment income (NII) volatility—a potential concern following the implementation of ASU 2016–01.

A Few Key Takeaways:

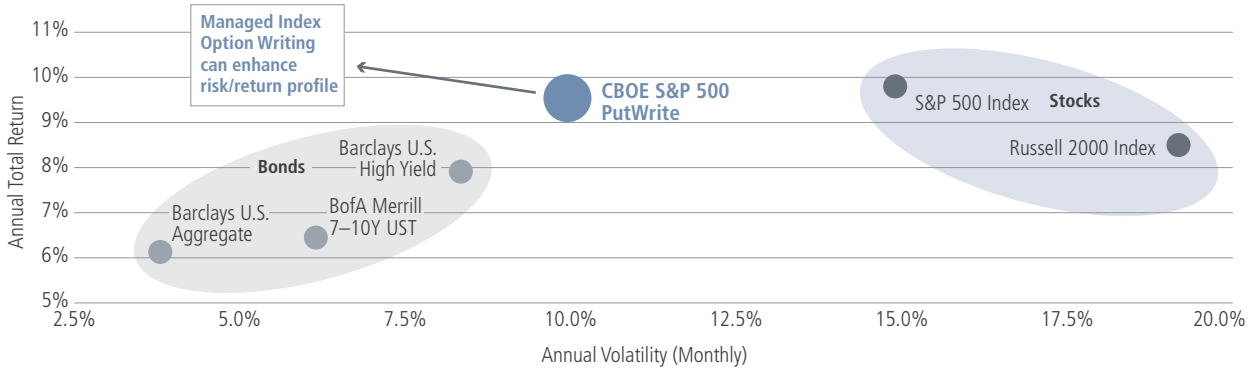
- ASU 2016–01 could cause an insurer's NII volatility to double depending on its holdings.
- A strategic allocation to an equity index put-writing strategy could reduce NII volatility under the new accounting rules by 32% in our model.
- An equity index put-writing strategy may help reduce surplus volatility while keeping NII and AM Best's capital adequacy ratio (BCAR) constant.

We find that an equity index put-writing strategy offers attractive risk-adjusted return potential and complements the other assets typically held in non-life insurance portfolios.

A collateralized put-writing strategy—represented in this paper by the CBOE S&P 500 PutWrite Index (the "PutWrite Index")—consists of a short position in a 30-day at-the-money equity index put option and an investment in short-term U.S. Treasuries with a value equal to the put option's notional value. Writing a put option has the effect of converting future equity capital appreciation and dividend/buyback return potential into upfront cash flows collected through premiums. Utilizing an insurance-like mechanism in which premiums are collected to help mitigate losses that may result from equity decreases, an equity index put-writing strategy can generate a more consolidated return profile compared to public equity investments.

FIGURE 1. COLLATERALIZED PUT WRITING HAS THE POTENTIAL TO OFFER BETTER RISK-ADJUSTED RETURN

Index Annual Return vs. Risk, June 1986 through December 2018



Source: Bloomberg LP, CBOE. Index data is gross of fees. Investing entails risks, including possible loss of principal. Indexes are unmanaged and are not available for direct investment.

As illustrated in Figure 1, the PutWrite Index produced equity-like returns with less volatility than the specified equity indices from June 1986 to December 2018, resulting in a better risk-adjusted return profile. These results are driven by the design of the PutWrite Index. Figure 2 illustrates how a put-writing strategy generally behaves in three different markets; while it may underperform its reference index in strong up markets, a put-writing strategy generally keeps pace in a moderate bull market and does comparatively better in flat markets and down markets.

