Option traders are nimble and quick ...

Options Trading Strategies

... betting on or against volatility, hedging, leveraging

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Memo slide – our calls and puts before and after the debt deadline

<table>
<thead>
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<th></th>
<th>25-Oct Wed</th>
<th>Today</th>
</tr>
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<tbody>
<tr>
<td>SPY</td>
<td>170.69</td>
<td>172.90</td>
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<tr>
<td>C 171</td>
<td>1.67</td>
<td>2.41</td>
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<td>P 170</td>
<td>1.59</td>
<td>0.34</td>
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<td>DIA</td>
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<td>C 153</td>
<td>1.13</td>
<td>1.07</td>
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<td>C 155</td>
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<td>P 150</td>
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<td>IWM</td>
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<td>C 109</td>
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<td>P 107</td>
<td>1.11</td>
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Question: Do option trades perform any useful economic function or is it just gambling?

A little of the former and a great deal of the latter.

Options are justified as providing a vehicle for hedges and potentially enhancing yields of traditional long positions (through writing covered calls).

The argument goes that speculators provide liquidity to enable that market (which has to be true up to a point).

According to a recent survey by Charles Schwab*, about 25% of options traders were using them for hedges in February 2009.

The survey also showed that of "active" investors, 44% of them trade options.


Basic option strategies .. calls

- **Buying a call**
  - gambling that the *price or volatility* will rise
  - near or out of the money: high leverage, high risk
  - deep in the money: lower leverage, lower risk

- **Writing a call**
  - covered (you already own the stock)
    - reduces loss in event of stock price decline
    - can enhance yield
  - naked (you don't own the stock)
    - collecting fees and gambling that price will fall
    - potential for *infinite liability* – a lot more than the bet
Basic option strategies .. puts

- **Buying a put**
  - gambling price will fall
  - *excellent hedge* for a long position in stock or related asset
- **Writing a put**
  - short-covered (short on stock)
    - hedging, locking (same as a call)
  - naked (no stock position)
    - gambling on no price decline
    - again, huge downside risk (if the stock plunges)

Advanced option strategies to be shown here:

1. **Hedging a larger position**
   - Simple hedge
   - Collar (complex)
2. **Getting leverage in indexes**
   - DITM calls
3. **Speculating against volatility**
   - Strangles and Straddles
4. **Supplementing yield of stocks**
   - Writing covered calls
Hedging with Options:

GLD had a big run-up in 2010. Suppose you have 300 shares of GLD that you want to keep, but are worried about declining, especially over a weekend.

You can hedge this by buying 6 put contracts (100 shares each) in the Nov 20 (exp) 130 (strike) put for $1.82 per share.

10/13/2010

… but this may be a little pricey for a hedge.

Images are from TD Ameritrade Command Center

... the GLD hedging choices (from the previous slide)

We chose the red, but could have chosen the green for less cost but less protection. We could have chosen other months as well.

Images are from TD Ameritrade Command Center

Mudd Finance
What is leverage?

- Leverage multiplies your percentage gain on investment relative to the percentage increase in the underlying asset value.
- (% gain in investment) = (L) X (% gain in asset value)
- Leverage comes from either (a) using debt to pay for part of a financial asset purchase
  \[ (L) = \frac{\text{Value of Purchase}}{\text{Your $$ contribution}} \]
  which assumes the remainder is financed with debt, or
  \[ (L) = \frac{1}{\left[ 1 - \% \text{ of purchase financed by debt} \right]} \]
  e.g. 2 to 1 for a stock purchase in a margin account when you borrow $50,000 to buy $100,000 in stock,
  e.g. a house bought with 20% down (80% of purchase financed by debt) is leveraged 5 to 1.
- or (b) because of the way a derivatives contract is structured to give you leverage. For a DITM option contract \( L = \frac{\text{Stock price}}{\text{Option Price}} \). See example next slide.
- Leverage works off of capital gains and of course works both directions; losses are leveraged too.

Complex Strategy 1: Buying Deep-In-The-Money (DITM) Options

- Calls:
  - Premium is nearly zero
  - Call is nearly identical to buying the stock directly, but \textit{with leverage}
    - Rollover DITMs for index ETFs is a good, albeit risky in the short term, strategy (see example next slides)
- Puts
  - A good way to short if you think the stock will decline
  - Shorting with leverage
Leveraging Long with an IWM Deep-in-the-Money (DITM) rolling call

The IWM ETF tracks the Russell 2000 and trades at 10%.

The call option that you buy must have adequate open interest (at least a few hundred contracts).

