S&P 500 Weekly Forecast 9/7

From: SqueezeMetrics <info@sqzme.co>
To: SqueezeMetrics <info@sqzme.co>
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Hey everyone,

We made it amply clear last weekend that we have a tough time quantifying "sentiment," yet we acknowledged that -- though there's *difficulty* of quantifying the "mushier" aspects of the market -- a rigorous application of sentiment can be useful. And that's especially true at times when crazy flows overwhelm the normal transactional volume of the market... like this past week.

What we want is something that really gets at the heart of how the market, as an organic collective, works. What is the most essential "equilibrium" that defines the price of the S&P 500? After weeks of agonizing about this, we decided to try measuring the spread between realized and implied volatility, except, of course, we're going to do it a *tad* differently from what you're used to.

But first:

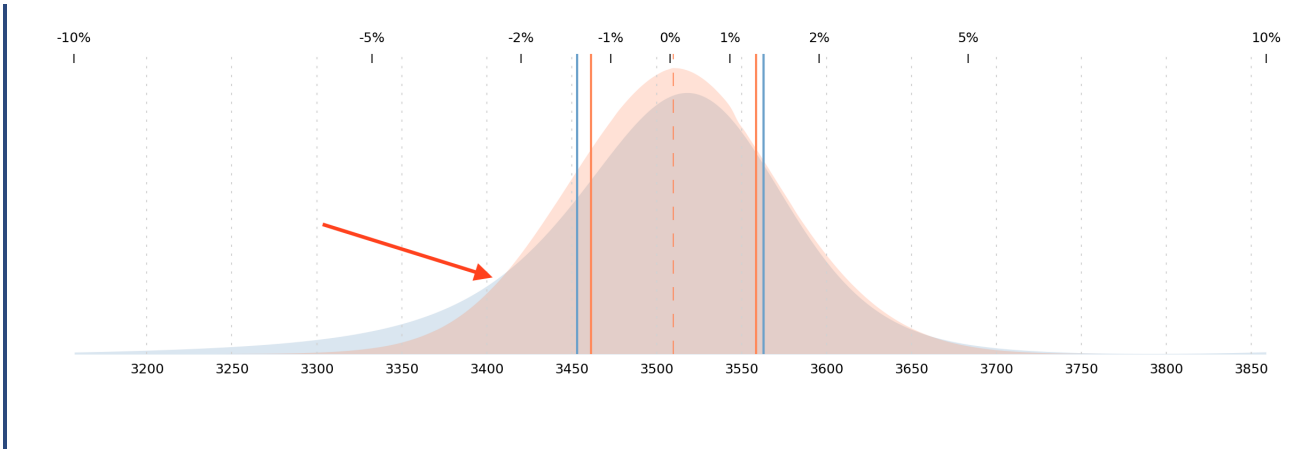
1. What a week...
2. What? A week?
3. Wrestling with SUMO

What a week...
The "big idea" last weekend was that we expected the week to land in the "shoulders" of the distribution, as any unwind in the Big Tech stocks would likely push the index down a little over 2.00% by the end of the week, *but not much more*.

