

S&P 500 Weekly Forecast 2/21

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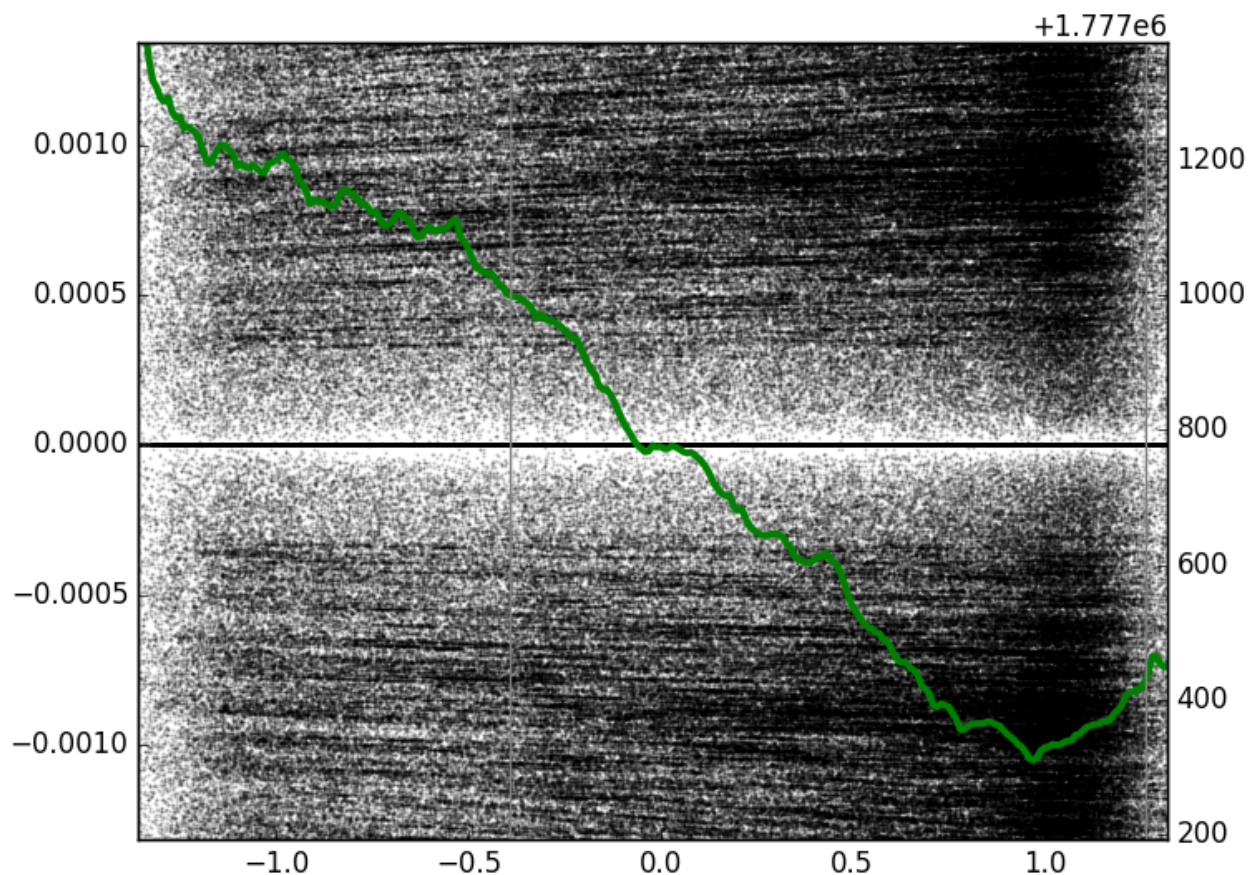
Hey everyone,

We said we'd talk more about hedging bands today. But after several days of testing, we really don't want to *think* about hedging bands anymore, much less *talk* about them. So please accept the following stream-of-consciousness as if it were something more profound.

First of all, we tested fixed-dollar-value bands. I.e., in GEX terms, set some arbitrary dollar limit (e.g., \$5bn) after which you believe that dealers will have to start re-hedging their deltas. This is a neat idea because it's always nice to keep things dollar-denominated instead of getting more abstract. The problem is that there's an implicit assertion that SPX option dealers, collectively, have a "dollar limit" of exposure, after which they hedge. This might be believable in the context of short gamma (because when you're short gamma, you lose money on big moves, so re-hedging is defensive and necessary!), but we were always a bit skeptical that it'd be the right tool for typical dealer long-gamma scenarios. After all, incremental dollars don't do much to rein in volatility at the upper end of GEX. There isn't a big difference, in volatility terms, between \$1.0bn and \$1.5bn GEX.

We tested "dollar bands" on a 15-minute timeframe. I.e., what happens 15 minutes later when SPX spot is above or below the center of the hedging bands? Well, the results were OK, but there weren't *perfect* relationships between levels and returns. It was lumpy. So we moved on to testing the gamma-implied volatility (GIV) associated with given levels of GEX. The results? Better. Smoother. The relationship between GIV bands and returns is more what you'd expect. But then it occurred to us -- what if intraday hedging bands are, ultimately, a reflection of near-term implied volatilities, and dealers derive their hedging bands primarily from market prices themselves. In other words, maybe they just send in orders corresponding to the 0.5 standard deviation intraday move or something silly like that.

