S&P 500 Weekly Forecast 8/9

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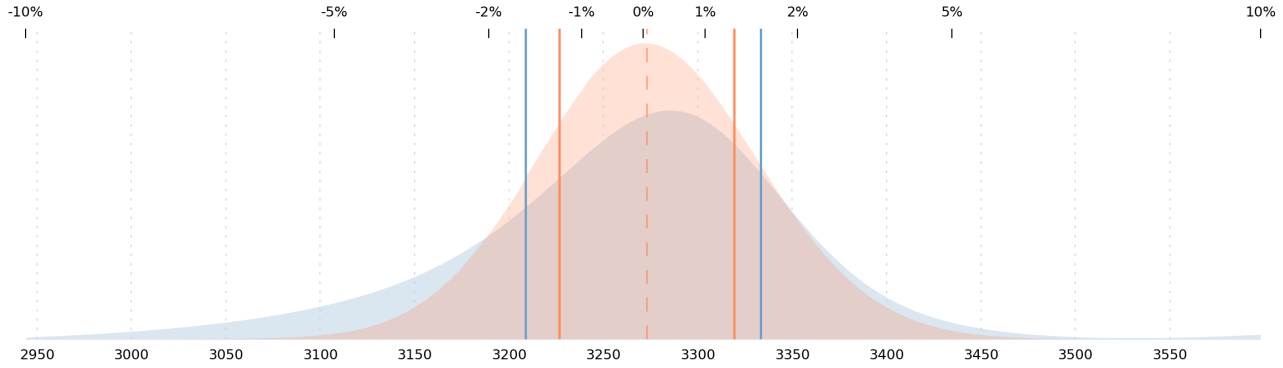
Hey everyone,

Last week, we introduced the Probability Page. The idea of the Probability Page is to give us a sense of where, in terms of a probability density, we have the most edge. As a result, it tells us where we might want to buy or sell options to fully maximize our edge.

For instance, last weekend, we looked at the market's implied density versus our own (derived from GEX+) and we determined that the best course of action was a non-aggressive bull call spread, with the long leg struck ITM and the short leg struck ~ATM.

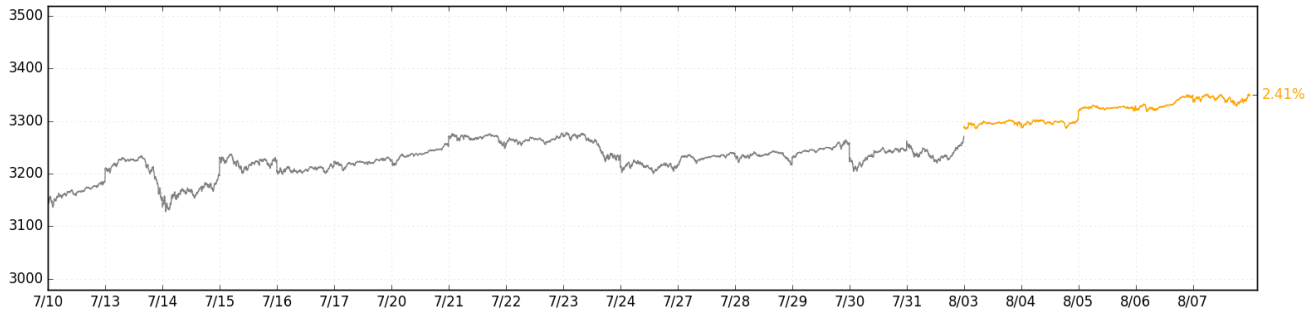


This worked out well. Though it was not an aggressive trade, it turned a full profit, and it managed to do a pretty good job expressing what we believed to be our edge -- i.e., that the likelihood of landing in the blue area is lower (and in the orange area, higher). But we left things off with the warning that it's actually a lot harder than just picking strikes by eye. So what we'd like to do in the coming weeks is hone a more scientific approach to using these probability densities to choose spreads.

But first...

1. What you saw
2. What you will see
3. What you've never seen before

What you saw
S&P 500 up **2.41%**, and very gently. Recall that the reason we didn't trade an iron fly this week is because we thought that the probability of [something like a 2.41% gain] was accurately represented in market prices, and thus selling a bear call spread wouldn't make too much sense. Seemed like the right call. Worked out.

