

S&P 500 Weekly Forecast 10/11

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Hey guys,

We left off last weekend wondering why, when S&P 500 "net put delta" converges upon zero, volatility becomes significantly underpriced. The "sentiment" explanation was that, when people are net *buying* lots of puts, that stabilizes the market, since fewer investors need to deleverage into a drawdown (they're insured). By the same token, when there's a two-sided market for puts (net zero delta), that means people are under-hedged, and so any drawdowns can turn ugly.

We tried finding other justifications for this phenomenon, but so far, the simplest one seems to be the most accurate, and we'll explain why in a moment. But first...

1. What happened
2. What will happen
3. Happily ever after

What happened

The big story last weekend was that, while in the process of researching the idea of daily customer SPX put delta flows, an interesting number popped up...

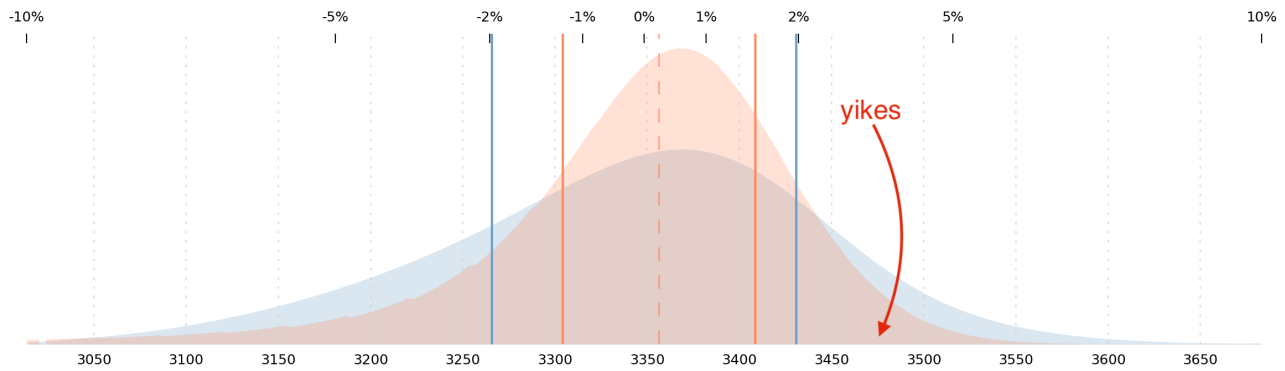
What makes us uncomfortable is that as of Friday, this indicator printed **-4.08** (-0.048) delta. Which, if you look at the 1-week data (all the middle plots above), has historically resulted in volatility being underpriced by something like 25% to 50% (i.e., realizing 1.25 to 1.50 MAD). This is... interesting. Especially since the last couple weeks have all been around -6 to -9 delta. Naturally, this is still something we're investigating, so we can't weight it too heavily, but we can't un-see those plots up there -- so we're probably going to go *very light* on any short vol position this week.

As a result, we took our usual iron fly bet down to a mere *fraction* of its usual size. The basic premise of that iron fly bet was that the market was pricing a weekly move of about 2.00%, and GEX+ would generally tell us that this is too much. This has been the premise of pretty much every bet that we've taken since April, and it's gone *very well*. And given the GEX+ data, our position optimizer told us to strike a 3375-centered fly, 100-wide.

Well, the index went up **3.85%** on the week, ending around 3475, and the fly got zapped.



Which means that the market's 2.00% implied weekly average move (MAD) was significantly *underpriced*, realizing 1.92 MAD (nearly 2x what was priced). Luckily, we managed to duck this one.