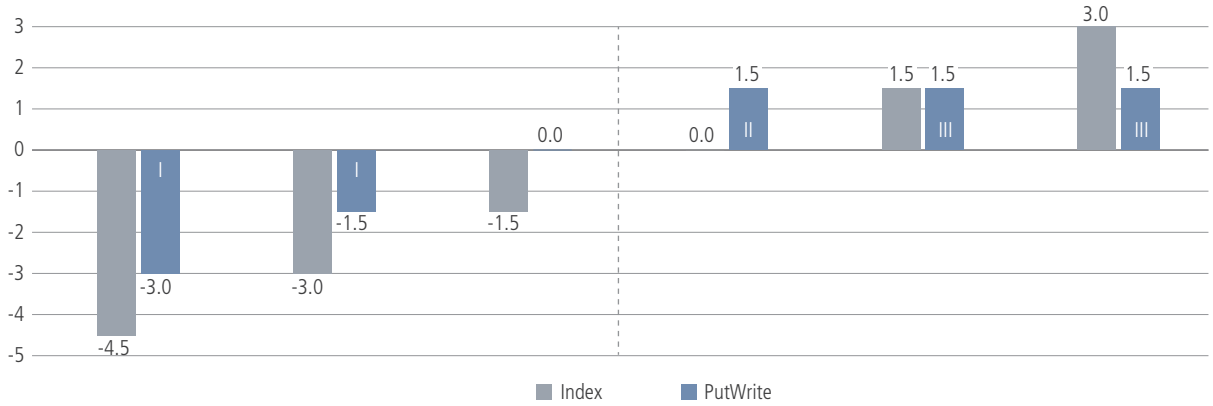
I. **Down Markets:** The put-writing strategy investor risks a decline in value similar to that of the underlying index, but those declines may be partially offset by the premium collected.

II. **Flat Markets:** The put-writing strategy investor keeps the premium collected.

III. **Up Markets:** The put-writing strategy investor does not participate in the full gain of underlying index beyond the premium collected.

FIGURE 2. A PUT-WRITING STRATEGY OUTPERFORMS THE INDEX IN FLAT AND DOWN MARKETS

Illustration of a Put-Writing Strategy Option Payoff

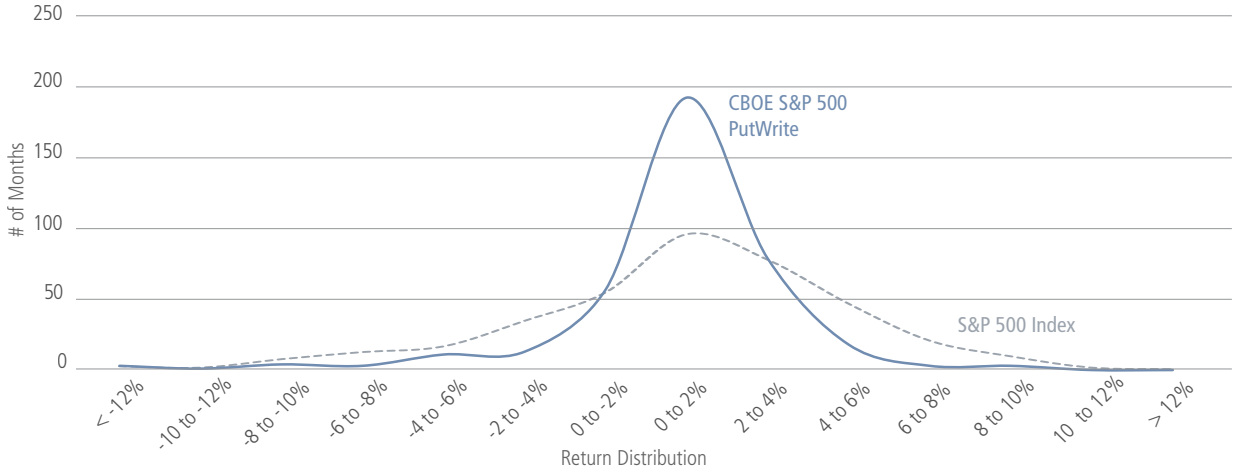


Source: Neuberger Berman. For illustrative purposes only. Investing entails risks, including possible loss of principal. Indexes are unmanaged and are not available for direct investment.

As we dig deeper into the monthly return distribution of the PutWrite Index compared to public equity opportunities, depicted in Figure 3, we find that the index exhibits a more centralized peakedness in returns—that is to say, the lower volatility of a put-writing strategy results in monthly returns that are more consistent than those found in public equity markets. This less-extreme return profile is particularly attractive under ASU 2016–01, as returns on both equities and options will be included in an insurer's reported earnings.