So we tested that dumb idea and found this beautiful relationship:



The green line is mean 15-minute SPX returns throughout the trading day. Left of center (0.0 on the x-axis), returns scale linearly up all the way down to the -1.0-standard deviation lower band, and scale linearly down all the way up to the +1.0 standard deviation upper band. Data is sampled every minute from 2016 to present.

Wow. That's strong.

But the y-axis (returns) is normalized to the width of the hedging band, so as to display the relationship without bias as to volatility regime and other such things. And that means that 0.0010 on the y-axis stands for *0.10% of the width of a hedging band*.

In other words, when SPX is touching the lower 1-stdev hedging band, the average move in the next 15 minutes is for the index to rise... by a tenth of a percent of the width of the hedging band. If the hedging band is, say, 20 points wide, that means that, on average, SPX goes up... *0.02 points*.

That doesn't seem like a lot.

But before we go any further...

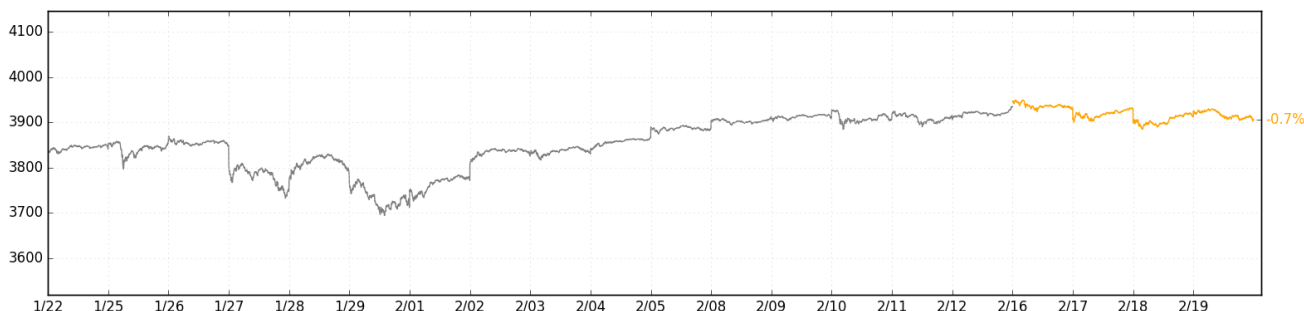
1. The short week with lots of gamma
2. The normal week with less gamma
3. The very appealing concept of hedging bands

The short week with lots of gamma

Our bet for this past week was on lower SPX, but largely unaffected VIX futures. That's why we were short March VIX and long an SPX put spread. From last weekend:

Which leaves us short VIX while betting in a left-shoulder event on the 1-week timeframe (like a 1.5% loss or something). And by golly is it a cheap bet right now: This week's ATM SPX vols were priced at 7% to 11% as of the close on Friday. And with GEX+ at \$700mm (implying a GIV of 9%), these options seem very desirable to buy.

Well, we only got a 0.70% loss on the index, and while that was enough to prevent our 3910 long put from expiring *completely* worthless, it wasn't enough to sooth our ego.

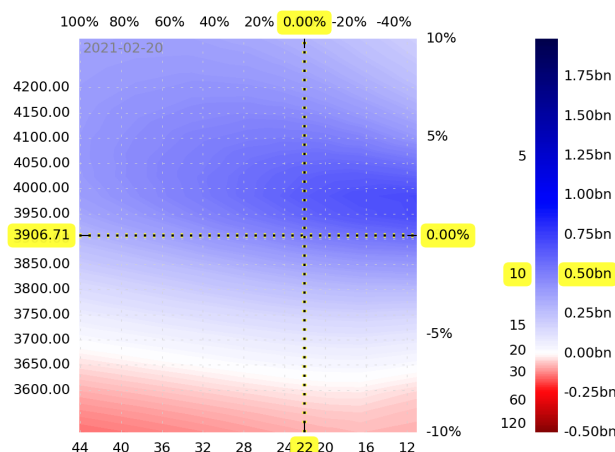
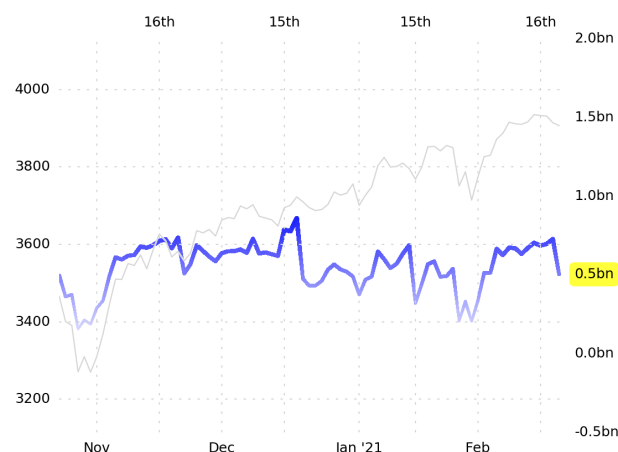


A lucky break: March VIX fell substantially into the 24s, bringing us pretty close to a breakeven on the week's trade (still a loser, though).

