

S&P 500 Weekly Forecast 10/25

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Hey everyone,

We apologize in advance for this note.

Back when we were first introducing the idea of vanna exposure (VEX), we noted that *internal* to VEX is something very different from GEX. While GEX tells us about how much delta-hedging must take place in the event of a move in the underlying, VEX tells us about how much delta-hedging must take place in the event of a move in *implied volatility (IV)*. Since IV can move *without* the underlying moving, that means that directional index hedging flows can theoretically be manifested by shifts in IV. Tantalizing! Especially if you think you can forecast IV.

But we never found much in the data.

More recently, as you know, we've been looking at "SPX daily net put delta," which is measurement of daily put flows in SPX. Most of the time, those flows are net *negative* delta (investors buying puts). This is pretty bullish. Sometimes, though they're net *positive* (investors selling puts). This is neutral. Very infrequently, though, the flows net out to zero. Curiously, that's when left-tail volatility tends to creep up.

We've said this many times already throughout this process, but you *always* have to be worried that when you think you've found a new trade signal, it's actually just looking at a different signal from another angle. The market for S&P 500 exposure is vast and interconnected -- we shouldn't expect to find novel signals, even if we do find some data sources that work better than others, or that throw things into sharper relief.

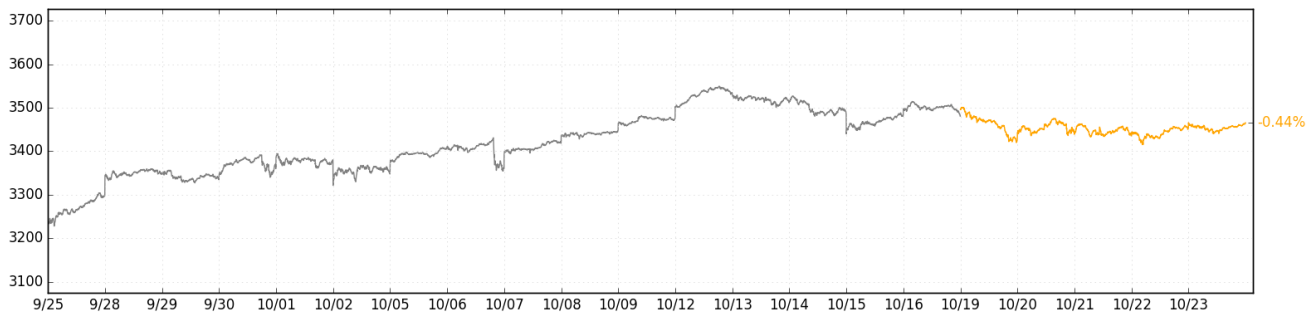
And so, when we started thinking about what the daily flows of "net put delta" could be about, one thing that was always in the back of our minds was VEX. Maybe we're somehow, obliquely, looking at vanna flows when we're looking at net daily put deltas -- because this net put delta thing seems to have some strong directional utility. This week, some readers made a compelling case that net put delta (let's just call it "NPD" for now) could be directly tied to VEX. So we dug deeper. Much, much deeper.

But let's come up for air, if only for a minute.

1. Last week
2. Next week
3. It's very dark down here

Last week

We came into this week bearish, which is something you may have heard us say... one or two times. Ever. The reason was that our recent foray into NPD showed us that the current put flows in SPX are associated with flat to negative mean returns. Anecdotally, the index went down... by **0.44%**.



Our position in November VIX futures was neither hurt nor thrilled. We still have that position.

Next week

In a marked break with tradition, all of what we have to say about the coming week is contained below.

It's very dark down here

Could NPD be a cause, or an effect, of VEX? Think about it:

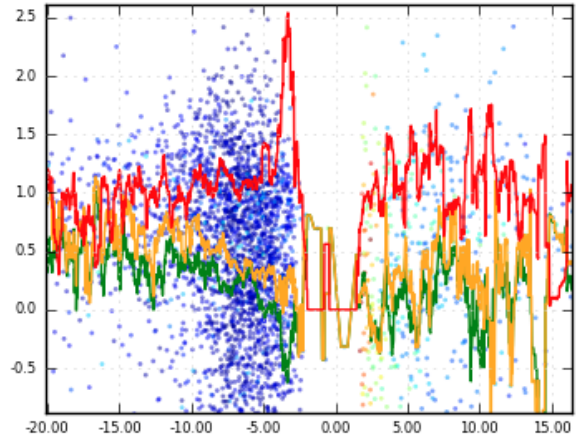
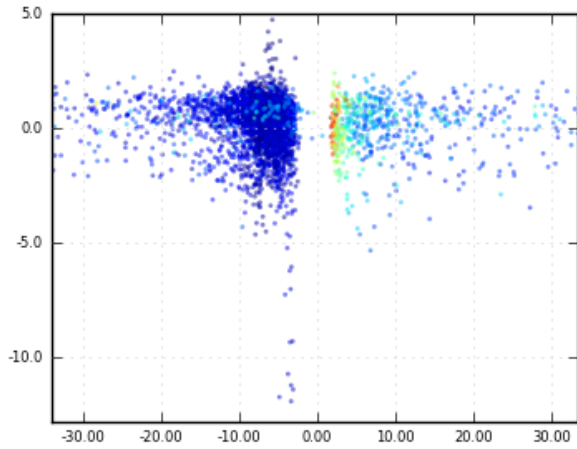
If investors sell a lot of puts for several weeks or months, that could easily buoy the market. Recall that 2007 and 2019 had net put sellers. It'd be positive VEX and positive GEX. (That's what [this paper](#) is about.) But when those put-selling flows stop or slow, there'd be whole bunch of sold puts sitting below the market. In the event of a leg down, these puts would *theoretically* provide support in the form of their gamma (they are long gamma to the dealer, and thus stabilizing) -- but that's only if the sellers don't panic and buy back their positions, which, if they do, would override the gamma impact with immediate delta flows (especially if IVs are rising concomitantly).