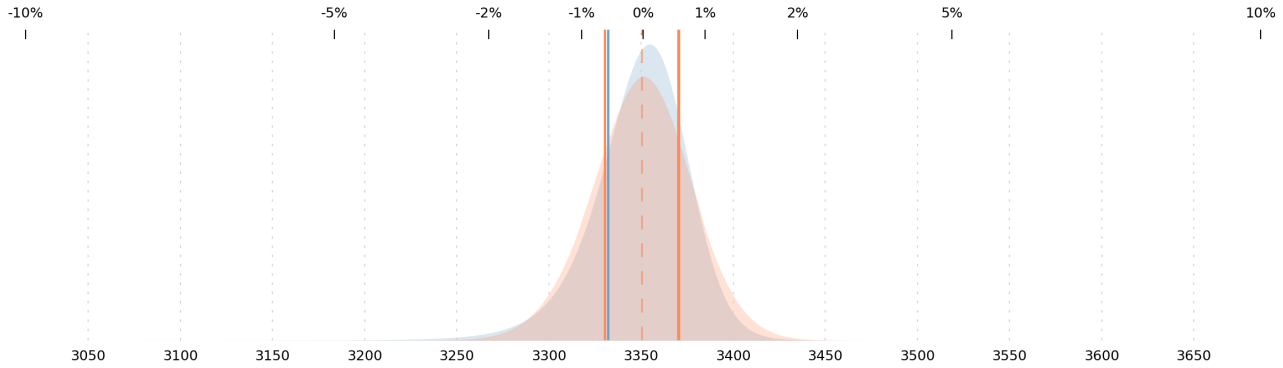


Small short VXX position continues to perform as well. Not much else to say.

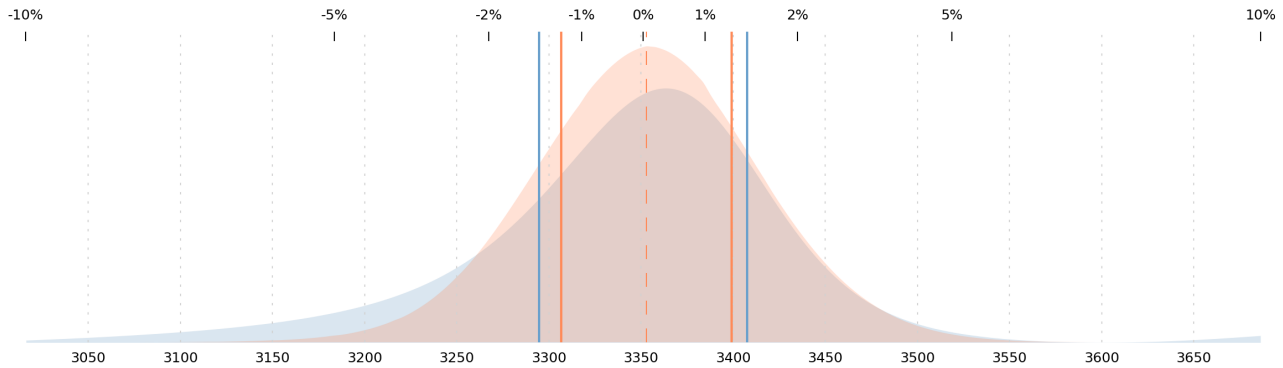
What you will see

GEX+ is $750mm, and that comes with a GIV of around 9. With fewer liquidity-taking events (SPX option flows haven't been very exciting lately), this means that volatility has been low, and you've been witnessing low-vol upside drift.

GEX-implied (orange) versus market-implied 1-day distribution is below. There's no edge here (the densities are almost identical), which is often suggestive that there won't be much edge elsewhere.



And indeed, the differential between the orange and blue weekly (5-day) densities is even smaller than last weekend's.



