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Utilizing Options to Mitigate the J Curve

The Challenge

When an investor decides to allocate capital to liquid, public markets, investment exposure typically starts almost immediately and, depending on how big the allocation is and which markets it is directed to, the exposure will be complete in a matter of hours, days or weeks.

In contrast, allocating to private markets starts a process that can take years to complete. For example, when an investor commits to a new private equity fund, that capital becomes an explicit liability that is called at intervals over the following years as investment opportunities are identified by private equity fund manager and deals are struck. It typically takes up to five years to call all of an investor's commitments depending on the markets the private equity fund is addressing.

This can create two challenges for the investor:

1. UNTIL ALL OF THE COMMITTED CAPITAL IS CALLED, A PROPORTION OF THE PRIVATE EQUITY ALLOCATION IS NOT EXPOSED TO EQUITY, LET ALONE PRIVATE EQUITY, RISK AND RETURN.

2. WHILE NOT EXPOSED TO PRIVATE EQUITY RISK AND RETURN, THE SPONSOR OF THE PRIVATE EQUITY FUND MAY STILL LEVY THE FULL PRIVATE-EQUITY FEES AND CHARGES ON THE COMMITTED CAPITAL.

The cost of these fees levied during a period with limited equity exposure can result in a "j-curve" shape to the private equity fund's lifetime returns: investors may spend a meaningful amount of time in the red before they start to enjoy gains.

The Put-Option Solution

Some investors address this challenge by allocating some or all of the committed cash to a liquid, large-cap public equities strategy, either actively managed or passive, until it is called for investment. The problem here is that the investor's capital, which is an explicit liability payable to the private equity fund, is completely exposed to the downside risk of equity markets. What happens should a capital call come just at a time when the investor least wants to sell equities?

It is important to assess how best to manage this risk. Down markets are not good times to sell privately held companies and therefore, in bear markets, investors may see very little capital being returned from private equity funds. At the same time there can be an increase in capital calls as fund sponsors sense value opportunities in the market. As a result, a prudent investor may not wish capital that is an explicit short- to medium-term liability to be exposed to 100% of the public equity market's downside risk.

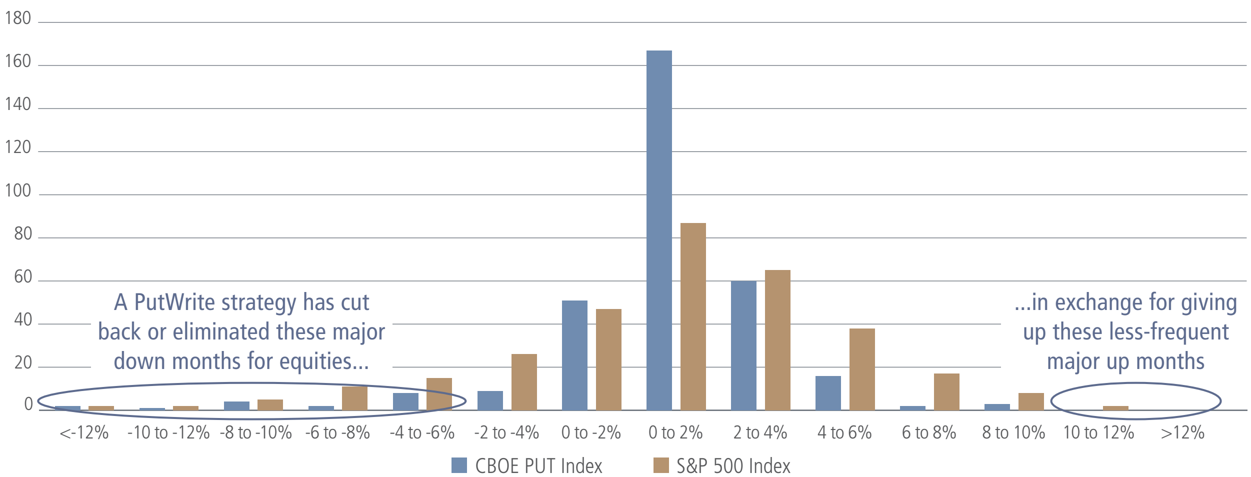
An investor that seeks equity exposure could choose to allocate only part of the capital committed to a liquid equity strategy, with the rest left in cash. Half an allocation equates to half the volatility and half the downside.

However, in what we believe may be a better alternative, Neuberger Berman has started to work with clients to develop equity-index options-based strategies that can manage-down equity risk relative to a passive or active equity strategy, which is likely to be exposed to close to 100% of the market risk. The profile of these strategies not only exhibits structurally lower volatility than a passive equity investment, but also a more attractive skew in returns that cannot be achieved by simply allocating less than 100% of committed capital to a passive equities strategy.

A systematic put-option writing strategy, represented by the CBOE S&P 500 PutWrite Index (the "PUT Index"), has historically delivered returns that cut back on some of the worst periods of performance of the S&P 500 in exchange for giving up some of the (less frequent) periods of exceptionally high returns, as shown in Figure 1.

