Lake Hill

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What we are rooting for

"***The factory of the future will have only two employees, a man and a dog. The man will be there to feed the dog. The dog will be there to keep the man from touching the equipment***."

- Warren Bennis

When will an option-based trading business pay off? What has to happen? When will it make or lose money? In short what are we rooting for?

When I first started in the business many years ago, I would buy calls if I thought the market would go up or puts if I thought the market would go down. Invariably if my market prediction was correct, I would still lose on the options, typically because the move was not far enough or fast enough, or I didn't have a plan for monetizing at the right time. Then I tried selling options with similar results. It was very frustrating.

Then I tried adding hedges to my options positions. This yielded better results from a PnL perspective but confused me even more as to when the PnL would happen. For example, if I buy a call it's clear that I at least want the market to rally (even though I still might lose from decay), but if I now sold stock against it, then a rally would cause a loss on the short stock killing any gains on the long call. Am I rooting for a rally causing a loss on my short hedge or a decline causing a loss on my long call position? And how much should I be hedging anyway?

It all seemed so complicated.

Ultimately, I discovered the following: I was really rooting for time and a disciplined process to generate an edge.

Here is why:

Let's say you have a model - this could be a complicated mathematical options model, a simple model, or even just a trading view which is also a form of a model. If the model or your trading view computes that a $5 call is really worth $6 (i.e., it is undervalued by a dollar), then there is $1 of "edge" in this option.

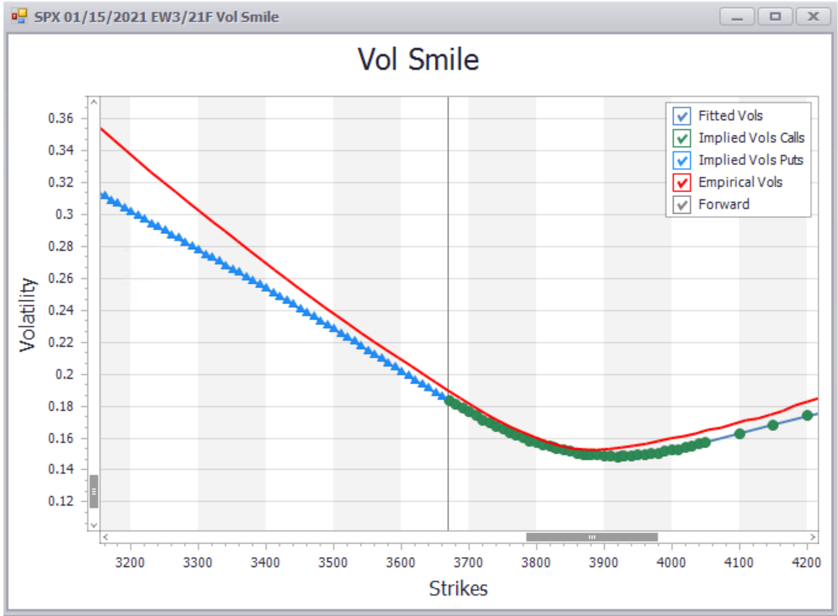
If you buy this call, you might make $1, $5, $7 dollars, or some other amount. Or you might lose 50 cents or all $5. The actual payout on this one trade is unlikely to actually be the $1 dollar edge. Sometimes we will make some amount, and sometimes we will lose some amount. The $1 dollar edge, if accurately calculated, only materializes if you do this trade repeatedly over time. If the next day you trade another option for $1 edge, you will still make or lose some unknown amount. However, over time and through multiple trades with edge**, the average will be $1 in positive PnL.**

When options traders mention an option is "worth" $X, it means that over time with repeatable trades the price should be $X. The trader may hope that the market moves in his favor on any given individual trade (and maybe it will), but there must be a process in place to consistently capture positive edge over time.

Process and repetition will allow time to average out the PnL.

