Option Hedging Techniques

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Agenda

• What is a Hedge?
  • Why Hedge?
  • Examples

• Characteristics of Index Options
  • European styled
  • Cash Settlement
  • AM Settlement
  • Tax Considerations

• Options on S&P 500® Index
  • SPX Options
  • Mini S&P 500 Index (XSP℠)

• Trading Examples
  • Hedging With SPX
  • Hedging With XSP
What is a Hedge?

A Hedge is an asset that can protect your portfolio from uncertainty

**Why use a Hedge?**
- Decrease or Transfer Risk

**Examples**
- Buying stock in two competing companies
- Buying one equity; Shorting an equity that does the same thing
- Buying put options on a particular index against your equity portfolio
Index Options

An Index is a measure or calculation of a group of securities

*Note: No trading happens in the index itself*

- **Why were index options listed?**
  - To make indices tradeable

- **Benefits**
  - Trade broad market segments in single transaction
  - Speculate on price direction of underlying index
  - Hedge portfolio that might closely correlate to a particular index
Characteristics

**Notional Value**

N.V. = contract size \( \times \) index level

**Tradeable Indices**

- ✓ DJIA
- ✓ Nasdaq
- ✓ S&P 500
- ✓ Cboe Volatility Index®

**Market Facts**

- Cboe offers 50+ index options products (domestic, intl, sector, vol)
- S&P 500 measures performance of 500 large companies listed on stock exchanges
- SPX options are widely used by investors, speculators, hedgers

**Cash-settlement** based on value of index at expiration
Long option holder has right exercise option to buy/sell underlying
Short option holder has obligation to option owner

<table>
<thead>
<tr>
<th></th>
<th>American</th>
<th>European</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Products</strong></td>
<td>All optionable Equity stocks and ETFs</td>
<td>Most index options</td>
</tr>
<tr>
<td><strong>Exercise</strong></td>
<td>Any time prior to or including Expiration</td>
<td>Only at Expiration</td>
</tr>
<tr>
<td></td>
<td><em>Note, Any option ITM by $0.01 is auto-exercise</em></td>
<td></td>
</tr>
<tr>
<td><strong>Settlement Type</strong></td>
<td>Physical delivery of shares</td>
<td>Cash</td>
</tr>
<tr>
<td><strong>Settlement Value</strong></td>
<td>Friday afternoon*</td>
<td>Friday morning*</td>
</tr>
<tr>
<td>Determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Last Trading Day</strong></td>
<td>Friday afternoon*</td>
<td>Thursday before 3rd Friday*</td>
</tr>
<tr>
<td><strong>Additional Notes</strong></td>
<td>Exercise before ex-dividend date to own shares and capture dividend payment</td>
<td>Weeklys trade until 3pm (SPXW)</td>
</tr>
</tbody>
</table>

Do not confuse buying and selling an option with exercising an option!
## Delivery of Shares vs. Cash Settle

<table>
<thead>
<tr>
<th></th>
<th>Delivery of Shares</th>
<th>Cash Settle</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mechanism</strong></td>
<td>Shares of underlying are delivered on the expiration date of ITM option contract</td>
<td>No physical delivery of underlying asset or security required</td>
</tr>
<tr>
<td><strong>Account</strong></td>
<td>Shares are transferred from seller to buyer</td>
<td>Account is credited or debited the ITM value of the options</td>
</tr>
<tr>
<td></td>
<td>• Call option holder exercises option to buy shares</td>
<td>• Amount of payment is difference between underlying settlement value on expiration and strike price of the option</td>
</tr>
<tr>
<td></td>
<td>• Call seller must sell stock to buyer at strike price</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Put option holder exercises option to sell shares</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Put seller must buy stock from seller at strike price</td>
<td></td>
</tr>
<tr>
<td><strong>Portfolio Structure</strong></td>
<td>No disruption of portfolio structure upon assignment</td>
<td></td>
</tr>
<tr>
<td><strong>Costs</strong></td>
<td>Reduce or eliminate costs associated with transportation, insurance and financing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(commodities)</td>
<td></td>
</tr>
<tr>
<td><strong>Additional Note</strong></td>
<td>Options that deliver shares often use the American-style exercise</td>
<td>Cash-settled options typically use the European-style exercise</td>
</tr>
</tbody>
</table>
## Settlement: AM vs. PM

<table>
<thead>
<tr>
<th></th>
<th>AM</th>
<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expiry</strong></td>
<td>Morning after the last trading day</td>
<td>Market close on the last trading day</td>
</tr>
<tr>
<td><strong>Last Trading Day</strong></td>
<td>Typically THURSDAY</td>
<td>Typically FRIDAY</td>
</tr>
<tr>
<td><strong>Settlement Calculations</strong></td>
<td>From Friday OPENING prices</td>
<td>From Friday CLOSING prices</td>
</tr>
<tr>
<td><strong>Additional Note</strong></td>
<td>Cash-settled options typically use the European-style exercise</td>
<td>Options that deliver shares often use the American-style exercise</td>
</tr>
<tr>
<td><strong>Product Examples</strong></td>
<td>SPX, DJX, RUT</td>
<td>Equity Stocks, ETFs, SPXW, XSP</td>
</tr>
</tbody>
</table>
Index Options

- Likely receive Section 1256 Tax treatment
- Profits and losses: 60% long term and 40% short term
- Regardless of holding period
- Applies whether investor is long or short the option
- Positions marked-to-market at EOY and taxed as if closed