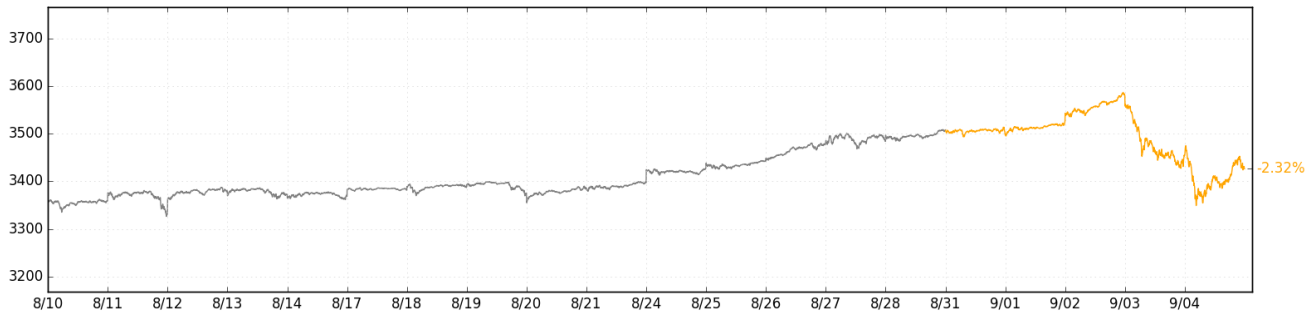
> The way we're thinking about it is that dealer long gamma in SPX *plus* dealer short gamma in AAPL, FB, NFLX, etc., *equals* more returns in the shoulders, but not the tails, of the distribution.
>
> [...]
>
> So here's to betting on another shoulder-width weekly return, and hopefully, *some* indication that the market isn't dominated by YOLO calls for the foreseeable future.

And so, with this in mind, we sold a put spread, with the short leg at SPX 3410.

> The spread is basically betting that the probability of ending below ~3410 (red arrow) is lower than what the market implies.



The index ultimately fell **2.32%** on the week...

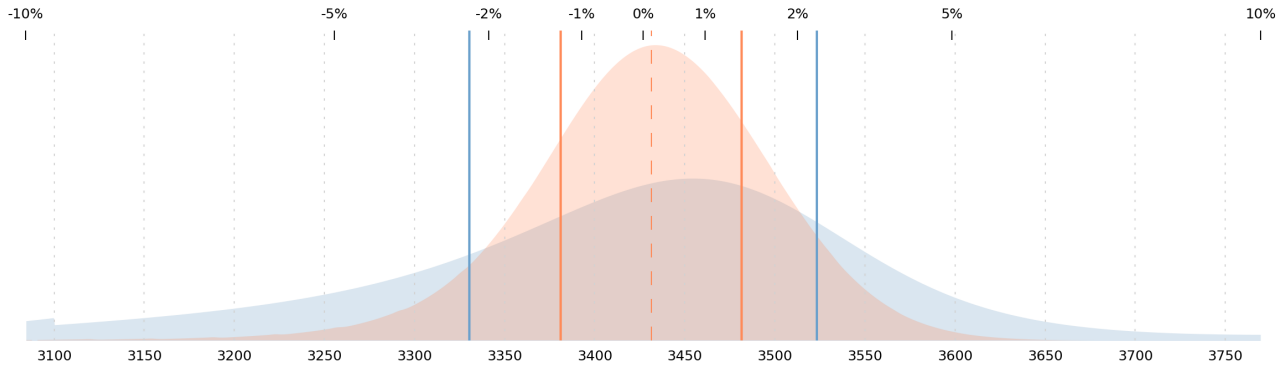


...ending at 3427, in the left shoulder of the distribution, and above our short put strike. So that went well enough (though a bit nail-bitey on Friday), but if you were following along on the daily notes, you'll recall that we had an opinion about the price of volatility on Thursday and Friday, too.

Since Thursday presented the NDX ker-plunk that we've been patiently waiting for, we also couldn't help getting back into a large short VXX position -- and a short 1-month straddle -- when we saw *VIX jump to 35*. As we've been saying for months, depth of book liquidity in the S&P 500 is really good, and there's no crash risk, so VIX at 35 is a pure selling opportunity. We'll likely be holding the short VXX for now, but closing the straddle (which was a placeholder) and exchanging it for the 1-week timeframe trade below.

What? A week?
Short (4-day) trading week coming up, and with what looks like quite a bit of edge. Below is the Probability Page PDF's *5-day* density comparison, so it's actually evaluating the *Monday* expiration. The resulting optimal position, though, will be very, very similar to the Friday expiration (4 DTE), which we'll be trading. So, uh, let's ignore that for now.

Note the huge difference between the GEX+ density (orange) and the market-implied density (blue).



