S&P 500 Weekly Forecast 3/15

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Hey everyone,

This will be the first of several unusual notes. It comes in two parts: First, we'll give a status update on the GEX 2.0 message we sent out on Thursday, and second, we'll generate the usual weekly forecast, albeit in a... rather diminished form. As things change to accommodate the next iteration of GEX, we're going to try to keep you in the loop on the status of the research, and we welcome feedback and questions.

1. GEX, Jr. status update
The main criticism of gamma exposure is that its assumptions are wrong. Indeed, every critic points out that "not all calls are sold, and not all puts are bought," as if this were some kind of revelation. So here are two things to consider:

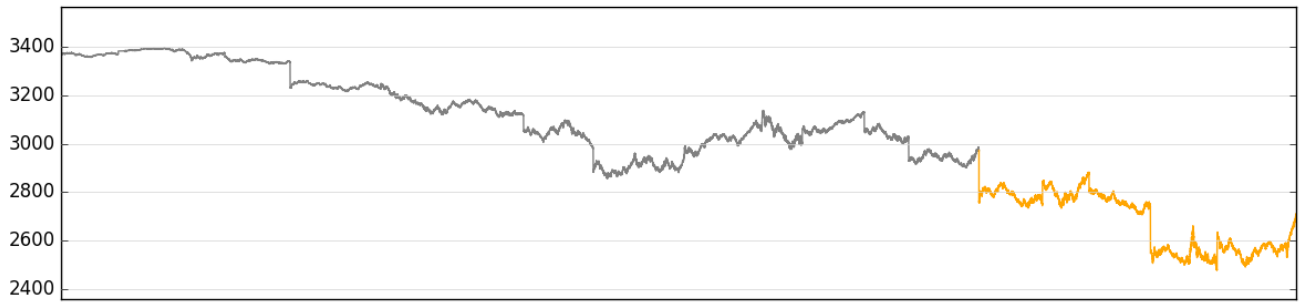
1. Yesterday, we finished assessing the direction of every SPX option trade from 2004 to present -- all 89 million of them. So we'll know what was bought and what was sold. This, when meticulously compared to subsequent option open interest, will be able to give us an incredibly accurate picture of what positions are held by whom and in what direction, and what that means for delta-hedging. The derivation of a "dealer-directional open interest" number is what's on deck for this week, and hopefully we'll have something to say about that next Sunday.

2. When we actually look at the data from 2004 to present, we estimate that 1bn call contracts were sold and 454mm call contracts were bought; and that 3.95bn put options were bought and 1.98bn put options were sold. There is, approximately, a 2:1 ratio of call selling to buying, and of put buying to selling. This, unsurprisingly, validates what you already know of GEX. The assumptions were pretty darn good. In case you were concerned.

But still, there's no doubt that a more granular level of detail will help us understand what's going on, and help us derive more accurate forecasts, especially in the last two weeks of "edge cases." Specifically we want to derive better forecasts when the market is more volatile, and to get even *more* accurate when things are calm. We want to know where, exactly, dealer delta-hedging need resides, and thereby where volatility picks up and slows down.

More on that soon.