Equity and ETF Options

- Treated similar to equity stocks for tax purposes
- Equity/ETF options generally taxed as long-term or short-term trades
- Long-term have been held for over a year
- Short-term have been held for LESS than a year

Investors should consult with their tax advisors to determine how the profit and loss on any particular option strategy will be taxed. Tax laws and regulations change from time to time and may be subject to varying interpretations.
Hedging with SPX Options

SPX = 3000

Determine # of SPX contracts (based on portfolio size):

Portfolio $Value to be Hedged

\[ \text{Value of Index x 100} \]

\[
\begin{align*}
\frac{\$500,000}{3000 \times 100} &= 1.6 \text{ SPX Puts} \\
1 \text{ SPX Put protects } \$300,000
\end{align*}
\]

Buy 2 SPX January 2021 3000 Put @ $100 (Total $20,000 – 4% of portfolio)
Hedging with SPX Options

$500,000 portfolio
SPX @ 3,000
Buy 2 SPX January 2021 3000 Puts @ $100
Cost = $100 x 2 x 100 = $20,000 (4% or portfolio)
1 SPX Put protects $300,000
Breakeven Point is SPX @ 2900
Hedging with SPX Options

Assume SPX at 2,700
Market is -10% so Portfolio is -10%
$480,000 stock portfolio (500k – 20k options) is now $432,000

But since we hedged:
SPX trading 2,700 → Jan 2021 3000 puts are now worth $300
Value of 3000 strike Puts: $300 x 2 x 100 = $60,000
Portfolio: Value of Equities + Value of 3000 strike puts
Portfolio Value @ SPX 2700: $432,000 + $60,000 = $492,000

Due to hedging:
Market -10% but Portfolio ONLY -1.6%
**XSP<sup>SM</sup>: What is it?**

- SPX – Flagship Cboe product ($300k notional/contract)
  - ADV in 2019 ~1.45 million ($435 BN Daily Notional)
- XSP is the ticker for Cboe’s Mini S&P 500® Index Options
  - Notionally equivalent to SPY options with meaningful potential benefits
- SPY options ADV ~ 2.9 million ($87 BN Daily Notional)
  - Clear Institutional & Retail demand for Index optionality on Mini S&P 500 product
- XSP affords end users the same exposure with benefits NOT typically associated with ETF options
  - 1256 Contract*: XSP (Yes); SPY (Generally, NO)
  - European Style (Eliminates early assignment risk)
  - Cash Settled (No portfolio disruption)

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*Section 1256 of United States Tax Code. Investors should consult with their tax advisors to determine how the profit and loss on any particular option strategy will be taxed. Tax laws and regulations change from time to time and may be subject to varying interpretations.*
XSP<sup>SM</sup> vs. SPX: The Size Difference

**Cboe Mini-SPX Index Options (XSP)**

- Tracks underlying S&P 500 index
- XSP options = 1/10<sup>th</sup> the size of SPX options
  - SPX = $3,000; contract value = $300,000
  - XSP = $300; contract value = $30,000
- Smaller size allows for flexibility
- European style options
- Cash settlement
<table>
<thead>
<tr>
<th></th>
<th>Mini SPX Index (XSP)</th>
<th>SPDR ETF (SPY)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Notional Value</strong></td>
<td>$30,000</td>
<td>$30,000</td>
</tr>
<tr>
<td>(SPX @ 3000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Settlement AM or PM</strong></td>
<td>PM-Settled</td>
<td>PM-Settled</td>
</tr>
<tr>
<td><strong>Expiration</strong></td>
<td>Mon., Wed., Fri., EOM, EOQ</td>
<td>Mon., Wed., Fri., EOM, EOQ</td>
</tr>
<tr>
<td><strong>Settlement Type</strong></td>
<td>Cash</td>
<td>Physical Shares of ETF</td>
</tr>
<tr>
<td><strong>Exercise Style</strong></td>
<td>European</td>
<td>American</td>
</tr>
</tbody>
</table>

*EOM – End of Month
*EOQ – End of Quarter
Hedging With XSP Options

Investor owns shares in several S&P 500 stocks

Notional value of positions = $150,000

- SPX measuring $3,000
- XSP measuring $300

Market is in a good state

Investor Concerns
- COVID-19
- U.S.-China Trade War
- 2020 Election

Investor Wants
- To remain long Equities
- To protect gains if the market falls, but looking for the broad market to continue rallying
Hedging with XSP Options

- BUY 5 Dec 300 puts @ 3.00 each
- Total Hedge Outlay = $1,500 (5 x $3.00 x 100)

5-Lot of XSP is 150K Notional (5 x 300 x 100)

Max Profit substantial

Max Loss is $1,500

BEP = $297 (300 - $3.00)

<table>
<thead>
<tr>
<th>XSP</th>
<th>Equity Positions Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>$50,000</td>
</tr>
<tr>
<td>150</td>
<td>$75,000</td>
</tr>
<tr>
<td>200</td>
<td>$100,000</td>
</tr>
<tr>
<td>250</td>
<td>$125,000</td>
</tr>
<tr>
<td>297</td>
<td>$148,500</td>
</tr>
<tr>
<td>300</td>
<td>$150,000</td>
</tr>
</tbody>
</table>

*Illustration for educational purposes
Option Hedging Techniques

• What is a Hedge?
  • Protects portfolio from uncertainty
  • Allows for transfer of risk

• How do Index options differ from equity options?
  • European styled
  • Cash Settlement
  • AM Settlement
  • Tax Considerations

• Options on S&P 500 Index
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QUESTIONS?

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