When we put these probability densities in the Juicer and test a bunch of spreads, the best we find is an iron fly centered at 3430, with wide wings at 3300 and 3560 (**+3300p -3430p -3430c +3560c**). In the case of a $1mm portfolio, the algorithm recommends selling 98 of these combos to achieve full Kelly, and computes a whopping **10.22%** average portfolio rate of return on the trade. That leaves quite a bit of room for error, and we're comfortable taking a fractional Kelly bet on something like this.

The only thing we might do to adjust for the fact that we're trading the Friday (4-day) expiration instead of the 5-day densities above is to pull in those wings by 10 points or so, as the 4-day market density won't be *quite* as thick in the tails.

We'll also reevaluate the short VXX trade as the situation changes, but at the moment, it still looks good (there's even contango in the front months of VIX, believe it or not!).

Wrestling with SUMO

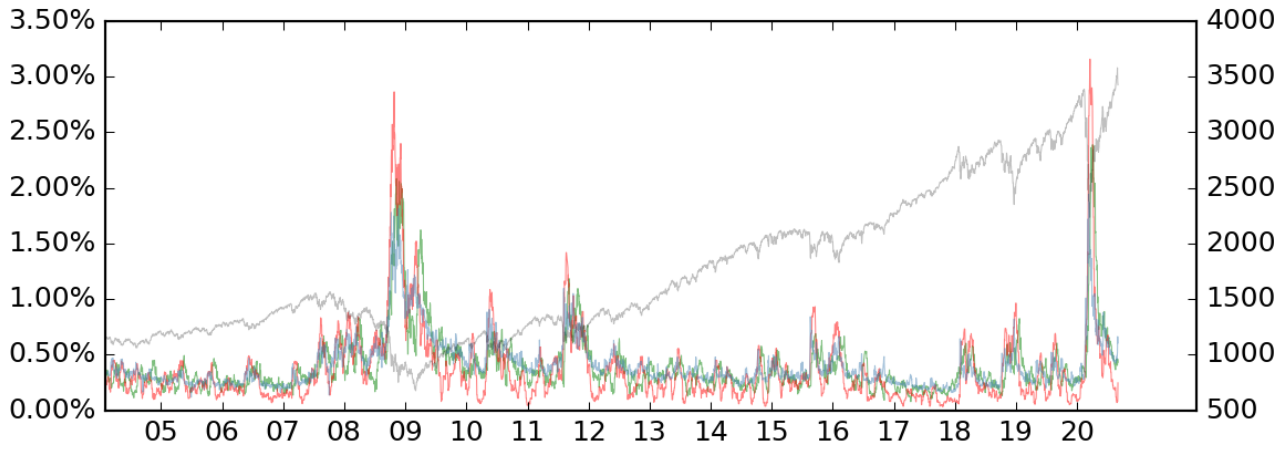
Ok, deep breath. It's time to talk about something at once really basic, and really confusing. This is a first pass at the problem, so give us some rope here.

There is no requirement that *implied* volatility (option prices) and *realized* volatility (the historical N-day movement of the asset) have a relationship. Options can, and do, overestimate movement; and sometimes they underestimate. As a general rule, though, the IV and RV track each other, because if people bought options from option dealers and the dealers routinely sold them too cheaply, they'd go out of business -- and if people sold options to option dealers too cheaply, they'd eventually stop selling them once they realized they were only losing money.

This is the sort of relationship that we look for in a "sentiment" indicator, since it's difficult to quantify with a great deal of "rigor," but it's pretty easy to get something on paper and test it out.

What we're going to do, though, is measure RV and IV in the way that *we* think makes the most sense, and that's going to be a bit odd. First of all, we're going to use *mean absolute* deviation instead of standard deviation; and second, we're going to split realized volatility into "up-volatility" and "down-volatility." Because why not?

Here's a chart of the 30-day *Up*-Index (green), *Down*-Index (red), and the 30-day *Forward* Index (blue). Note how they move together over time, though loosely. (Gray is SPX.)



