

## S&P 500 Weekly Forecast 11/8

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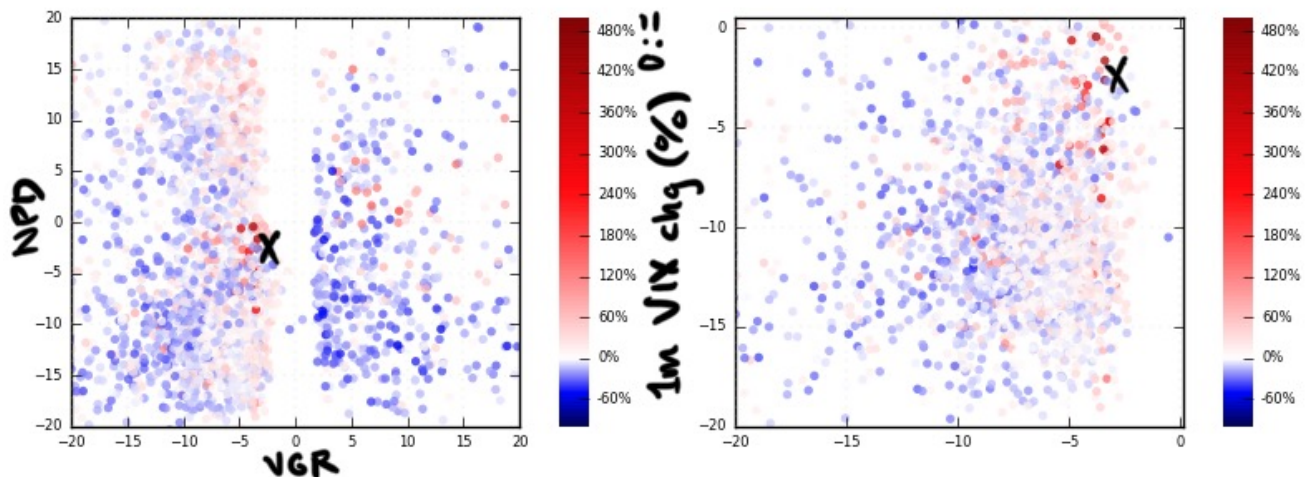
Hey everyone,

We still need to get a better feel for what this new data means. This note is another failed attempt.

Part of improving our understanding means watching the data in real-time while we watch the market, and the other part means trying to suss out the relationships -- and the functional meaning of those relationships -- in the historical data. For the last two weeks, we've watched the vanna-gamma ratio (VGR) and net put delta (NPD) give us incredibly clear signals on when to be long S&P volatility, and when to be short.

So let's try to draw a better mental map of what's going on, so that we can eventually get this data on the forthcoming "Sentiment Sheet PDF" in a way that's useful at a glance, but without neutering the data of its inherent complexity.

That all sounds very analytical and smart, so let's take a quick break for some *drama*. Below is a plot of VGR, NPD, and 1-month percentage change in VIX (as heat). As of Friday's data, VGR is **-3.25**, and NPD is **-2.49**. "X" marks the spot.



That's right. We're back in the "ring of fire." Right now, customer positioning has very high vanna relative to gamma, and Friday's flows told the story of a balanced market for SPX put delta -- which means that dealers are starting to pass most of their new put exposure to fickle, irresponsible customers instead of warehousing it themselves.

This is dangerous. Last time we were in the "ring of fire" was exactly two weekends ago (10/25). The index fell 5.59% over the next week, and VIX went up 38% (10 points). But that was *last last* week. Let's talk quickly about *last* week.

1. Last week

2. Next week

3. What's "customer vanna?"

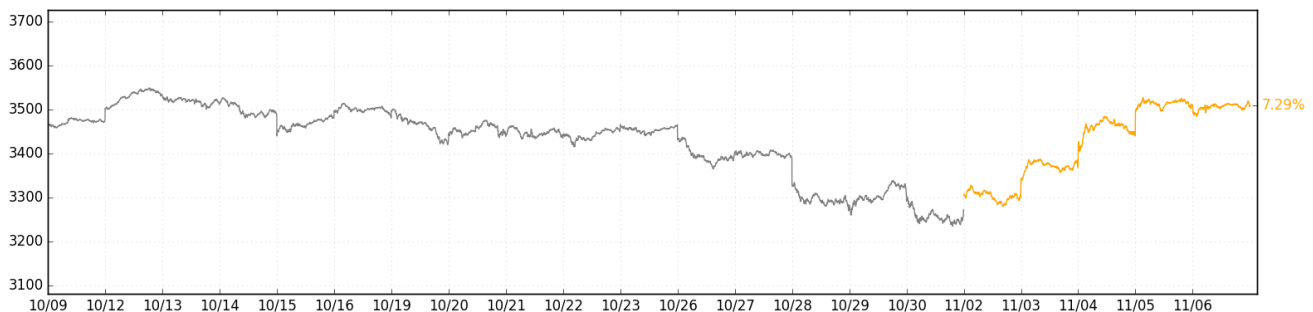
### Last week

From the Sunday note:

Oh, and right now, VGR is over 200. The deep positives combined with an NPD of under 0.00 is associated with average 1-month decreases in VIX of around 20% or more. Like we said above (in that heavily-annotated plot), when VGR is above zero, flows matter more, and when people are net buying puts, that's bullish for the index and tends toward decreasing VIX.