This is why we say that VEX is GEX's "evil twin." It was a huge factor in 2008 and 2020 index price-action -- perhaps the primary factor. When VEX goes negative and there's no GEX to keep things together, that's when volatility goes to the moon.

So what if, when we're looking at net put delta, we're actually seeing the relationship between GEX and VEX. E.g., if there are a lot of put-sellers, are those sold puts accumulating to dealer VEX? Are they adding more VEX to the market than they are GEX? What happens when VEX becomes larger in proportion to GEX? After all, GEX is an incredible market stabilizer -- VEX is more fickle.

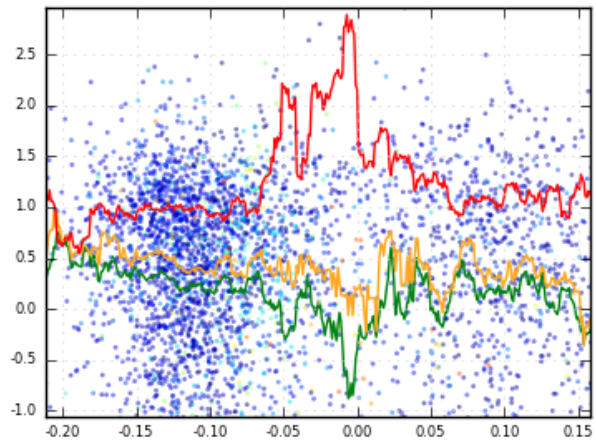
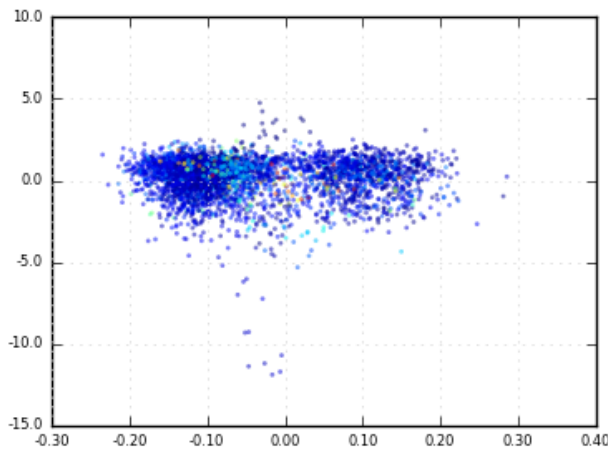
If that's what happening, *then we should be able to look at the ratio of GEX to VEX*, and to see something similar to what we're seeing in NPD. Because if NPD is actually about changes in the GEX-VEX relationship, then we should see greater instability when VEX (representing sold puts) makes up a relatively greater proportion of dealers' exposures. Since part of our hypothesis here is that the *gamma* impact of customer-sold OTM puts ends up being completely overridden by customers' position adjustment, we went through the DDOI data and made adjustments (the *same* adjustments to all the data from 2004 to present, for consistency) to temper that supposed impact.

Here's what we got: Below is the ratio of VEX to GEX against 1-month SPX returns. When the ratio (x-axis) is negative, GEX is higher (normal). When it's positive, VEX is higher (a feature of volatile regimes). Dots are colored by VIX level (red is high, blue is low). Right panel is the left panel zoomed in, with mean, median, and mean absolute deviation overlays (green, orange, and red, respectively).



Just about every monthly loss in excess of 5 mean absolute deviations (-5.0 on the y-axis) occurred when VEX was lower than GEX, *but not by a lot*. Somewhere around a ratio of -3.50 is where crazy historical volatility occurs (2.5x higher than average). This aligns with our thesis above -- that "we should see greater instability when VEX (representing sold puts) makes up a relatively greater proportion of dealers' exposures." This also aligns with the tendency of slightly net negative *put deltas* (NPD between -5 and 0) to precede a fat left tail.