A hedged option portfolio becomes more complicated with lots of long and short option inventory coupled with the underlying hedge. What are we rooting for? Just as with the simple call example, we want the odds after all costs and market and volatility movements to <u>on average over time</u> be in our favor. Even if the market direction, option premiums, and many other factors move in our favor (which would be quite a feat), we may still lose in any given period. We are rooting for the average over time to be in our favor. The key is to do it again and again and be in a market where edge exists.

Here is an example specific to Lake Hill:



Source: Lake Hill Technology Infrastructure Screenshot

This is a snapshot of the S&P 500 Index options market implied volatility (January 2021 expiration) taken on November 8, 2020. The blue and green dots show where the market is trading. These were snapped from live option prices at each strike. Note each strike has differing implied volatilities which generate a skew smile. Changes in implied volatility or skew will impact the option prices as well as the shape of the curve.

When we buy or sell an option, we are also buying or selling the implied volatility of that option. A reminder, even a positive change in implied volatility in our favor may not translate to a positive PnL due to factors such as options decay.

The blue/green curve is the market's price of implied volatility. The red curve is the Lake Hill fair value. Different traders calculate fair value in different ways (simple or complex models as mentioned above).

The key point to understand is that fair value means that if we trade this option repeatedly, then on average over time the correct volatility input is the red line. It does not mean that we will generate an immediate profit on any single trade, nor does it mean that we are rooting for the curves to instantly move in our favor. If we repeatedly over time buy "cheap" options or sell "expensive" options while incurring hedging costs, we can expect to capture the edge over time.

In any given month the volatility levels and fair value curves will change. The market curves and fair value curves go up and down which will change the amount of edge any particular option or portfolio has.

In the S&P500 Index example above, it appears the far upside and downside strikes (out-of-the-money puts and calls) are cheap and have a positive edge if bought. The near-the-money strikes appear to be trading close to fair value (neither rich nor cheap). These differences could be generated by investors who selling more out-of-the-money options than anything else. Lake Hill might be happy to provide liquidity to those investors by buying the "cheap" out-of-the-money options and manage a portfolio of different options positions across numerous strikes, all hedged with futures.

What are we rooting for? Since the options are hedged with futures, if we are long or short calls or long or short puts (in options parlance "long skew" or "short skew"), we are rooting for our portfolio hedging costs minus the premiums collected net of premiums paid to be in our favor <u>over time</u>. This takes many repeated investments across many option positions over time. The edge will only manifest itself if we stick with the process through negative and positive PnL events.

At Lake Hill we apply our rigorously disciplined process to all our strategies. So whether you are looking to hedge your portfolio or pick up some additional yield, Lake Hill employs the same core discipline in selecting the best options to buy or sell (and when to take profits, cut losses, and roll positions) in order to meet the stated portfolio objectives. Naturally, it takes a tremendous amount of technology and process refinement to do this on a large scale across many portfolios.

Option users can simply buy and sell the options that want to express whatever hedging, yield enhancement, or tactical desire they may have, but it seems to us that picking a strike price or an expiration date without understanding where the incremental value (or edge) lies is very inefficient and could lead to disappointing results over time. Also, just because you bought or sold a certain option recently, how do you know that it is still the best option position for you to have today after the market has moved? The Lake Hill process considers that question every day and re-optimizes the strategy portfolio if and when better opportunities arise. Our hedging, yield enhancement and tactical strategies are dynamic and constantly seek to capture incremental edge.

The positions in our various strategies change from month-to-month, yet with completely different positions in each strategy, we are still rooting for the same thing. We are rooting for the edge to materialize over time.

Whether it is a simple call or a complicated options portfolio with changing positions and changing edges, a successful portfolio strategy that includes options must be dynamic and react to new opportunities that arise as the market changes. Ultimately, we are rooting for lots of options activity by a large number of market participants that generates edge. Patience and process is the key to success.

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Past Performance is not indicative of future performance. Data is subject to revision without notice.

