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"***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, 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: one is rooting for time, edge, and a disciplined process.

Here is why:

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

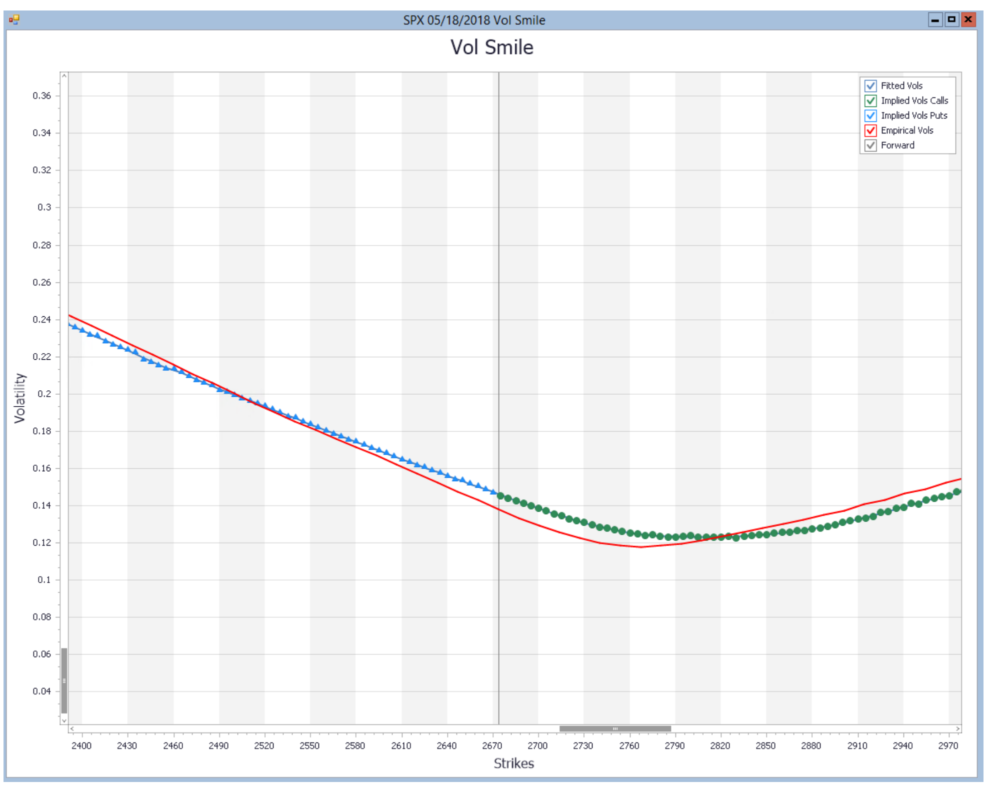
If we buy this call we might make $1 or $5 or $7 dollars or some other amount, or maybe lose 50 cents or all $5. The actual payout on this one trade is not likely to actually be the $1 dollar edge. Sometimes we will make some amount, and sometimes we will lose some amount. The $1 dollar edge, if accurately 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. He may hope that the market moves in his favor on any single trade and maybe it will, but there must be a process to 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. What are we rooting for? Just as with the simple call example we want the bet 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 on any single 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

Above is a snapshot of S&P 500 May 2018 expiration implied volatility (the blue and green dots) taken on April 16, 2018. These are 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. All traders may have differing methods for calculating fair value (simple or complex models as mentioned above). Here's the important point:

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 buy "cheap" options or sell "expensive" options while incurring hedging costs then we are betting that if we do this repeatedly over time we will capture the edge.

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 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 we buy. The near-the-money strikes appear to have positive edge if we sell them. These differences are likely generated due to naturals who are buying near-money options and selling out-of-the-money options. As a "liquidity provider", Lake Hill might be long the "cheap" out-of-the-money options to be short the "expensive" near-the-money options and have differing positions across numerous strikes hedged with futures.

What are we rooting for? Since the options are hedged with futures, if we are long calls or short calls, long puts or short puts (in options parlance "long skew" or "short skew") we are rooting for our hedging costs minus the net premiums collected versus premiums paid to be in our favor <u>over time</u>. This takes many repeated bets. The edge can only manifest itself by sticking to the process through negative or positive PnL.

Lake Hill net positions change from month-to-month and yet with completely differing positions we are rooting for the same thing. We are rooting for the edge to materialize over time.

A similar business which we have written about is owning a roulette wheel. What are we rooting for if we own a roulette wheel? Do we want the spin to come up red, black or green? It depends on the gamblers ever changing bets. Each bet or string of bets can show long strings of losses or profits (see the chapter "Investing in a Roulette Wheel from our book *The Edge in Discipline and Time*). The key is to size the bet, stay disciplined, follow the process and collect the edge over time. The roulette wheel is a great example because with a certain and guaranteed edge, there are still significant and unpredictable positions (long or short red or black) and significant and unpredictable PnL swings.

Whether it is a simple call or complicated options portfolio with a changing position and a changing edge, if the book is uncorrelated to the market and other metrics, then rooting for these uncorrelated metrics or market environments won't help. Ultimately, we are rooting for lots of hedging activity which generates edge but comes with unpredictable PnL in the short term. Patience and process is a requirement.

The Lake Hill Tactical Program and its multi-year track record has shown results which appear superior to being "the house" in the casino roulette wheel example we have previously written about[1] – something we and our investing partners should be very excited about. Strings of monthly or quarterly or even yearly gains or losses are consistent with our process. It always "feels" different when the PnL and the news and the market environment changes. For Lake Hill it's all an opportunity to collect the edge.

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