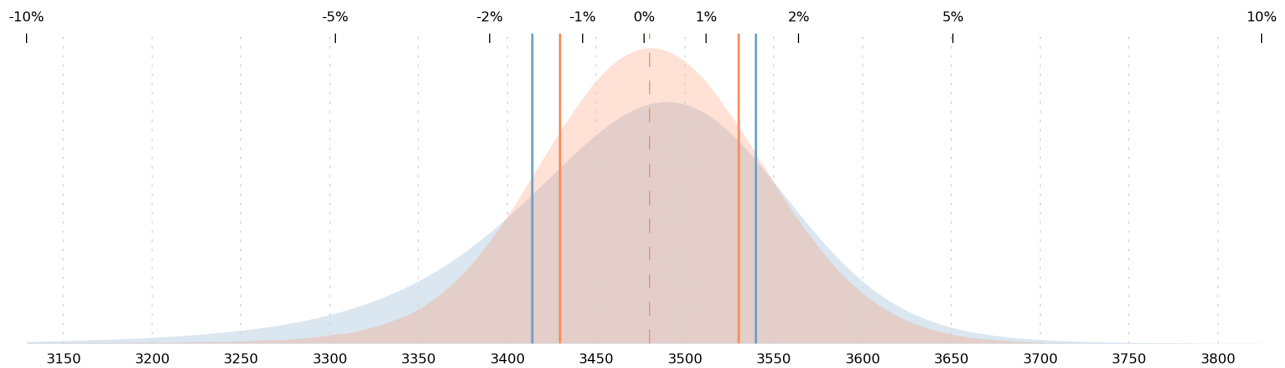
So, if we weren't *already* very curious about this whole "net put delta" thing, this certainly helped to pique our interest even more.

What will happen

Ok, right out of the gate, let's quote Friday's net put delta: **-2.73**

That's closer to zero than last weekend's -4.00, and that's definitely going to impact how we think about the coming week. Based on last weekend's plots, using data from 2005 to present, this level of net delta appears to be associated with a 1-week MAD of around 1.50, and a 1-month MAD of around 2.00. That's an average of 50% return on a long straddle on a weekly basis, and a 100% return on a monthly basis.

Last weekend, these numbers were a bit at odds with what the GEX+ positioning was telling us. This weekend, though, even GEX+ tells us there's very little edge in being short vol for the week. See the 1-day probability densities on the Probability Page (no edge whatsoever), and see the 1-week densities below (very little edge).



We don't often take long volatility positions, but this week is going to have to be an exception, on the basis of the near-zero net put delta alone. From what we can tell of the history of this indicator, it would be ill-advised to take any short-convexity position right now. We're going to choose to trust that data, and even to take a small wager on some index puts.

Since we don't have any good data yet on the historical distributions presented by this data, we can't feed it into the Juice algo to retrieve an "optimal" position and position size, so we're just going to be "tactical" (which is a euphemism for "imprecise") and buy some OTM weekly index puts if the opportunity presents itself. It's going to be a low-probability bet, but it seems to be well worth the cost in exchange for the potential convexity.

You may be thinking, at this point, "But you only just met this data last week! Shouldn't you slow down? Take it easy? If you're meant to be together, you'll figure it out!"

And yeah, we get it, but let's try to explain why we're falling in love so quickly.

Happily ever after

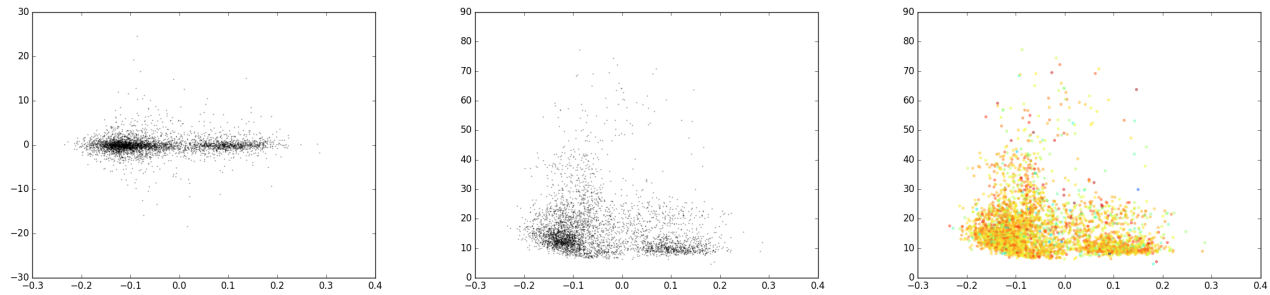
Back when we started this search for a sentiment indicator, we talked at length about how "sentiment" is mushy, and even though we think it's a valuable pursuit, it's *dangerous* to use something mushy as a basis for your market forecasts. When the data's mushy, your brain gets mushy.