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HYPOTHETICAL PERFORMANCE RESULTS HAVE MANY INHERENT LIMITATIONS, SOME OF WHICH ARE DESCRIBED BELOW. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. IN FACT, THERE ARE FREQUENTLY SHARP DIFFERENCES BETWEEN HYPOTHETICAL PERFORMANCE RESULTS AND THE ACTUAL RESULTS SUBSEQUENTLY ACHIEVED BY ANY PARTICULAR TRADING PROGRAM. ONE OF THE LIMITATIONS OF HYPOTHETICAL PERFORMANCE RESULTS IS THAT THEY ARE GENERALLY PREPARED WITH THE BENEFIT OF HINDSIGHT. IN ADDITION, HYPOTHETICAL TRADING DOES NOT INVOLVE FINANCIAL RISK, AND NO HYPOTHETICAL TRADING RECORD CAN COMPLETELY ACCOUNT FOR THE IMPACT OF FINANCIAL RISK IN ACTUAL TRADING. FOR EXAMPLE, THE ABILITY TO WITHSTAND LOSSES OR ADHERE TO A PARTICULAR TRADING PROGRAM IN SPITE OF TRADING LOSSES ARE MATERIAL POINTS WHICH CAN ALSO ADVERSELY AFFECT ACTUAL TRADING RESULTS. THERE ARE NUMEROUS OTHER FACTORS RELATED TO THE MARKETS IN GENERAL OR TO THE IMPLEMENTATION OF ANY SPECIFIC TRADING PROGRAM WHICH CANNOT BE FULLY ACCOUNTED FOR IN THE PREPARATION OF HYPOTHETICAL PERFORMANCE RESULTS AND ALL OF WHICH CAN ADVERSELY AFFECT ACTUAL TRADING RESULTS.

FOR CUSTOMERS TRADING OPTIONS, THESE FUTURES AND FOREX CHARTS ARE PRESENTED FOR INFORMATIONAL PURPOSES ONLY. THEY ARE INTENDED TO SHOW HOW INVESTING IN OPTIONS CAN DEPEND ON THE UNDERLYING FUTURES PRICES; SPECIFICALLY, WHETHER OR NOT AN OPTION PURCHASER IS BUYING AN IN-THE-MONEY, AT-THEMONEY, OR OUT-OF-THE-MONEY OPTION. FURTHERMORE, THE PURCHASER WILL BE ABLE TO DETERMINE WHETHER OR NOT TO EXERCISE HIS RIGHT ON AN OPTION DEPENDING ON HOW THE OPTION'S STRIKE PRICE COMPARES TO THE UNDERLYING FUTURE'S PRICE. THE FUTURES CHARTS ARE NOT INTENDED TO IMPLY THAT OPTION PRICES MOVE IN TANDEM WITH FUTURES PRICES. IN FACT, OPTION PRICES MAY ONLY MOVE A FRACTION OF THE PRICE MOVE IN THE UNDERLYING FUTURES. IN SOME CASES, THE OPTION MAY NOT MOVE AT ALL OR EVEN MOVE IN THE OPPOSITE DIRECTION OF THE UNDERLYING FUTURES CONTRACT.

Futures, options and derivatives products inherently involve substantial leverage and also greatly increase the risk of loss. There is no additional portfolio leverage applied to generate the returns.

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(i) the funds and managed accounts are speculative and involve varying degrees of risk, including substantial degrees of risk in some cases;
(ii) the funds and managed accounts may be leveraged and may engage in other speculative investment practices that may increase the risk of investment loss; (iii) the funds' and managed accounts performance may be volatile; (iv) an investor could lose all or a substantial amount of his or her investment; (v) the investment managers have total trading authority over the funds, the funds are dependent upon the services of the investment managers, and the use of a single advisor could mean lack of diversification and, consequently, higher risk; (vi) the funds may have varying liquidity provisions and limitations and there is no secondary market for investors' interests in any of the funds and none is expected to develop; (vii) there are restrictions on transferring interests in the funds; (viii) the funds' fees and expenses may offset the funds' trading and investment profits; (ix) the funds may not be required to provide periodic pricing or valuation information to investors with respect to individual investments; (x) the funds are not subject to the same regulatory requirements as mutual funds; and (xi) the funds are subject to conflicts of interest.

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