The left axis is in mean absolute deviation. E.g., when the red line is at 2.50%, that means that the prior month of trading had an *average daily down-move* of 2.50%. When the green line is at 0.25%, that means that the *average daily up-move* over the last month was 0.25%.

Meanwhile, the Forward Index prices the expected average daily move over the *next* month ("implied volatility," but expressed as a mean absolute deviation). Sometimes it's higher than both the Up- and Down-Index, sometimes it's lower, and sometimes it's between the two.

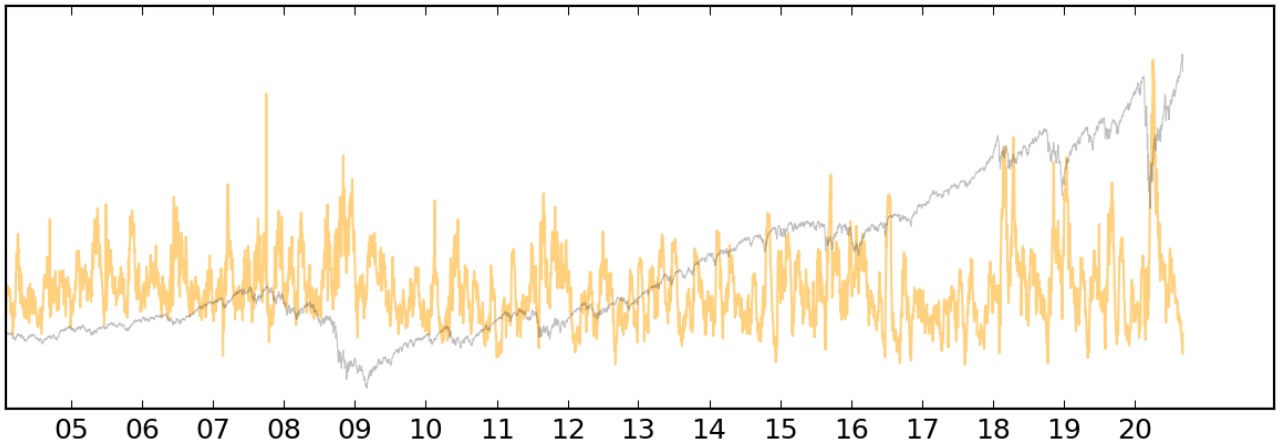
What we're very interested in is the differential between the Up- and Down-Index and the Forward Index, since these differentials should tell us a lot about how people are pricing future expectations relative not only to a monolithic historical volatility, but to something with a bit more nuance -- both *up* and *down* volatility.

Preliminary work says that when you look at these historical differentials, you find something pretty cool: The Up-Index in relation to the Forward Index appears to tell you something about *momentum*. I.e., when it's *higher* than the Forward Index, it predicts greater 1-day returns; and when it's *lower*, it predicts lower 1-day returns. (Kinda makes sense, right? Upside volatility relative to implied volatility seems to isolate a sort of "momentum" factor.)

Meanwhile, the Down-Index to Forward Index differential appears to tell us something about *support*. I.e., when the Down-Index is higher than the Forward Index, it predicts greater 1-day returns. (Again, kinda makes sense, right? The price of puts relative to realized vol tells you how further downside is being priced.)

Our ambition here is to mash these simple representations into a "support-momentum" (SU-MO) index of sorts, which would use the differentials between these particular volatility numbers to predict *1-day mean returns*. We like the idea of predicting 1-day returns because if you're right about short-term stuff, you make a lot more money.

Below is a first attempt, where a higher orange line means there's more support and/or momentum that should foretell positive returns, and where lower predicts mean losses.



We already like the way this indicator functions, but it's going to take some more thought. If it continues to perform on the 1-day timeframe, this will become the basis of our future "sentiment analysis."

We'll walk through this thing a lot more next Sunday once we know what we're doing. Enjoy the short week!

The SqueezeMetrics Team