FIGURE 3. PUTWRITE INDEX HAS PRODUCED MORE CONSISTENT MONTHLY RETURNS

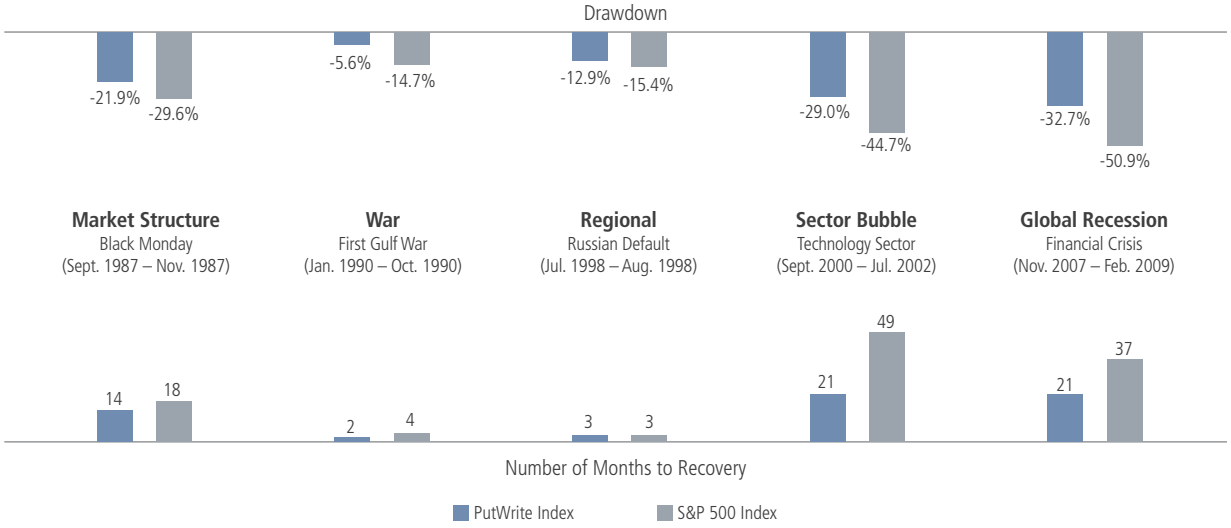
Monthly Return Distributions, June 1986 through December 2018



Source: Bloomberg LP. Index data is gross of fees unless stated otherwise. Selected time period reflects longest common history of indexes. [Analysis limited to inception of HFRI indexes of 12/31/1989.] Investing entails risks, including possible loss of principal. Indexes are unmanaged and are not available for direct investment.

Beyond traditional performance measures such as return and volatility, tail risk is an important concern for insurers and other institutional investors alike. Figure 4 provides a historical drawdown analysis of the PutWrite Index compared with the S&P 500 Index during different periods of market stress. Perhaps not surprisingly, the drawdowns of the PutWrite Index are significantly smaller than those of the S&P 500—a finding consistent with the return profiles depicted in Figure 3—while the index also recovered from these selloffs more quickly.

FIGURE 4. PUTWRITE INDEX HAS SUFFERED LESS EXTREME DRAWDOWNS AND RECOVERED MORE QUICKLY
June 1986 through December 2018



Source: Bloomberg LP, CBOE. Investing entails risks, including possible loss of principal. Indexes are unmanaged and are not available for direct investment.

Overall, a put-writing strategy can offer the opportunity for return efficiency in a cost-effective and liquid format.[1]

The Case for a Put-Writing Strategy in an Insurance Portfolio

While a put-writing strategy may look attractive on a standalone basis, it's important to examine the asset class from a total portfolio perspective. Specifically, how might a put-writing strategy interact with the rest of an insurer's portfolio? To evaluate this, we consider a constrained optimization framework.

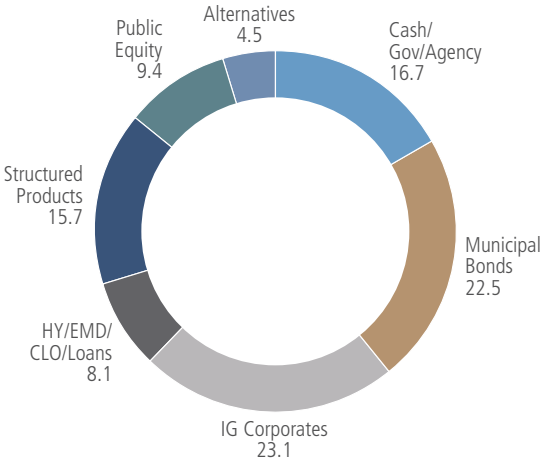
We begin with a sample non-life insurance portfolio presented in Figure 5, which we will henceforth refer to as the "Industry" portfolio. To construct this portfolio, we take a weighted average of the U.S. property & casualty industry asset allocations, removing outlier companies. As we see in Figure 5, the resulting Industry portfolio has a fairly large allocation to municipal bonds and investment grade corporate bonds. There is also a sizable (9.4%) allocation to public equity, a potential source of unwanted volatility in a company's earnings under ASU 2016–01.

