



The low forward combined with depressed long-dated implied volatility has resulted in the most attractive pricing on long-dated call options in many years. As an example of how marked this difference can be, if we compare prices of 60-month maturity SPX ATMS calls on 30-Jun-03 and 11-Oct-13, two periods with the same implied volatilities but very different forwards, the difference in premium is ~4.5% (19.1% vs. 14.6%). However, if we compare the option prices in terms of the forward (ATMF strikes), then the above mentioned spread in the premium disappears.

Historical performance of long-dated calls

Option strategies have had better risk-adjusted returns vs index performance. In this section, we look at the historical performance of different long-dated call strategies². We compare the performance of the option positions vs. the total return on the SPX Index. These backtests³ focus on SPX 18M and 36M options. We chose the 18M maturity for our backtests since many investors prefer exchange-listed options to OTC and 18M is the farthest listed maturity for which we had consistent data for the SPX. We chose the 36M maturity to study the results for even longer-dated options whose vega exposure does not decay as rapidly. Our results are largely similar among the two maturities studied and include those for

- Calls and call spreads either held to maturity or rolled⁴ after some time has passed in the life of the option
- Call diagonals (buy long-dated calls financed by selling 1M calls) where the long-dated call is either held to maturity or rolled after some time has passed in the life of the option

We find that:

- Call spreads tend to have the highest risk-adjusted return, even after scaling their delta higher to match the initial delta of just the long call leg
- Selling 1M 2% annualized premia calls to finance the purchase of long-dated calls has had better risk-adjusted performance compared with equity or outright calls
- Rolling long-dated calls and call spreads prior to expiry has generally (but not always) resulted in higher risk-adjusted returns than holding them to expiry

The table below displays the performance of these strategies in up and down market periods. The option strategies have tended to suffer less during market downturns but have underperformed in rising markets. This is expected as call options have a delta of less than 1- for every \$1 change in the SPX, the call price will change by less than 1 (by their delta value to be exact), all else equal.

² Backtests are for the Dec-02 to Sep-13 period. We assume a transactions cost of 0.30 vols for outright long dated calls and for those calls financed by selling 1M puts. In addition, we assume that the 1M options are sold at the bid. We assume a transaction cost of 0.20 vols for call spreads, which is applied to the closer-to-the-money strike. As an example, if the 18M ATM call has a vega or volatility sensitivity of 4, then we add $0.3 \times 4 = \$1.2$ to the mid ATM call price as transaction cost.

³ The backtests below assume that a long investor replaces his long delta-one position with an equivalent notional of calls (that is 1 outright call or spread contract per 100 'shares' in the index). All excess funds are invested in short-term Treasury securities.

⁴ We roll the long-dated calls after 1/3rd and 2/3rds of the option's time has passed.