Calculating the Premium & Leverage

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<th>Symbol</th>
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<th>Ask</th>
<th>Last</th>
<th>Days</th>
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<tr>
<td>IWM</td>
<td>66.84</td>
<td>66.85</td>
<td>66.85</td>
<td>44</td>
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<table>
<thead>
<tr>
<th>Calls</th>
<th>Bid</th>
<th>Ask</th>
<th>Last</th>
<th>Vol</th>
<th>Op Int</th>
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<tr>
<td>54 Call</td>
<td>13.54</td>
<td>13.65</td>
<td>13.59</td>
<td>310</td>
<td>277</td>
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Premium = 13.65 – (66.85 – 54.00) = 0.80 or 1.2% of stock price

Leverage = 66.85/13.65 = 4.9 to 1, which implies that a 10% rise in the index (and ETF) would give you a 49% gain. For example, if the stock rises by $1.00 to 67.85 (about 1.5%) the option should rise by about (not exactly because of the premium) $1.00 to 14.65 (about 7.3%).
Complex options strategy 2: Strangles

When you do a strangle, you buy a call and a put for two strike prices that are near the money, both of them being out of the money and close to in the money (typically).

The next slide shows our IBM example from the previous lecture.

This would be done for a stock with high volatility (relative to your cover percentage at least).

A variation of this, the straddle, involves buying a put and a call on the same stock at the same strike price, which implies that one is on the money and the other is out of the money. This variation is far less popular than a strangle.

You can buy the IBM November 19 195 Call for $1.82 (OOM), which gives you the right to buy IBM for $195 per share between now and Nov 19.

You can buy the IBM November 19 175 Put for $8.05 (ITM), which gives you the right to sell IBM for $175 per share between now and Nov 19.

Do you remember these from the last lecture? If we do both it is a strangle!
Performance and Profitability of the Strangle

Note: This graph is somewhat misleading. It shows the profit and value of the position on the expiration date only if the option is held to expiration. It shows nothing about the possible value of an option between now and the expiration date.

Clearly you are playing volatility here. This example is a little asymmetric.

We can do a strangle with the **135 Call** and **131 Put** for $2.89 per share or a straddle at 133 strike price for $2.38 + $2.27 = $4.65. The lower cost of the strangle is why they are preferred.
When do you do straddles and strangles?

- You are betting on volatility, not the alpha (you don’t care whether the stock rises or falls).
- Because of the short duration of your bet, timing is critical.
- PIT does straddles and strangles on companies that have earnings reports coming up.
- Any other anticipated shock, bad or good, is a candidate (buyout etc).
- Advanced volatility studies (Econ 136) are essential to playing these seriously.

Straddles & Strangles can pay off because of Discontinuities

JWN announces that sales are going better than expected.
The VIX and Strangles

If you are in a strangle, especially on an index ETF like DIA, and the VIX does this after you have taken the position, you will make money.

You can get the VIX at yahoo with quote symbol ^VIX.

On the other hand, if you make any kind of option trade, straddles, strangles, or just buying puts or calls, when the VIX is this high, you are paying a very large premium and might lose when the VIX falls. This might be a good time to write covered calls if the volatility is not due to market stress.

ETN tracking issues: The VIX vs. ...

There are now 3 VIX ETNs, VXX & VXZ, and TVIX.

iPath S&P 500 VIX ST Futures ETN (VXX)

iPath S&P 500 VIX MT Futures ETN (VXZ)

VelocityShares Daily S&P 500 2X VIX ST Futures ETN (TVIX)
My Sep/Oct 2008 DIA Strangle

In the volatile and dangerous market of Sep/Oct 2008, when the DJIA fell for every day in October until its spectacular 938 point rally on Monday, October 13, I put a strangle on the DIA tracking stock (which tracks the DJIA at one-tenth the value).

I calculated the monthly standard deviation for the DIA CGR going back four years at 0.0301 (3%).

On Sep 25, when DIA was at 110.27, I bought 120 Oct calls for $0.32 each and 97 Oct puts for $0.63 each, same number of contracts.

The calls were 1,000 Dow points otm, or 9%, and the puts were 1,300 Dow points otm, or 12%. Basically I was 3 sigmas away on the calls and 4 sigmas on the puts.

But the VIX was climbing to record territory and I knew that historical sigmas were not relevant.

On Sep 29 the DJIA plunged and I sold half of my put position for $1.94. The next day I sold my calls for $0.33, a once cent profit, which had risen despite the fall in the DJIA because the VIX had risen. On the same day I sold my remaining puts for $1.28.

I should have stayed in the second half of the put position. They went to $13 on 10/10.

Complex Strategy 3: Goldcorp GG Hedged Covered Call (Collar)

• When you write an OTM call and buy an OTM put (for insurance) this is called a Collar.
• Goldcorp is $21.50
• Nov 22.50 call option is $1.25
• Nov 17.50 put option is $0.25
• Buy the stock
• Write the call
• Buy the put (for insurance)
This above is a covered call I wrote specifically for this class last year. I bought AeroVironment (AVAV) last Spring for an Econ 136 experiment for around 26. I should have sold it when it popped above 35 but didn’t. So I wrote this call for us to track until November 22.

Because of high volatility this was expensive for the buyer. I pocket $1.50 per share and would actually prefer that this be exercised, allowing me to also pocket a $4 cap gain ($1.41 had I bought the stock then written the call). The $2.91 gain if executed is more than 10% absolute – not bad for 50 days. If it doesn’t execute I will just write another call.

Note: This option was exercised.