[1] For a more detailed look into put-writing strategies, please refer to: Derek Devens et al., "Uncovering the Equity Index Put-Writing Strategy," Neuberger Berman, June 2017.

FIGURE 5. SIZABLE PUBLIC EQUITY EXPOSURE COULD CREATE UNWANTED EARNINGS VOLATILITY

P&C Insurance Industry Portfolio Allocation

Asset Class	Allocation (%)
Cash & Short Term	8.8
Government & Agencies	7.9
Municipal Bonds	22.5
U.S. Corp A/above	11.0
U.S. Corp BBB	12.1
U.S. HY	2.9
EMD	1.0
CLO	1.4
Loans	2.7
Structured Products	15.7
Public Equity	9.4
Alternatives	4.5



Source: SNL, Neuberger Berman.

Optimization Framework

Using the Industry portfolio allocation as our baseline, we run two different optimizations: one without an allocation to the PutWrite Index ("No PutWrite") and one with ("PutWrite"). While the portfolios could be further optimized by relaxing the constraints on other asset classes, we take care to keep the broad asset class allocations of these optimized portfolios consistent with that of the Industry portfolio; as these optimizations are otherwise identical, any increased efficiency of the PutWrite optimization can be attributed to the addition of a put-writing strategy.

Working within an asset-liability management framework, we optimize our portfolios minimizing surplus volatility (the volatility of assets minus liabilities) rather than asset volatility in order to capture the interactions between an insurance company's assets and liabilities. To model the liabilities we construct a liability-replicating portfolio that approximates the interest-rate sensitivities using KRDs of a non-life insurer's liabilities. However, due to the relatively short duration of the typical non-life insurer's liabilities, the portfolios that result from this exercise do not deviate significantly from the asset-only optimization.

We also account for the dividend received deduction (DRD), which provides equity allocations with some advantages compared to a put-writing strategy. After prorating the DRD, a non-life insurer pays approximately 10% in federal income tax on the dividend portion of its public equity income, whereas it pays 21% on capital gains from equity and on taxable income generated by a put-writing strategy. While our analysis incorporates this relative tax benefit for public equity, we still find it optimal to allocate a portion of the public equity portfolio into the PutWrite Index.

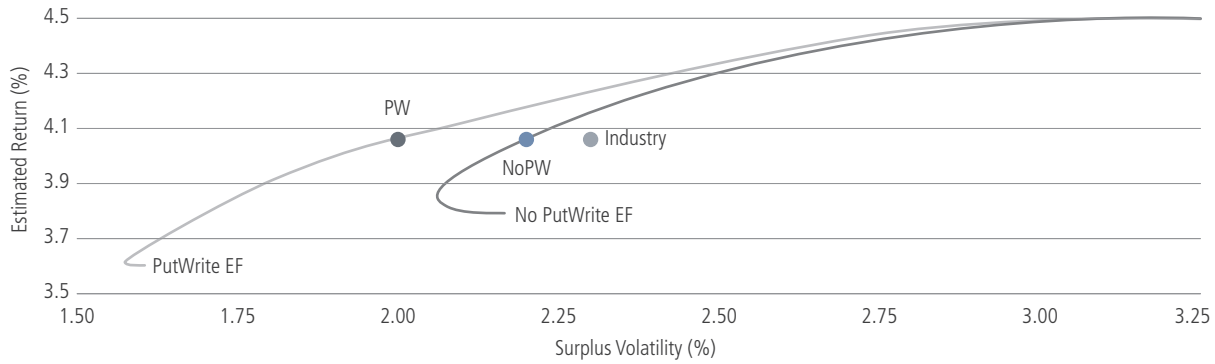
Finally, we recognize that BCAR—which is used to evaluate the strength of a P&C insurer's balance sheet—is an ongoing concern for a number of P&C insurers. As an extra constraint in each optimization, we do not allow for the sum of BCAR B1 and BCAR B2 to increase beyond the sum of BCAR B1 and BCAR B2 level of the Industry portfolio.