FIGURE 1. AN EQUITY-INDEX PUT-WRITING STRATEGY CAN "CUT THE TAILS OFF" OF THE UNDERLYING INDEX

Number of months (y axis) exhibiting a given range of return (x axis), June 1986 – June 2017



	S&P 500 TOTAL RETURN INDEX (SPXT)	CBOE S&P 500 PUTWRITE INDEX (PUT)
ANN. TOTAL RETURN	10.40%	10.10%
ANN. VOLATILITY	14.90%	9.90%
WORST DRAWDOWN	*-50.91%*	*-32.66%*

Source: Neuberger Berman, Bloomberg, CBOE. Analysis is limited by the availability of historical data as sourced from Bloomberg and CBOE. The CBOE S&P 500 PutWrite (PUT) Index incepted in June 2007 with historical backtested data available since 6/30/1986. Indexes are unmanaged and are not available for direct investment. Investing entails risks, including possible loss of principal. **Past performance is no guarantee of future results.** See "Disclosures" at the end of this piece, which are an important part of this material.

The PUT Index has generated a very similar annualized return to the S&P 500, with two-thirds of the volatility and the drawdowns. Shallower drawdowns also translate into a shorter time to the recovery of the previous peak, which further reduces the risk that committed capital might be unavailable when called by the private equity fund sponsor.

What is the source of this more attractive skew to returns? Put options are a little like insurance contracts, bought by investors to protect their portfolios from steep drawdowns in their equity portfolios. Like all insurance, buyers tend to pay a premium for it: over time this generates an excess return for the writers of equity put options beyond the simple equity risk premium. The premium can be seen, most of the time, in the way options are priced: the volatility implied in options pricing tends to be higher than the volatility that is actually realized over the lives of those options.

Put options come with further advantages that make them well suited for a capital allocation that may be called as a cash commitment at short notice. First, because these strategies can be implemented with exchange-traded index options, they are extremely liquid. Second, because the size of their cash flows is determined by the pricing of the equity risk premium, a put option strategy will be selling options that deliver higher cash flows when there is risk aversion and equity markets are selling off. That is significant because, during these periods of risk aversion, private equity investors may not see cash flows coming in from asset sales, but are likely to see cash being called by a private equity fund sponsor eager to seize value opportunities. Put options should tend to deliver more cash when compared to full equity exposure just at the time when the private equity investor needs it.

Finally, clients can tailor equity index put option strategies to meet their specific risk tolerances either by allocating less than 100% of committed capital or by writing puts that are out-of-the-money rather than at-the-money. (The PUT Index returns shown in Figure 1 are from at-the-money puts.) When you write puts with strike prices even slightly lower than the prevailing index price, the sensitivity of the strategy to the underlying equity index falls rapidly, delivering volatility that is closer to 30% of equity markets than to the 60% we have seen from an at-the-money strategy.

Conclusion

In summary, we believe that an equity index put option strategy can be tailored to create a highly liquid, lower-volatility, lower-drawdown exposure to equity exposure that can provide steady cash flow. This equity index put option strategy can be used as a proxy for private equity while capital is committed and waiting to be called for investment. This not only has the potential to mitigate the "j-curve" effect, but can also be reintroduced when capital is returned from a private equity fund sponsor and is waiting to be deployed in a new private equity fund.

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Options involve investment strategies and risks different from those associated with ordinary portfolio securities transactions. By writing put options, an investor assumes the risk of declines in the value of the underlying instrument and the risk that it must purchase the underlying instrument at an exercise price that may be higher than the market price of the instrument, including the possibility of a loss up to the entire strike price of each option it sells but without the corresponding opportunity to benefit from potential increases in the value of the underlying instrument. The investor will receive a premium from writing options, but the premium received may not be sufficient to offset any losses sustained from exercised put options. Put writing makes an explicit trade-off between up-market participation and down-market participation, while still seeking reasonable returns in flat markets. As such, in up markets, an investor typically will not participate in the full gain of the underlying index above the premium collected. An investor that makes a commitment to a private equity fund that invests in option strategies pending capital calls could lose a significant amount (if not all) of its investment and be unable to meet capital calls from the private equity fund. A similar risk may not occur if the investor's capital was not deployed in an equity strategy at all.

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Index Definitions

The S&P 500 consists of 500 stocks chosen for market size, liquidity, and industry group representation. It is a market value weighted index (stock price times number of shares outstanding), with each stock's weight in the Index proportionate to its market value. The "500" is one of the most widely used benchmarks of U.S. equity performance. As of September 16, 2005, S&P switched to a float-adjusted format, which weights only those shares that are available to investors, not all of a company's outstanding shares. The value of the index now reflects the value available in the public markets.

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 CBOE S&P 500 PutWrite (PUT) Index incepted in June 2007 with historical backtested data available since 6/30/1986. 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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