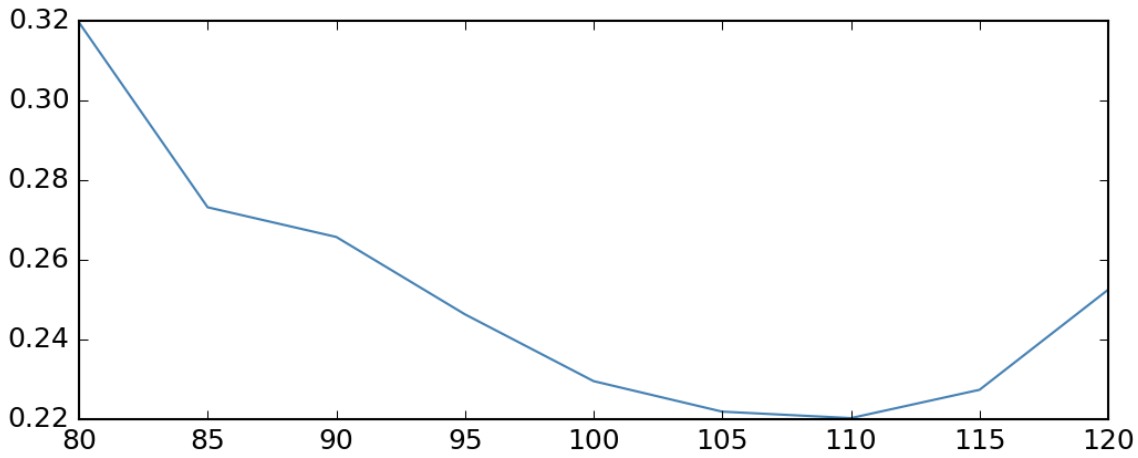
Basically, all this means is that we'll be taking a a bet like last week's, except smaller. E.g., buy a call around 3250 and sell one around 3375 -- but bet literally *half* of what you did last week.

What you've never seen before

Somewhere up there, we said that (despite the fact that we *just did it two seconds ago*) you shouldn't just pick strikes willy-nilly and trade a spread that way. But the only reason that we think you shouldn't do that is because we actually think there's a better way, and it's something we're exploring further.

The reason that you can't just eyeball the "right" option or combo to buy or sell from the probability densities is that the decision is inextricably tied up with the process of geometric mean optimization. In other words, you *have* to find the Kelly-optimum of any given option/combo position in order to evaluate it relative to other positions. I.e., the only way to give a trade structure a fair shot is to find its optimal position size, and then compare the virtues of *that* PnL against the optimal position size of other potential structures' optimal sizes (is it really fair to compare short 1 ATM put to long 1 far OTM call and then to say that selling puts is "always better?"). *Only* in this way can you discover which trade is best -- and the results can be pretty surprising.

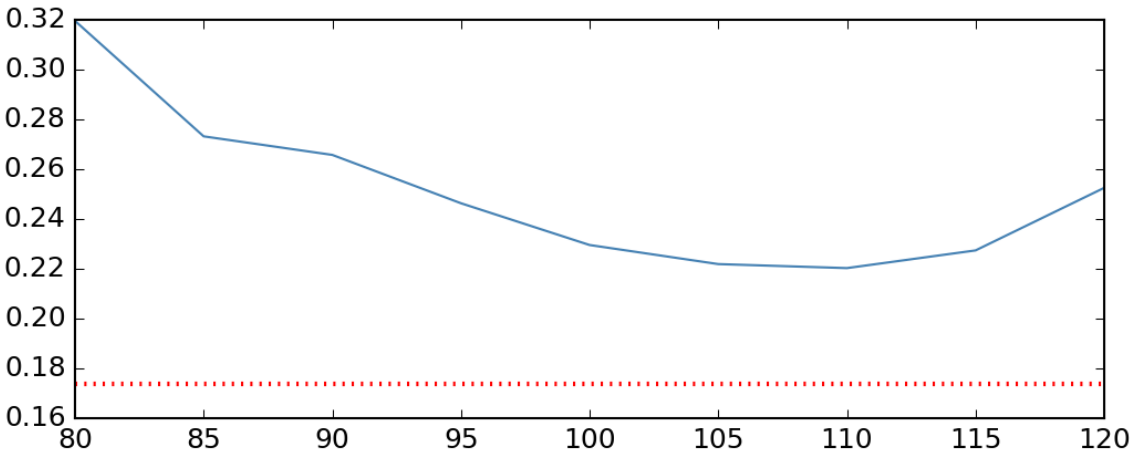
So, just for a taste, let's look at some hypothetical 1-month options on a $100 underlying that has an IV skew (taken from the midpoint of the call options) that looks like this:



A pretty standard-looking vol "smirk": Some excess kurtosis and some left-skewness, and an ATM IV of about 23%.