Optimization Results

As shown in Figure 6, we construct two efficient frontiers—one for each set of parameters—with the Industry portfolio as a reference point. Visually, the PutWrite efficient frontier sits to the left of the No PutWrite efficient frontier, suggesting that inclusion of the PutWrite Index improves the insurance portfolio's risk-adjusted returns at lower levels of risk.[2] We can think of the vertical distance between the two efficient frontiers as the return potential a put-writing strategy can add to a non-life insurance portfolio given various levels of risk. Similarly, we can consider the horizontal distance between the frontiers as the potential surplus volatility reduction a put-writing strategy can provide.

[2] Fixed income returns are estimated based on current yields less expected defaults. Equity and alternative assumptions are based on Neuberger Berman's intermediate-term capital market assumptions which use a Black-Litterman approach. Risk is measured based on the historical volatility of public indices. The estimated return and volatility are based on forward-looking assumptions and the historical performance of the CBOE S&P500 PutWrite Index.

FIGURE 6. ALLOCATION TO A PUT-WRITING STRATEGY MAY IMPROVE AN INSURER'S RISK-ADJUSTED RETURN

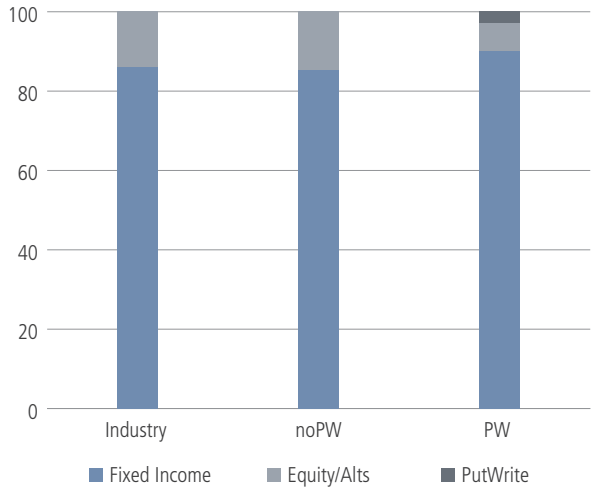


Source: Neuberger Berman. Estimated returns and estimated volatility (risk) shown are hypothetical and are for illustrative purposes only. They are not intended to represent, and should not be construed to represent, predictions of future rates of return or volatility. Actual returns and volatility may vary significantly. Unlike actual investment performance, hypothetical model results do not represent actual trading and accordingly they may not reflect the impact that material economic and market factors might have had on decision-making if assets were actually managed during the relevant period. Investing entails risks, including possible loss of principal. Indexes are unmanaged and are not available for direct investment.

We investigate further by examining a portfolio on each of the efficient frontiers. We choose two model portfolios that maintain the estimated returns of the Industry portfolio, labeled as "noPW" and "PW" in Figure 6. Figure 7 shows a detailed allocation for these model portfolios.

FIGURE 7. A CLOSER LOOK AT OUR MODEL PORTFOLIO ALLOCATIONS

Asset Class	Industry (%)	noPW (%)	PW (%)
Cash & Short Term	8.8	5.0	5.0
Government & Agencies	7.9	7.9	7.9
Municipal Bonds	22.5	19.5	19.5
U.S. Corp A/above	11.0	10.0	10.0
U.S. Corp BBB	12.1	19.5	24.2
U.S. HY	2.9	2.5	2.5
EMD	1.0	1.0	1.0
CLO	1.4	1.4	1.4
Loans	2.7	2.7	2.7
Structured Products	15.7	15.7	15.7
Public Equity	9.4	10.2	2.8
Alternatives	4.5	4.5	4.5
PutWrite	0.0	0.0	2.8



	Estimated Return (%)	Surplus Volatility (%)	Asset Duration	Surplus Duration	Spread Duration	BCAR B1 + B2 (%)	RBC R1 + R2 (%)
PC Industry	4.06	2.3	4.0	1.9	3.9	10.0	3.1
noPW	4.06	2.2	3.5	1.4	3.3	10.0	3.2
PW	4.06	2.0	4.2	2.1	4.3	10.0	2.4

Source: Neuberger Berman.

