S&P 500 Weekly Forecast 9/20

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Hey guys,

Underrated skill: Knowing when to throw in the towel.

Last weekend, we squeezed the life out of an idea we had about measuring market sentiment by splitting *historical/realized* volatility into "up" and "down" components and comparing them with *implied* volatility (we're still trying to create a daily sentiment indicator for a "Sentiment Sheet" PDF). The goal was to maybe isolate a momentum, support, or mean-reversion factor, as seen through the all-important lens of volatility. The results ultimately showed us that... well, we weren't looking in the right place. *(Low realized upside volatility followed by an extreme rise in implied volatility vaguely points toward subsequent bullishness, but that's about all we found.)*

So, this ultimately wasn't too interesting, nor did it illuminate any other heretofore ill-understood effect of the volatility market. As we posited at the beginning -- this is cheap, public, and well-understood data that armies of machine-learning researchers have long since picked over. So after our failure to intuit something from this realized-implied we thought, "why don't we play to our strengths instead?" *(Duh.)*

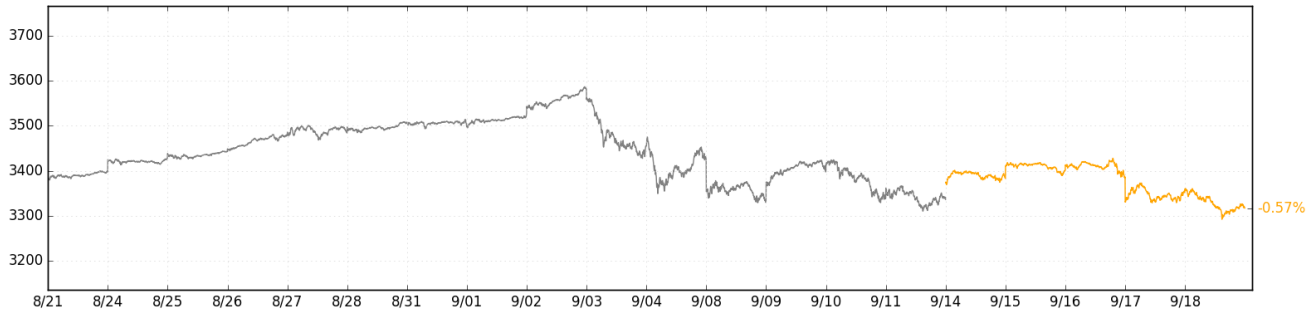
So we dug back into our database of transaction-level S&P 500 (SPX) option trade data, extracted the dollar values of every day's transactions (long and short delta), and looked to see whether there was some "sentiment" value to be gained by analyzing the subsequent performance of the index. What happens the day after billions of dollars of SPX puts are net bought? What happens when they're net sold?

Intuitively, this was a good basis for a sentiment indicator, and we resolved that if the answer wasn't obvious from the outset, we'd drop it and move on to something else. But after seeing the output, we *didn't* end up dropping it. 'Cause it's looking pretty neat. And let's be honest, measuring the tens of billions of dollars that move through the SPX complex is a way cooler basis for a sentiment indicator anyway.

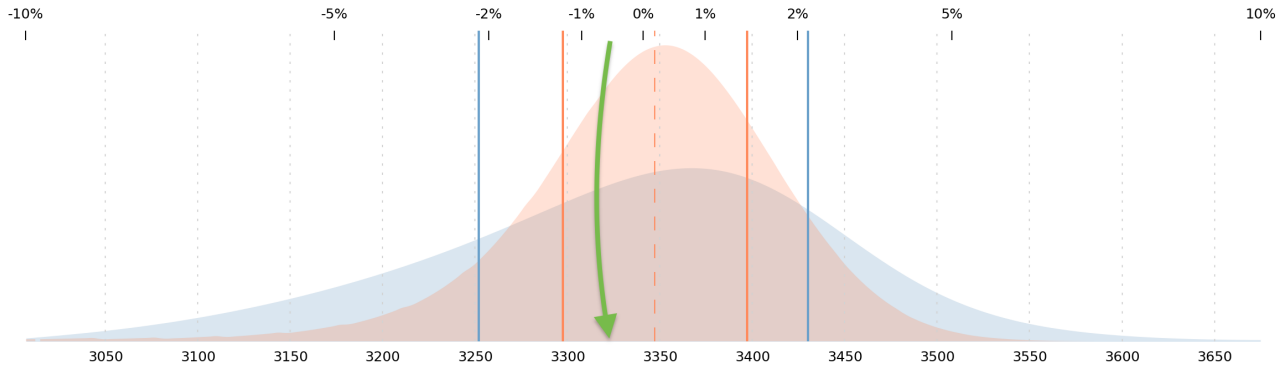
But before we get there...