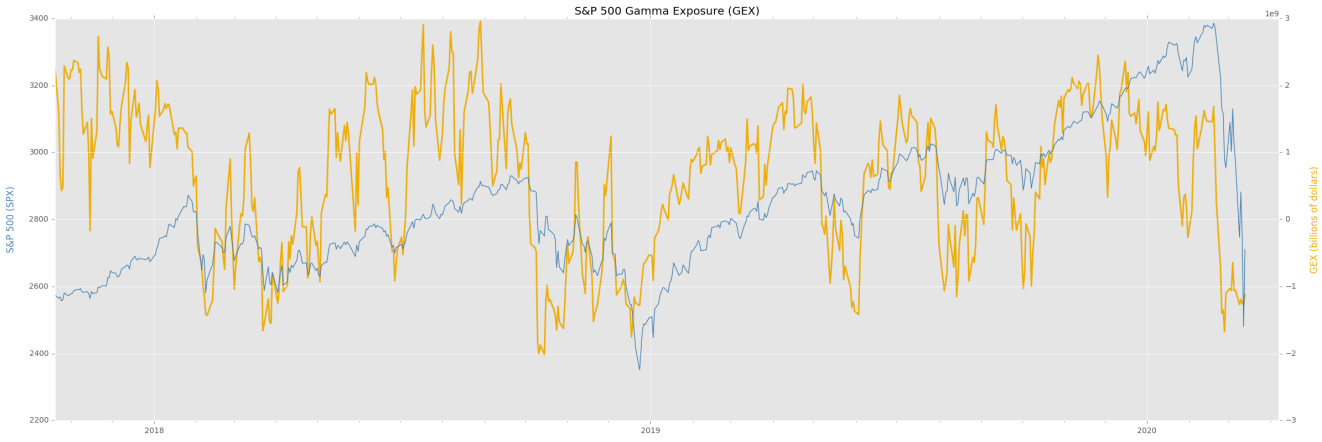
2. Your regularly scheduled forecast



This is a plot of the last month of the S&P 500. We wanted to add more history for context, and we'll probably keep showing these longer-term plots so you can get a better feel for recent movement. The orange part of the line is this past week. This past week alone was **down 8.83%**.

According to last week's GEX forecast, that's another left-tail event. Extraordinary in terms of GEX history.

But this is where we had to acknowledge that GEX, with its original assumptions, can't generate a suitable forecast for this type of market, which has incredibly high implied volatility and unusual option positioning. Indeed, we came close to admitting defeat. GEX being at **-$1.12bn**, even though it's accurate, can't tell us quite enough to forecast a day like Friday.



And that's why, on Thursday, we sent out a GEX-2.0-derived forecast with a 1-day GXV of **99.35%**.

This forecast implied a 1-day standard deviation of returns of 6.25%. You may have noticed that the next day realized a historically significant 9.29%. We sent out that note on Thursday because we were expecting a historically significant Friday, and we knew that GEX 1.0 couldn't tell you that this was the case.

Why couldn't it tell you? It's a few things all at once: (1) Because gamma decreases when implied volatility is high. (2) Because implied volatility *itself* becomes a larger part of the picture when we're trying to isolate delta-hedging effects. (3) Because sometimes it's wrong to assume that nearby puts are held short by market-makers. None of these things could have possibly been addressed by GEX.