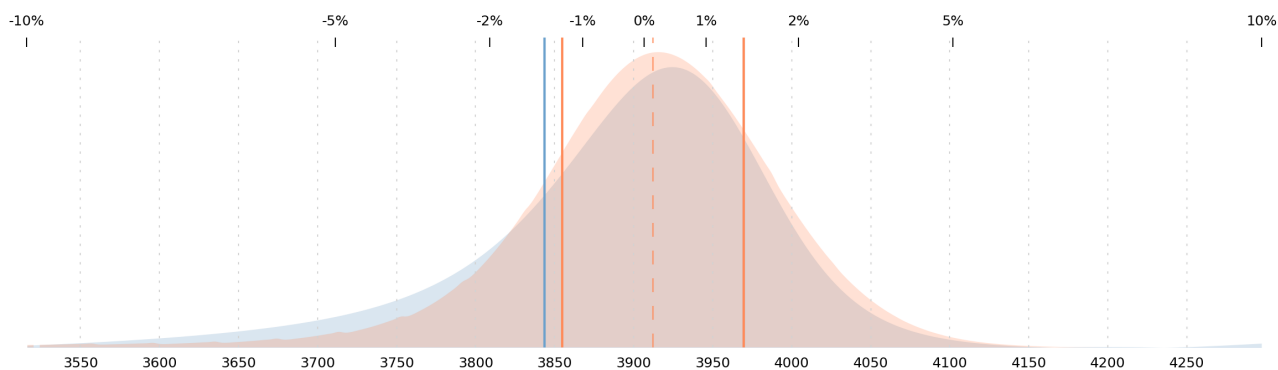
As you may know from the Friday morning note, this past week was Gamma Week, and a not-insubstantial amount of gamma disappeared on Friday at the close.

The normal week with less gamma

We predicted that GEX+ would fall to \$500mm, and it did.



And this does exactly what you think it might do: It increases the volatility predicted by GEX+, which leaves us in exactly the same situation as we were before. We *want* to be short near-term volatility (that's our bread and butter!), but we can't be. GEX+ and market IVs predict a nearly identical distribution of returns for Friday. There is still no edge in selling options.



The only real difference between these distributions is that GEX+ (orange) says that a 0% to 1.50% loss is more likely (exactly what we were betting on last week), and that a 2.00%-ish gain is more likely. The market (in typical fashion) believes that a 2% or greater weekly loss is more likely.

Anticipating this setup, we did something a bit unusual: On Friday, we got rid of the majority of our short VIX position, bought 4000-strike SPX calls, and bought *another* ATM put spread (3900/3850), legging our way into each of these positions.

We got rid of most of the short VIX because with March VIX in the 24s and spot VIX at 22 (and with a floor around 20), we didn't think it was quite juicy enough to hold on to anymore. We bought the SPX call and put spread because we were anticipating the decrease in GEX+, post-expiry, to lead to this exact 1-week probability distribution that you see above.

This trade, as it stands, will win if SPX closes the week anywhere below 3883, or anywhere above 4017. In the middle, it loses. The sizing is peanuts, because by golly it's not a high probability bet.

Hopefully you see what we were trying to get at by structuring a trade this way. It's a pure probability bet. And it's small because it doesn't have a lot of edge (the weekly densities above are *very* similar!). In other words, we were really happy to be short VIX since late January, but now that's over, and it's tough to figure out what to do next.

Now let's talk about other disappointments.

The very appealing concept of hedging bands

See, the problem with just declaring that hedging bands are real and useful is that *it's an appealing idea*. Finding some truth, some alpha, in an ugly idea is much more compelling, because it means that you don't necessarily *want* to be true. But when you *want* something to be true, because it seems so *right* that it be true, then you have to be careful. This is especially true of something that looks pretty on a chart, as we believe these intraday hedging bands do.

So that's why we're being all cagey about this. Because we're scared. We're scared that we want this to be true, and that if we want it too much, we'll dig up some trumped-up stats to "prove" our point. We took unusual care in the past few days to make sure we weren't superimposing unicorns and rainbows on these charts.

And with all of that care, we still managed to come up with that gorgeous chart above, demonstrating a very consistent relationship between SPX 15-minute returns and SPX spot position relative to dealer hedging bands.

The trouble is that it looks like these hedging bands matter more in certain circumstances than in others. So we tried testing to see if the signal was strongest at the beginning of the trading day or at the end. We tried testing by volatility level. We even started looking at SPX volatility term structure. We came up empty. We were unable to find that factor that supercharges the predictiveness of hedging bands, if indeed there is one.

For now, we believe that the signal we've found is simply too weak to rely on. But the fact that the signal is so *clear* is tantalizing. So as much as we hate to keep looking at this (it's horrible), we still think that this is an important, and potentially valuable, venue for inquiry.

Thank you for humoring us. And please let us know if you have any ideas.

Once more unto the breach, dear friends!

The SqueezeMetrics Team