1. -32.5 market hours
2. +32.5 market hours
3. Getting sentimental all over again

-32.5 market hours
We implicitly break time into discrete chunks whenever we talk about market returns. The "weekly" timeframe is definitely one of the least popular ways to look at things. So when we say, "the week was pretty much flat," that will make a lot of people grit their teeth, because they think intraday returns are important, or daily returns, or monthly returns. But weekly? Who cares.



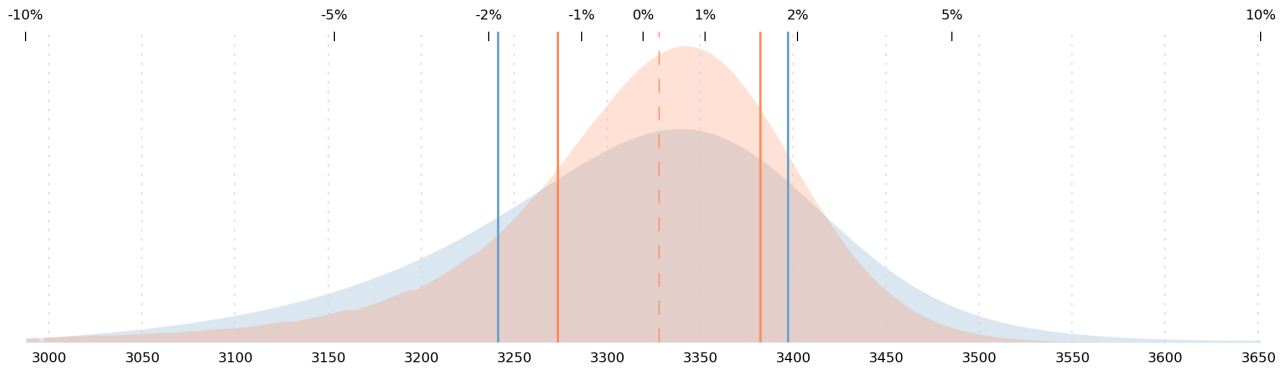
Being that we frequently sell iron flies on a weekly timeframe, *we care*. We care that the week was only down **0.57%**. Our 100-wide, 3350-centered SPX iron flies profited, because our forecast was, ultimately, "more correct" than the market's forecast. (Green arrow is where we landed in relation to our forecasted density [orange] versus the market's [blue].)



Despite that seemingly mundane end to the week, a lot of people had bearish feelings going into the Friday close, and while we're not going to *validate* those feelings, there was definitely a shakeup in the market, and for the first time in a long time, the GEX+ data is feeling more dynamic. Fun!

+32.5 market hours

The probability densities *above* display a pretty big differential. This has allowed us to take pretty big position sizes lately. This *coming* week, though, has a differential that looks like this (which you can find on the Probability Page PDF right now).

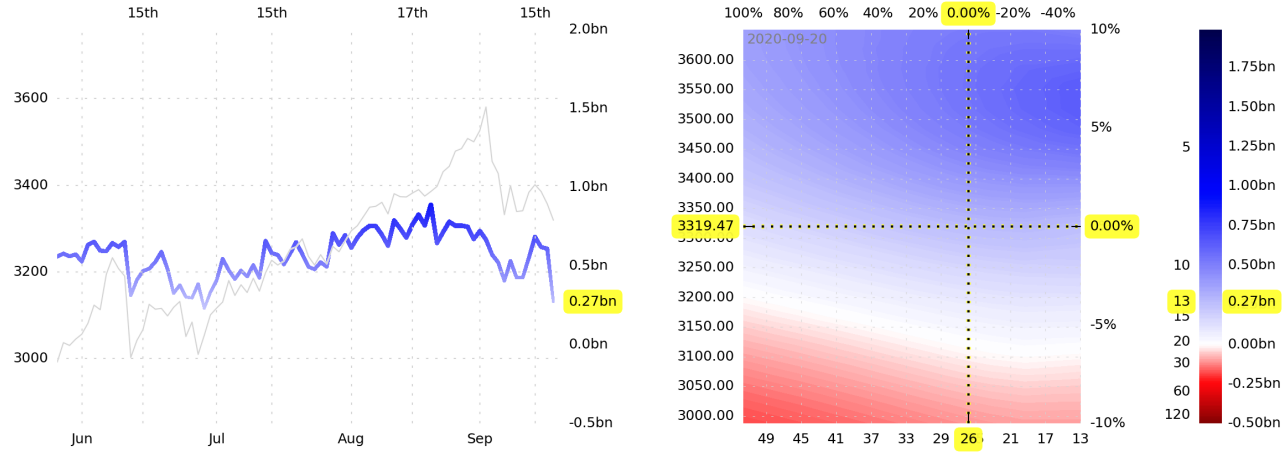


You can tell right away that we have a lot less edge here. The GEX+ (orange) density has a *slightly* more bullish bias than the market implies, and it also believes that there will be either slightly lower volatility or slightly more mean-reversion. As a heuristic, you'd probably want to *halve* the size of your last iron fly trade,

since, at a glance, there looks like nearly half the edge (we're still tuning the Juice algo, so apologies for our imprecision).

