

Options Worksheet



August 17, 2020

BUYING SPX INDEX PUTS FOR PARTIAL PORTFOLIO PROTECTION Without Commissions

Buying index put options is a strategy that can be used in anticipation of a market decline to provide partial protection for a portfolio of stocks that has a high correlation to the SPX. The strategy is designed to limit downside risk while still allowing room for upside appreciation without disturbing the portfolio. The profit potential of the portfolio is reduced only by the cost of the puts. The portfolio's potential for dividend income and appreciation is unaffected. Should the market decline as anticipated, profits on the puts could partially off-set the loss in value of the stock holding. Conversely, should the market continue to advance, the portfolio will realize the gains, less the cost of the puts, which can be viewed as the insurance premium. Maximum risk is limited to the cost of the puts (plus the amount that the puts are out of the money). Buying puts for portfolio protection is not a strategy to be employed on a routine basis. European options i.e SPX,DJX, may trade at a discount if in the money prior to expiration.

OPTION STRATEGY: BUY 3 DEC 3380 SPX INDEX PUT OPTIONS EXPIRING IN 2020 AT A PREMIUM OF \$180.40 EACH FOR A GROSS COST OF \$54,120. THIS STRATEGY WILL PARTIALLY HEDGE A \$1,000,000 PORTFOLIO.

Percent Market Change	Level at Expiration	Unprotected Port Value	Profit/Loss Put options	Total Value (Puts + Port)	% Change	% Offset	Loss Otherwise On Portfolio
Down 15%	2877.74	\$850,000	\$96,558	\$946,558	-5.34%	64%	\$150,000
Down 10%	3047.02	\$900,000	\$45,774	\$945,774	-5.42%	46%	\$100,000
Down 7.5%	3131.66	\$925,000	\$20,382	\$945,382	-5.46%	27%	\$75,000
Down 5%	3216.30	\$950,000	(\$5,010)	\$944,990	-5.50%		
Down 2.5%	3300.94	\$975,000	(\$30,402)	\$944,598	-5.54%		
Unchanged	3385.58	\$1,000,000	(\$54,120)	\$945,880	-5.41%		
Up 2.5%	3470.22	\$1,025,000	(\$54,120)	\$970,880	-2.91%		
Up 5%	3554.86	\$1,050,000	(\$54,120)	\$995,880	-0.41%		
Up 7.5%	3639.50	\$1,075,000	(\$54,120)	\$1,020,880	2.09%		
Up 10%	3724.14	\$1,100,000	(\$54,120)	\$1,045,880	4.59%		
Up 15%	3893.42	\$1,150,000	(\$54,120)	\$1,095,880	9.59%		

Days to Expiration = 123 Computation using beta could yield a different number of puts.

SPX are European-style cash settled exercise with Friday A.M. settlement terms.

** Note ** The portfolio values above are adjusted to reflect a portfolio beta of 1.00.

Tracking error will occur if the underlying portfolio does not exactly match the components of the option used and; the number of contracts used to hedge the portfolio may overprotect the underlying portfolio as the result of rounding up or down to full contract amounts.

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Options trading is not suitable for all investors, and involves a number of inherent risk that may result in substantial or unlimited losses.

Please read carefully the disclosures on the last page

The previous table shows the overall returns of the protected and unprotected portfolio if the SPX Index remains unchanged, or moves either up or down by 5, 10, and 15% at the expiration of the options. Cost of the puts was deducted in computing profit/loss. With the SPX Index currently at 3385.58, an investor with a \$1,000,000 portfolio of stocks with a high correlation to the SPX is concerned about the market. The concerned investor decides to hedge the portfolio, by purchasing SPX Dec 3380 put options at 180.40 (\$18040.00). Based on the \$1,000,000 portfolio value, 3 puts are purchased for a total investment of \$54,120. The formula used to determine the number of puts to best implement this strategy is Portfolio Market Value/Aggregate Exercise Price of Put = Number of Puts to Hedge Portfolio: $\$1,000,000/\$338,000 = 2.96$ rounded to 3. (Not adjusted for Beta.) Computations using Beta could result in use of a different number of puts.