Let's start with what we think is a potentially powerful example. The 23% IV 100-strike call and put can each individually be bought for $2.64, which means that the straddle costs $5.28. Let's say you think that's too expensive, and so in your head, maybe you say, *"No way! The average up or down move in stock XYZ over the next month is more likely to be $2.00, at most, which means that the straddle should cost $4.00! What's more, there's no justification for any of the skewness, as there are no asymmetrical risks present."*

Now turn that little dialogue in your head into an IV skew: When you back out an IV from your $4.00 straddle, you get closer to 17% IV. And because you're saying that the skewness is unjustified, your "personal" IV skew -- which you believe more accurately represents reality -- looks like this (red dotted):



Last week, we said that part of the reason that we don't like IV skews is that they really don't tell us the whole story -- and this is one such case. Because if we asked you to tell us what strategy seems best here, it would probably be some variety of short volatility and short skew, like selling the 90-strike put, or selling an OTM put spread, or doing a risk-reversal, or something like that. And if you get the sizing right, it's not like these are *bad* trades... but they're definitely not optimal, either.

So, for example, imagine we have a $1mm portfolio, and we've resolved to sell the 90 put. When we feed all the associated price and probability data into the Kelly optimizer (which is converting these IV skews into the language of probability densities), we find that the ideal is to sell 78 puts, and that we should expect an average portfolio rate of return of **1.66%** on that trade. And if we decide to spread that put with a long put bought at 80, we're able to safely lever up a bit and sell 101 spreads -- which results in an average rate of return (ARR) of **1.91%**.

But it'd be a mistake to think that we're actually making any money from skew. The 95/105 risk-reversal (a trade that only makes money from skew, in this case) can only safely be safely bought in the amount of 18 contracts, which yields an ARR of **0.07%** (skew trades are almost always bad). What's more, if we just sell an ATM put and forget about the whole skew trade idea, we can sell 51 100-strike puts for an ARR of **1.92%** -- the best performer of our ideas so far. So by ignoring the skew component and just shorting ATM vol, we found an OK trade. And maybe this is what we'd end up doing, *if we were thinking conventionally.*

But that's exactly what we're *not* trying to do here -- so imagine that we stop trying to be oh-so-smart and we just let the computer and its algorithm figure out which option combo is best, removing ourselves from the trade selection process entirely.

Here's what the computer tells us to do:

- Long 85C
- Short 95C
- Short 105C
- Long 115C

This is, in options parlance, a condor spread. We're told to sell 103 of these, and to expect an ARR of of **6.17%**.

Ok. So, first of all, we wouldn't have thought that a *condor* was the optimal trade for this situation. And second, nor would we have thought that, by optimizing strike-selection for our perceived edge, we would be

able to *improve the average rate of portfolio return on the trade by **to 6.17%** (and while improving the trade's probability of profit, too!).*

Obviously, this being a big geometric mean optimization algorithm, it gives us a very risky proposition, huge positions with huge loss potential (103 spreads is... a lot). But that doesn't change the fact that we've found the mathematically optimal option spread -- which means that regardless of whether you bet "full Kelly" (and you won't), you're better off trading the optimal spread even in smaller size, which will have substantially higher returns than the alternatives. In the example above, a condor is *objectively* the best risk-reward proposition to express your edge, and nothing can change that. That's just math.

Unfortunately, doing all of this computation in the domain of SPX options is a bit harder than in our imaginary universe of a $100 stock with a couple 1-month options. But... we know it can be done, and it's what we'll be working on this week. Hopefully, by next weekend, we'll be able to tell you what the optimal option spread is for SPX options in order to fully and accurately express our GEX+ edge.

Enjoy yet another week of summer trading.

The SqueezeMetrics Team