A *small* Friday iron fly position centered at 3340 (a bit bullish), with 100-wide wings, seems appropriate.

This visible decrease in our short volatility edge here is due primarily to the monthly SPX OpEx on Friday, which brought GEX+ all the way down to $270mm in liquidity provided per SPX point. Last time GEX+ was that low was all the way back in late June.



Interestingly, the zero-GEX+ "illiquidity zone" (that red stuff) is within reach now. A 5.00% decline in the S&P 500, along with VIX rising to 40, would make SPX option dealers gamma/vanna neutral for the first time since the crash, and between here and there are varying degrees of liquidity provision that would allow volatility to pick up a bit.

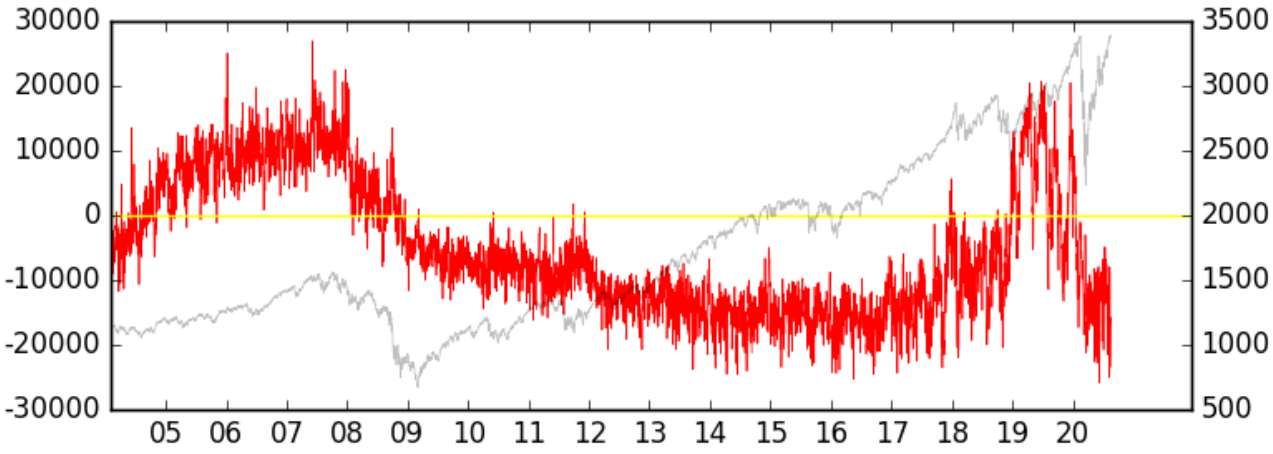
Still, it would take a 5.00% drop in SPX to even *begin* to get gamma-implied vol (GIV) above 20 (which would mean *sustained* daily average movement above 1.00%). All things considered, that's why we're still comfortable being modestly short volatility here -- this is by no means a dangerous market (indeed, our 1-week probability density above visibly predicts mean and median *gains*, and you can see from the GEX+ context chart that every time GEX+ has fallen to this level recently, it's been followed by a bounce).

This is the part where we might bring in some other broad, sentiment-related thoughts to get a sense for what might happen in the week ahead and add a bit of color, but DIX -- our old standby -- is currently a bit uncertain... so where do we turn for our sentiment fix?

Getting sentimental all over again

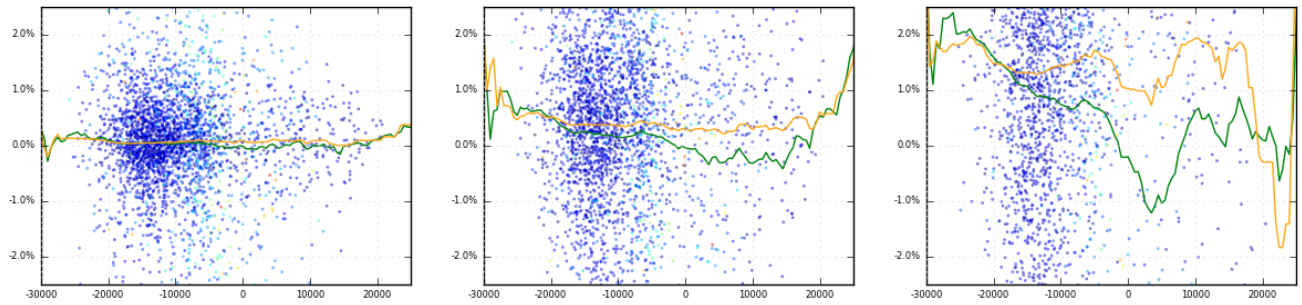
If you had to guess, what does a whole bunch of SPX put-buying foretell? Does the index go up afterward, or down? In other words, is it an intuitive indicator, or is it contrarian?