A. MARKET DECLINES 10.00%

If the market declines by 10.00% and SPX drops from 3385.58 to 3047.02, corresponding to the DJIA's fall from 27877 to 25089, the \$1,000,000 portfolio will fall in value to \$900,000 (assuming 100% correlation), for a loss of \$100,000. The puts, however, would then have an intrinsic value of 332.98 (3380.00 - 3047.02). Assuming the hedger then sells the puts at \$332.98, a price reflecting the intrinsic value with no premium for any remaining time value, for a profit of \$45,774 (\$99,894 - \$54,120). The potential loss to the portfolio is effectively reduced by \$45,774 for an overall loss of only \$54,226 instead of \$100,000 on an unprotected portfolio (a 45.77% offset). As the table shows, the puts will continue to provide a "safety net" to the portfolio as the market declines.

B. MARKET ADVANCES 10.00%

If the market advances by 10.00%, and SPX climbs from 3385.58 to 3724.14, corresponding to the DJIA's move from 27877 to 30664, the portfolio will increase from \$1,000,000 to \$1,100,000 (assuming 100% correlation with the Dow) for a gain of \$100,000. The hedger could lose up to the entire amount paid for the puts (\$54,120), but prior to expiration might choose to sell them to recover any remaining time value the options may continue to carry. The maximum loss, however, will be limited to the \$54,120 premium, which can be viewed as the cost of "insurance" to protect the portfolio. In an advancing market, the portfolio will continue to realize the gains after the one-time cost of the puts, or "insurance," is deducted.

C. MARKET UNCHANGED

If the market remains unchanged, with the SPX holding at 3385.58, corresponding to the DJIA at 27877, the \$1,000,000 portfolio would continue to hold its value. The hedger could lose up to the entire amount paid for the puts, but might choose to sell them to recover any remaining time value the options may continue to carry. The maximum loss will be limited to the \$54,120 premium.

The above table is for illustration purposes only, and no return should be construed as a guarantee. The results in the previous example will differ significantly if the exercise price and/or expiration date are different. The information and statistical data contained herein have been obtained from sources, which we believe to be reliable, but in no way are warranted by us as to accuracy or completeness. We do not undertake to advise you as to any change in figures or our views. This is not a solicitation of any order to buy or sell. The information herein does not take into account the investment objectives, financial situation or specific needs of any individual or particular client of Oppenheimer and Co. Inc. Before making an investment decision with respect to any security mentioned herein, the recipient should consider whether such security mentioned is appropriate given the recipient's particular investment needs, objectives and financial circumstances. We recommend that investors independently evaluate particular investments and strategies and encourage investors to seek the advice of a financial advisor. Past performance is no guarantee of future results, and no representation or warranty, express or implied, is made regarding future performance of any security mentioned. We, our affiliates, and any officer, director, employee or any member of their families may have a position in and may from time to time purchase or sell any of the above mentioned or related securities. Prior to buying or selling an exchange traded option, a person must receive a copy of **Characteristics and Risks of Standardized Options**. A copy may be obtained from Oppenheimer & Co., Inc., 85 Broad Street, New York, New York 10004. Options trading is not suitable for all investors, and involves a number of inherent risks that may result in **substantial or unlimited losses**. An option investor may lose the entire amount in a relatively short period of time. You may obtain prospectuses for listed ETFs of your choice, which describe in detail the investment objectives, investment policies, risks, fees and other matters from the respective listing exchange. Please read any prospectus carefully before you invest. This information is not an offer to sell nor a solicitation to buy securities in any state where such offer is not permitted. Oppenheimer and Co. Inc. does not provide tax advice, and as such, as with any investment having tax implications, clients should consult with their own independent tax adviser. The contents herein may not be reprinted, sold, or redistributed without the written consent of Oppenheimer & Co. Inc. Member of SIPC.