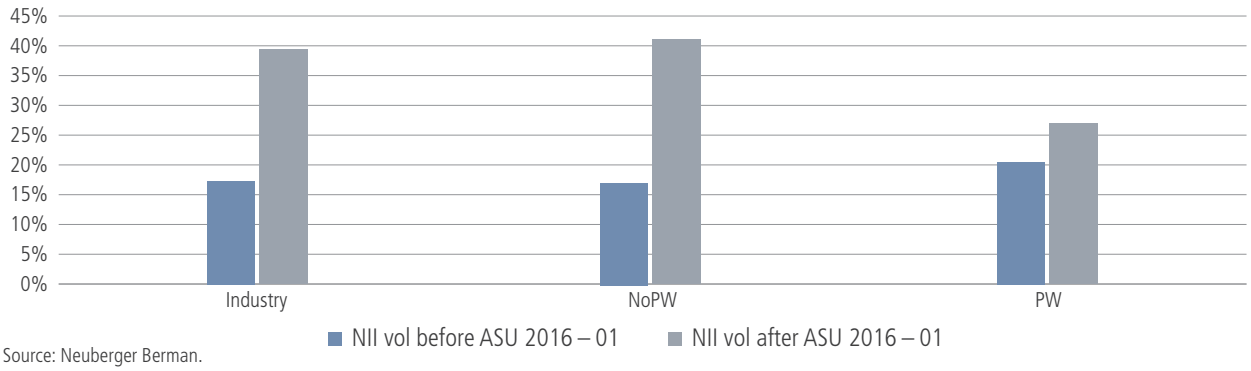
By design, fixed income allocations between the model portfolios remain relatively similar to better isolate the effects of a put-writing strategy. After including a put-writing strategy, we find that the PW portfolio reallocates from public equity and other alternatives, BBB-rated corporate bonds and the put-writing strategy. Ultimately, this rotation among asset classes resulted in a 24-basis-point decrease in the model portfolio's expected surplus volatility at the same level of estimated return.

Accounting Standards Update 2016–01 and NII Volatility

The adoption of ASU 2016–01 enhanced the benefits that a put-writing strategy may provide non-life insurance companies. Before ASU 2016–01, companies could record unrealized gains and losses as other comprehensive income (OCI), potentially reducing the NII volatility from public equity exposure to that of the dividend yield's volatility. However, with unrealized equity gains and losses now being recorded in net income under ASU 2016–01, an insurer's NII volatility increases.

We estimate NII volatility by measuring the volatility of high yield bonds, equity and alternatives, where equity volatility reflects the changes under ASU 2016–01. In our framework, investment grade corporate bonds are assumed to have no NII volatility. Using our Industry portfolio as an example, ASU 2016–01 causes NII volatility to more than double from 17% to 39% (see Figure 8). We can make a similar comparison between the noPW portfolio and the PW portfolio; while noPW has an NII volatility of 40%, the addition of an allocation to the PutWrite Index can reduce this to 27%, mitigating some of the effects of ASU 2016–01.

FIGURE 8. A PUTWRITE ALLOCATION CAN MITIGATE SOME OF THE EFFECTS OF THE NEW ACCOUNTING RULES



Source: Neuberger Berman.

Structuring and Insurance Accounting for Investments in Put-Writing Strategies

The optimal structure for an insurer to hold PutWrite depends on the insurer's unique objectives and constraints. If Schedule BA limitations are binding, PutWrite can be structured such that it is held on Schedule D. Alternatively, a more favorable fee arrangement may be found in a structure that is recorded on Schedule BA. Neuberger Berman's Insurance Analytics team can help insurers select a structure that meets their investment goals and constraints.

Conclusion

By increasing income volatility, the new accounting rules put into place by ASU 2016–01 have made equity a less attractive investment for non-life insurers. We believe a strategic allocation to a collateralized put writing strategy can help. With the unrealized gains and losses of public equity investments now included in net income, as are the premiums and earnings generated by a put-writing strategy, the lower relative volatility of a put-writing strategy may represent a way for non-life insurers to mitigate the income impact of the new accounting rules.

A put-writing strategy offers an attractive return-risk profile that supplements the typical asset allocations of non-life insurance investors. As demonstrated through our optimization framework, an efficient frontier inclusive of the PutWrite Index sits to the left of one without it, suggesting that a put-writing strategy has the potential to reduce portfolio risk without detracting from other objectives like expected return and BCAR.

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The CBOE S&P 500 PutWrite Index (PUT) is designed to track the performance of an index option put writing strategy that sells a sequence of one-month, at-the-money, S&P 500 Index puts and invest cash at one- and three-month Treasury Bill rates. The number of puts sold varies from month to month, but is limited so that the amount held in Treasury Bills can finance the maximum possible loss from final settlement of the SPX puts, i.e., put options are fully collateralized.

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