But if there's a real reason to believe that a dataset has a mechanism that impacts the market in predictable ways, it doesn't matter if it's based on "sentiment" -- in fact, when something's based on sentiment, it's less likely to have been discovered by some machine-learning algo at one of those funds with 72 PhDs and 2 traders.

But to establish that it's *not* something *else* that's driving the performance of the indicator (and that's it's actually as simple as it appears), you have to try to consider every angle -- which is why we shot some ideas at you guys last week, and listened to your responses. Let's go through some of those ideas.

When folks sell puts, IVs go down because dealers back off the bid real fast. The new, lower IVs are simply not representative of likely future volatility, though. It's just "a technicality" that IVs went down.

Easy to address. Did IVs obviously go down on days when there were net put sellers, or when net delta was around zero? We tested it, and the answer is "no." In the leftmost panel below, x is net delta and y is daily change in 30-day IV. The results are symmetrical around $y = 0$, and there are no patterns visible.



But this led to another question: Do put buyers (sellers) buy (sell) more when vol is at some particular level? Is zero net put delta associated with some particular level of IV? In other words, is net put delta just telling us something we already know? According to the middle panel, *no* -- 30-day vol can be anywhere from 5 to 80, and there appears to be no pattern, except that when there are lots and lots of put-buyers (deep negative delta), vol is usually above 10.

And then are any of those *levels* of volatility associated with changes in IV? The rightmost plot is color-coded by the day's change in IV. It's a mess. IVs go up and down regardless of how high they are, or whether there are marginal net put buyers or sellers. I.e., *there appears to be no meaningful relationship between net delta, IV level, or daily changes in IV*, which bolsters the idea that this is actually a type of sentiment indicator, and a unique source of information.

Next:

As dealers become longer puts, they become longer gamma. When dealers are long gamma, they hedge with wider hedging bands, thus "allowing" more volatility.

Insignificant upon a cursory study. The impact on dealer gamma of any given day's option volume is very small compared to a small change in spot. While it's true that long gamma allows dealers to hedge relatively less frequently, daily changes in SPX put flows (especially when they're net zero delta!) don't have any meaningful impact on big-picture gamma.

Lastly:

Whenever the dealer is *not* the sole arbiter of option prices (i.e., when there's a natural put buyer for every seller), IVs fall, simply because put sellers are systematic (sell-at-any-price) and put buyers are tactical.

A look through history suggests that systematic put-selling, while it exists, it usually overemphasized. Ever since 2008, there's pretty much always been more systematic put-buying, in varying degrees. To say that put-buyers are "more tactical" in aggregate seems obviously false. A minority are "tactical."

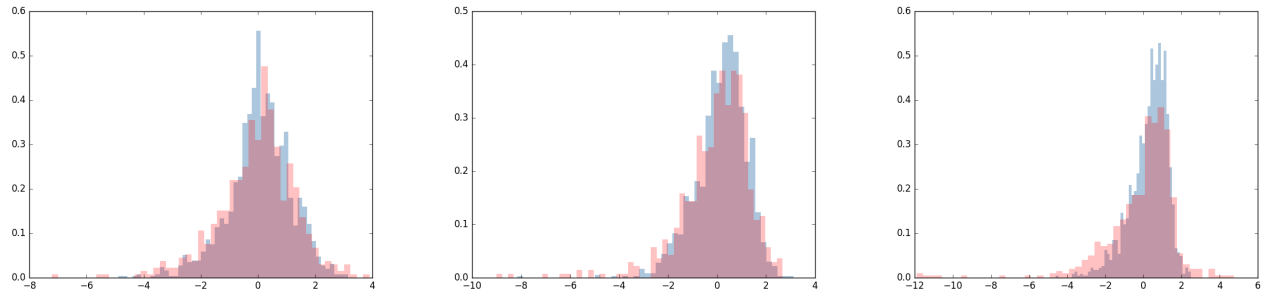
Taken together, this suggests to us that the simplest explanation is, so far, the best one:

[...] bought puts reduce investors' need to deleverage and make the market truly more stable.

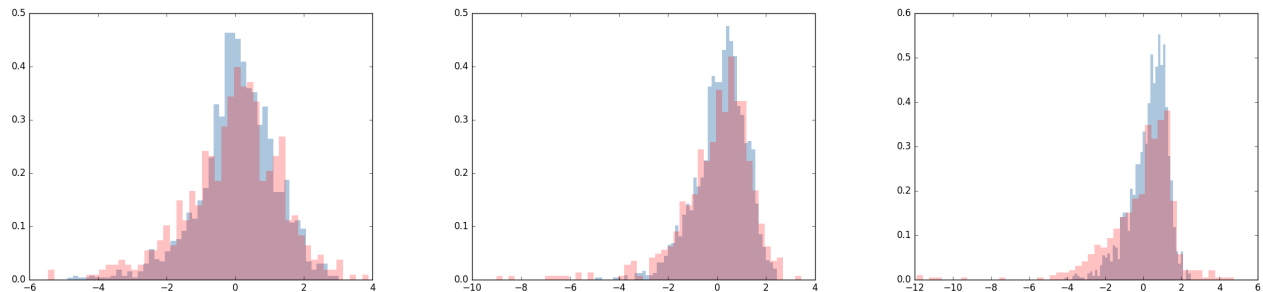
Some more anecdotal evidence is that net *call* delta is a much weaker signal than net *put* delta. If the mechanism at work here were about IVs, or gamma, or something like that, the buying and selling of calls would seem to have just as much of an impact as that of puts, but it doesn't. While there is a strong correlation between net put and net call delta flows, when they're isolated, the puts have a much stronger relationship with excess volatility. This, again, suggests that this really has to do with how well investors are hedged, *not* some kind of microstructural minutiae of the option market.

This *also* squares with what we see in the daily, weekly, and monthly returns data. E.g., if we split daily net

delta observations into two segments, -10 to -20 delta (deep negative) and -5 to +5 delta (close to zero) and plot their relative returns on top of each other, they look like the following, where we're looking at 1-day, 1-week, and 1-month normalized returns (left to right), where x is mean absolute deviation (MAD), and where the red histogram is the stuff that's closer to zero.



On each timeframe, the blue histogram has more returns closer to 0 MAD, and the red has more returns in the shoulders and tails of the implied distribution. Compellingly, when we take the 2-day moving average of the net put delta below (if it's a sentiment indicator, it should respond well to a modest moving average, which is essentially smoothing the time-series), it gets even a *bit* more obvious that the red stuff is higher volatility. It's also clear that the 1-month red returns (far right) have the strongest left-skewness and the highest volatility.



What this all adds up to is that these day-to-day changes in net SPX put flows, measured in deltas, seem to tell us about incremental shifts in investor put positioning. When puts are being bought, that's good for stability. When puts aren't being bought, that's bad for stability. When you actually think about how quickly investors' put positions decay, it makes sense that you'd need to see a constant demand for puts in order to maintain a "safe" hedge ratio for the market. When that demand slows, as it has recently, it portends an increase in volatility relative to implieds, and the opportunity for some serious left skew events, which investors are unprepared for.

We're liking how this is shaping up.

Enjoy the week!

The SqueezeMetrics Team
