A defensive equity solution using put options

Reducing volatility and sensitivity to drawdowns while providing similar returns

Client case study

The organization

A large public pension fund desired a change to its U.S. Large Cap equity portfolio that would reduce volatility, mitigate sensitivity to drawdowns, and provide a similar return to the S&P 500 Index. To accomplish these objectives, Russell Investments implemented a put-writing mandate to harvest the volatility risk premium by selling fully-covered put options on the S&P 500 Index while simultaneously investing the cash collateral in a range of short- and intermediate-term high-grade debt instruments.

The challenge

Volatility can have a destructive impact on portfolio value by reducing the compounding rate of portfolio returns. A decline of 10% in one year followed by an increase of 10% in the next year does not mean you broke even. In this case, the portfolio lost 1%.[1] When responding to the harmful characteristics of volatility, many investors have pursued strategies that alter the risk-return profile, specifically seeking solutions that offer lower risk for similar returns.

The solution

As shown in Exhibit 1, over the last 30 years, writing puts on the S&P 500 Index has resulted in similar returns, consistently lower risk, and shallower drawdowns (along with a faster recovery after the drawdown) relative to the index.[2]

Writing put options is a way to capture the volatility risk premium that is embedded in the pricing of options. There is persistent demand in the marketplace to buy option protection that can be harvested (similar to selling an insurance premium). Essentially, implementing a put-writing strategy can diversify a client's risk exposures away from the equity risk premia and capture the volatility risk premia. Furthermore, listed options on established markets (e.g., U.S. Equity, Developed Europe) are highly liquid, exchange-traded, and have relatively low transaction costs.

Writing puts has historically shown to provide 90% of the return with 70% of the volatility versus the S&P 500 Index.

Exhibit 1: Summary statistics

PORTFOLIO STATISTIC	SPTR	PUT
Annualized Return	10.1%	10.0%
Annualized Standard Deviation	14.1%	9.5%
Tracking Error	0.0%	8.3%
Beta	1.00	0.55
Correlation	1.00	0.82
Information Ratio	n/a	-0.007
Worst Drawdown	-51.0%	-32.7%
Up Capture	100.0%	62.8%
Down Capture	100.0%	39.0%
Calmar Ratio	**0.20**	**0.31**

Source: Russell Investments; Bloomberg. PUT = CBOE S&P 500 Put Write Index. SPTR = S&P 500 Total Return Index. Time period is 1988-2018. Past performance is no guarantee of future results.

Using a security for multiple purposes is an excellent strategy for improving the efficiency of the client's cash. In this case, $80 million of cash can be used elsewhere by the client by pledging existing securities to satisfy margin requirements.

Mandate guidelines

The client desired a core-satellite approach to its equity option allocation whereby Russell Investments would be the core portfolio such that any active tilts away from the benchmark index's methodology would be reasonable and systematically implemented. Meanwhile, the satellite mandates were permitted to take larger deviations away from the benchmark. Our Enhanced Put Write strategy utilized overlapping positions, varied execution timing, diversified option tenors, and enhanced collateral returns. Overlapping positions were maintained through a continuous rolling process. These positions help to mitigate the "pin risk" that is often associated with options (i.e., the uncertainty of whether an option will close "in the money" or "out of the money" as expiration approaches). By varying the tenors of the options, the mandate further mitigates the path dependencies that are often inherent in option positions.

On the collateral management side, our goal was to hold approximately 20% of the portfolio in Treasury securities to satisfy the initial margin requirements for the options, place another 10% in broker collateral cash to protect against adverse market movements, and have the remaining 70% in an enhanced cash portfolio of high-quality securities with a portfolio duration limit of 1.25 years. The performance goal was to exceed the total return on the benchmark index over a three- and five-year period.[3]

Operational enhancements

With cash rates rising since the initial launch in 2016, we revisited the cash portfolio allocation with the client in 2018. After stating its increased risk appetite, we increased the portfolio duration limit to three years and reduced the broker collateral cash reserve by investing in agency discount notes.

Future enhancements

A future enhancement that we will implement in 2019 is to "dual-purpose" the Treasury securities held in the enhanced cash sleeve to satisfy the initial margin requirements of the client's Overlay program, which is a completely different mandate that we run for this client. Essentially, we can use a security like a T-Bill or T-Bond to serve as both an investment that earns a yield while simultaneously pledging it to the Overlay account to satisfy the initial margin requirements for derivatives. Using a security for multiple purposes is an excellent strategy for improving the efficiency of the client's cash.[4] In this case, $80 million of cash can be used elsewhere by the client by pledging existing securities to satisfy margin requirements.

The results

The mandate was launched in mid-2016. Through January 2019, the portfolio has exceeded the benchmark index by 111 basis points on an annualized basis. Over this period, the volatility (standard deviation) of the portfolio was 8.3% (compared with the S&P 500 volatility of 12.6%). The worst drawdown during this timeframe was only 15.2% (compared to S&P 500 experiencing a drawdown of 19.4%).

[1] A starting portfolio of $100 that falls 10% in year 1, ends at $90. If it rises 10% in year 2, the portfolio will end with a value of $99. That's a -1% return over the period. Another way to make this point is to assume you had a -50% loss in year one. To break even, you'd need a +100% return in year two.

[2] For the top five drawdowns during the period, SPTR averaged 20 months to recover to the previous high. In contrast, similar drawdowns took only 10 months to recover for the PUT index. In addition, drawdowns in PUT were less in severity and lower in overall length when compared to SPTR.

[3] The CBOE Put Write (PUT) Index is an appropriate benchmark. The PUT strategy is designed to sell a sequence of one-month, at-the-money, S&P 500 Index puts and invest cash at one- and three-month Treasury Bill rates.

[4] See Saucier, P., Causey, B. (2019). "Enhanced cash and liquidity management". *Russell Investments Strategy Spotlight*.

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