Below is a plot of *daily net put delta as a proportion of option volume*. The y-axis is in dollars, so, "$N of put delta per contract traded." When it's above the zero line, that's bullish (long delta, put selling) activity, and when it's below the zero line, that's bearish (short delta, put buying) activity.

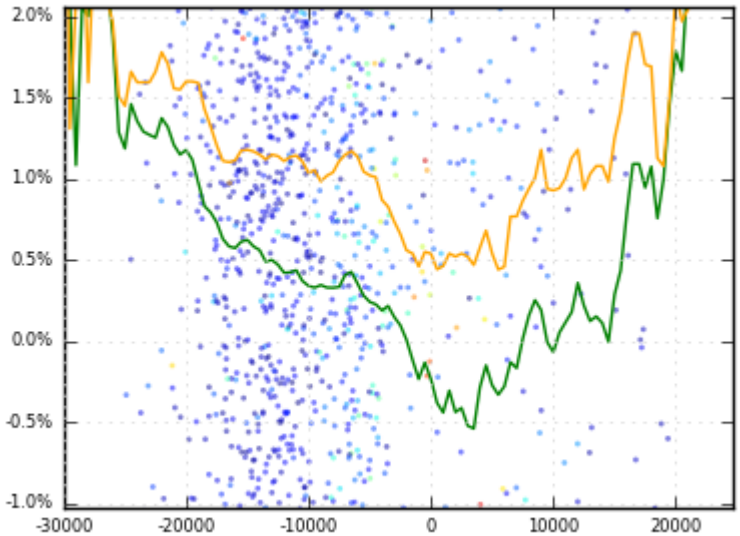


This may already look a bit familiar -- in our paper on the Implied Order Book, we talked at length about how put sales (long delta) are one of the most dangerous forces in the market, and they are an essential ingredient to true market crashes.

So it shouldn't come as too much of a surprise when you see that this data works similarly. Below are the day, week, and month returns associated with those varying levels of dollar put delta. The green line is mean returns, and the orange line is median returns.



Since we're especially interested in ~weekly timeframes, here's a detail of the 1-week timeframe, normalized for implied volatility.



We see that when a lot of puts are being bought (-), subsequent 1-week market returns are excellent. When a lot of puts are being sold (+), what little data we have suggests that subsequent 1-week market returns are also excellent (but only when it's a ton of long delta). There's a persistent story, though, across all timeframes, that when net SPX put deltas are around $0 (or a little bit positive), that's when things aren't looking good.

Nerd Note: One of the things we find immediately fascinating about the data is that on all timeframes (including on the 1-day timeframe), there is a strong distinction between the mean and median returns. The difference between the mean and median is actually a measure of the skewness of the distribution. I.e., when the mean is much lower than the median, that means that there's a yuuge left skew in the returns data. Interestingly, this is a persistent feature of the data -- that the distribution has a big left skewness in those modestly positive put delta ranges (0-10,000). As the put delta gets more and more negative, that left skew completely disappears on all timeframes (green line overlaps with orange line). This is FASCINATING because it means that, historically (since 2004), you'd have been well-compensated to sell puts precisely when everyone else is buying tens of billions of dollars of them, and not *because IVs were elevated (they weren't, in most of these scenarios), but because everyone else was buying protection, and because the actual act of investors accumulating protection actually stabilizes the market. This seems like a very good sentiment indicator!*

In case it wasn't obvious, this is definitely a contrarian indicator. But especially with contrarian indicators, you have to be concerned that you're just looking at "the same data, but from a different angle." We were initially concerned that what we're viewing here could be just as easily described by looking at day-to-day change in implied volatility (it seems like put-buying and put-selling ought to have an identifiable impact on IVs, right?). We looked, and found no meaningful correlation between day-to-day changes in IV and subsequent returns. The dollar-delta data seems to offer us something unique.

And for what it's worth, we're at -12,000 on that plot right now, which predicts modest average returns and slightly higher median returns.

Let's talk a bit more about this next week -- it's going to take some time to chase this down all the way.

Enjoy the week!

The SqueezeMetrics Team