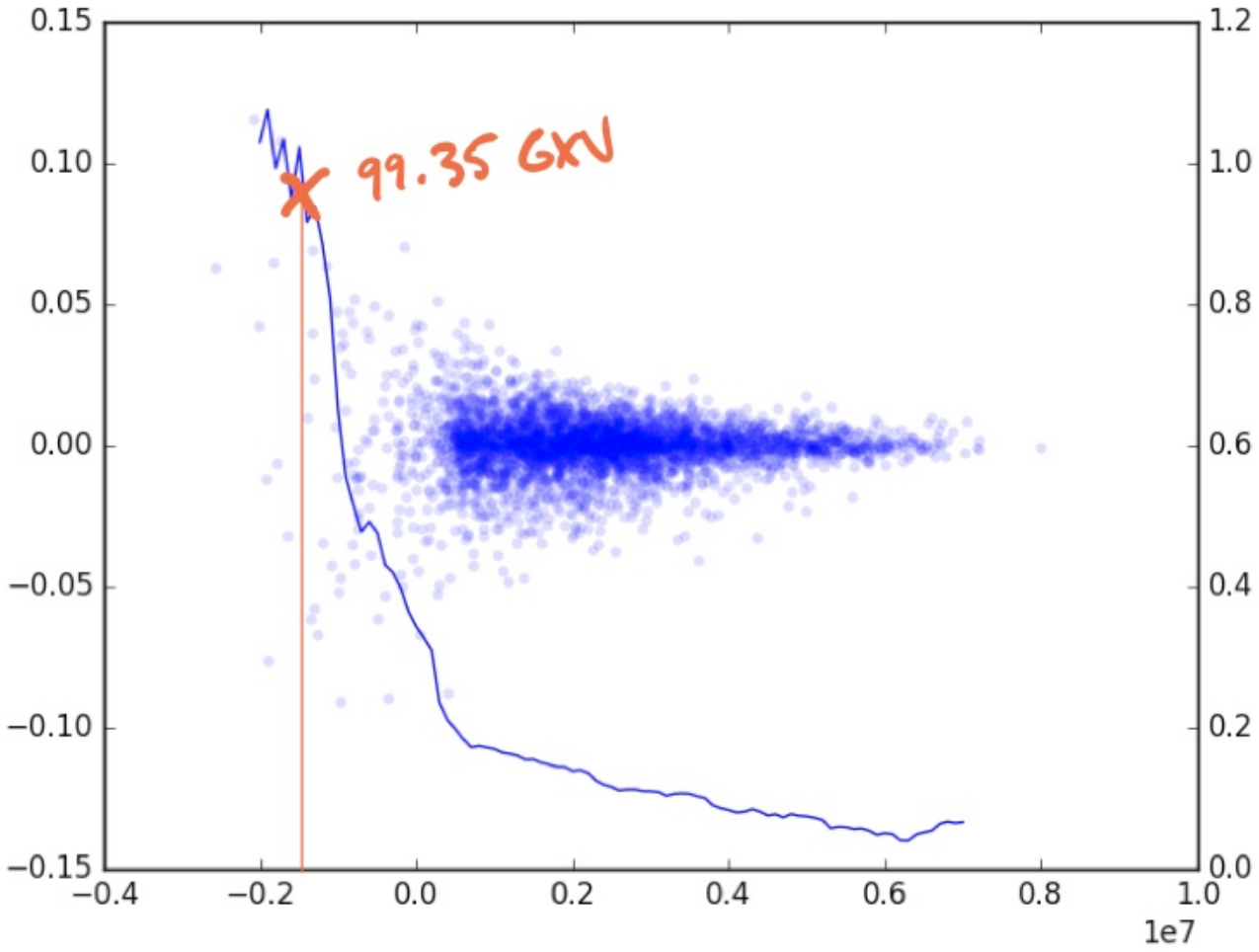
So here's a thought-experiment nerd note: Imagine that there is a put option held *long* *by an option dealer (3), that the put is priced at 80% IV (2) and its gamma is, as a result, negligible. Now also imagine that the put is struck above the market. E.g., if the market's trading at 2500, the put, held long by the dealer, is struck at 2750 -- way up there. The put has a delta of, say, 75.*

What happens if option prices fall across the board and the IV of the put option drops from 80% to 60%?

All other things being equal, the delta of that put is now 85 (+10). And that means that the option dealer has to re-hedge his delta (which was +75 units of SPX) by *buying* *another 10 units of SPX. You can take a minute to think about this. Or an hour, whatever it takes.*

But the upshot is that customer short puts (dealer long puts) struck above the market can cause insane upside squeezes when implied volatility falls. And when implied volatility is high, this effect can be huge. The effect is called vanna. And in this market, it's an important complement to gamma. Two sides of the same coin.

GEX 2.0, by taking both the direction of trades as well as the vanna into account, was able to forecast a day with historically *insane* volatility. So again, that's why you got that note on Thursday. We really wanted you to see it in action, and how extraordinary the situation really was.



Hopefully that piques your interest enough to forgive us when we say we're just as ill-prepared to make a detailed forecast right now as we were on Thursday. If you take a guess at where we'll open on this plot tomorrow, GEX 2.0 will probably be more like **-$1.12bn** (yes, that's the exact same number as GEX right now, but in the context of GEX 2.0, it means something very different). This forecast implies something like **55%** 1-day volatility. A 55% 1-day volatility gives a standard deviation of **3.46%**.

Last we checked, E-minis are, once again, at their locked limit down. So perhaps it would be best to consider that 3.46% standard deviation to *begin* at 5% down.

In case you were unclear on the historical significance of this market, we continue to rely on data from 2008 to inform our forecasts. Questions about the mess above? Just ask.

Good luck, stay safe.

The SqueezeMetrics Team