Similarly, slightly negative NPD and slightly negative VEX-GEX ratio *both* result in low (0% to negative) 1-month mean and median index returns, and very negative results in great returns. Indeed, we think that the plots above looks quite a lot like the plots of NPD that we've been generating for the last couple weeks (there's even very little data around 0 in both cases). To refresh your memory, here's NPD. See how the overlays are nearly identical from -20 to 0 on both datasets?



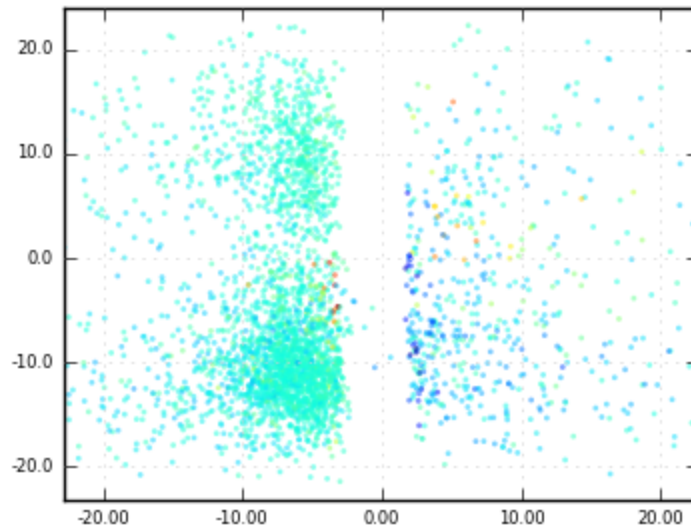
So, case closed, right? Daily net put delta was simply giving us a window into a sort of customer-adjusted VEX-GEX ratio, which contains the directional VEX information that we've been hunting down for the last six months. Now we have an indicator that gives us a great directional and vol indicator, and that wins our long battle with net put delta! Huzzah!

[pause]

Just kidding. So, for reasons that we totally don't understand, there is *not* a strong correlation between NPD and the VEX-GEX ratio, despite the fact that the plots look like they're pretty much showing us the same

exact thing. Aside from the slightly different shape, the first thing that might catch your eye is that the high-VIX (red dot) days in the NPD plots are scattered throughout -- they aren't all clustered together.

And when you try to find some kind of linear relationship between the VEX-GEX ratio and NPD, you get this mess, where the x-axis is VEX-GEX and the y-axis is NPD, and there's no relationship to speak of:



Dots, this time, are color-coded by 1-month returns, where reds are big SPX losses and blues are big SPX gains. What we want you to notice, first and foremost, is that most of the red dots are clustered around where NPD is near zero and where VEX-GEX is also near zero. That means that nearly all of the 6-deviation and 8-deviation monthly losses that the S&P 500 has experienced since 2004 have occurred when VEX was relatively high, as compared to GEX (but still lower than GEX), and when the market for put options was balanced.

(And it also looks like the largest 1-month *gains* the index has ever experienced [dark blue] occur when VEX is a bit higher than GEX, and when people are either neutral or net buying puts.)

Now for the kicker: As of Friday's data, NPD is **-2.95** and the VEX-GEX ratio is **-3.16**, placing us directly in the middle of that ring of fire.

Does this mean that there's a risk of a huge move in the index?!

We wish we had a better answer to this obvious question. Those huge historical moves that you see on these plots all began with a VIX under 20. With VIX at 28, an 8-mean-absolute-deviation move would be a 50% loss to the index in a month. That's definitely not on the table.

But it's still worth noting that the combination of near-zero VEX-GEX and NPD is historically dangerous... and it's easy to see why. When evil VEX is stealthily stalking GEX and when net flows aren't renewing investors' put protection, downside shocks are potentially very violent, and the probability of downside is increased by an underhedged investment community.

Is this at odds with GEX+ and the usual forecasts?

Kind of, yeah. Our measurement of GEX and VEX was always about measuring option dealers' current hedging obligations. This never really purported to delve into "flows" or "sentiment." All the stuff above is

about *customer* positioning rather than dealer positioning, and it's opening up some new doors.

Can I derive the VEX-GEX ratio from the usual data on the usual spreadsheet?

If you do, you'll note that our adjustment to VEX for the tests above doesn't shine through in the volatility expectations. We have some "special sauce" at work above. You will, however, note that whenever VEX is historically large, relative to GEX, that's always a sign that 1-month SPX returns are iffy.

What now?

We're holding on to our November VIX futures. If we're feeling cheeky, we might even buy some SPX puts. While none of this has a very high probability of profit, the potential for unusually convex downside is too unusual and too interesting an opportunity to pass up.

Lot more work to do on this. Thank you for your patience.

Enjoy the week!

The SqueezeMetrics Team