As of Friday at the close, we're short some of the same November VIX contracts that we were long last weekend. We'll also likely be selling a wide-winged iron fly position expiring Friday (in small size). Gently scaling into some short volatility makes us feel warm and fuzzy.

Well, this past week, SPX went up **7.29%**, and VIX went down 13 points (35%). As such, our short VIX position did wonderfully (and our little iron fly was completely obliterated, taking a max loss).



Anyhow, what we find really interesting about the plot above is that there's a really clear pattern on both the downswing and the upswing of the past two weeks: There are *jumps*!

Why are there jumps? Because the customer vanna-gamma ratio has dramatically impacted the direction of the index. On the week starting 10/25, it was bearish; and on the week starting 11/1, it was bullish. *But despite this signal coming from customer positioning, SPX option dealers were still long gamma (positive GEX).* So what you're seeing in that chart is the fight between these two forces: The directional impact of customer vanna and the volatility impact of gamma. Vanna induces dealers to re-hedge, and customers to roll/close, *as IVs change*. This has a huge directional impact. But at the same time, the intraday activity is dominated by dealers' re-hedges from their +GEX (long gamma), which keep price range-bound.

Basically, when vanna overcomes gamma, you get those jumps (and this is why the vanna-gamma ratio [VGR] matters!).

### Next week

Since we're still under the impression that VGR/NPD are the dominant determinants of "what happens next," let's use its historical tendencies as our guide.

The mean 1-month change in VIX for a VGR of -3.25 is **+30%** using data from 2012 to present (when you're thinking bearish thoughts, perhaps it's best to ignore the data from 2008). With VIX currently at 24.86, that would put VIX at around 32 within a month, on average. Arguably, since the data is highly skewed when VGR is in the low negatives, we should also consider the median. The median change in VIX is +11%, which would

take VIX from 24.86 to 27.5.

These numbers induce us to think that we should be in possession of some long vol. Right now, we're leaning toward buying some OTM puts in ES/SPX. How far OTM? What tenor? Honestly, we don't know enough to say. Lately, with this data, we've been taking more of a "shotgun" approach, accumulating a position by feel, perhaps with reference to SPX dollar delta and vega, and ideally with fixed risk. Again, this gets into the *craft* of trading. We are but humble data providers!

*Nerd note: Look back up at our "X marks the spot" scatterplot. See how the "ring of fire" is a combination of a low-negative VGR and a low-negative NPD? That's where we're at right now. In the above analysis, however, we only looked at our current VGR to derive mean and median change in VIX. If you segment the returns by NPD as well, you'll find that the mean historical change in VIX is actually +80%! This is because all of the biggest vol events started in the "ring of fire." The reason that we're not emphasizing this is that we believe dealers are well-positioned in terms of their vanna, and that (as per our "crash risk indicator") there's no way we end up with a runaway liquidity-taking event. As such, our bet is on a vol expansion here, not on the Apocalypse.*

### What's "customer vanna?"

There's an interesting mythology developing around vanna, now that it's... suddenly become more popular. That mythology very frequently holds two irreconcilable ideas to be true: (1) That net SPX flows are customers short puts, and (2) that "dealer vanna" is responsible for ramping the index when IVs fall.

When IVs fall, a dealer long OTM put (customer short OTM put) causes the dealer to sell the underlying, not buy it. If you're having trouble visualizing this, remember to consult the "vanna cheat sheet" on page 7).

There are two ways to reconcile this: Either (1) Net SPX put flows are actually customer *long* puts, or (2) it's not "dealer vanna" that matters, it's "customer vanna." Well, we think that (1) is actually true most of the time (puts are usually bought), but it's not true *all* the time. Yet, even when customers appear to be net selling puts, decreases in IV tend to correspond to increases in SPX. Since the derivatives cart is what pulls the index horse, this could be tough to explain -- but this is where "customer vanna" comes in.

A customer who methodically sells 15-delta puts does not want 5-delta puts (or 30-delta puts). So if IVs get whacked, and that 15-delta put becomes a 5-delta put, the customer may very well buy back the 5-delta put and sell a new 15-delta put. This would be a net +10 delta event, which would induce a dealer to buy some of the underlying. But if the dealer was already long that put, then he'd have already (theoretically, of course) sold the -10 delta as a hedge -- and the whole process would net out. In a way, it's as if both parties are delta-hedging -- just at different frequencies.

But what if there was no dealer in the mix? What if most of the OI is held by customers? In this case, when IVs fall, the systematic put-seller induces a dealer to actually *net* buy +10 delta of the underlying when he rolls his position, as the dealer *hadn't* been on the other side. *Bullish*. And if the trend continues, the dealer will have to buy more as the delta falls. Meanwhile, the customer who's still long the put may feel pressured to cut or roll his position, which would also be a net neutral or positive, and likely cause a dealer to buy the underlying. Market goes up and stays up, achieving a new equilibrium.

This is, deliberately, the exact opposite of a hypothetical scenario (IVs *expanding*) that we outlined last weekend:

A customer buys a 30-delta put from a dealer. Another customer sells the 30-delta put to a dealer. The dealer is now out of the picture, not needing to delta-hedge. As the index goes down and IVs expand, the customer who sold the put will exit the position as it gains convexity/gamma, perhaps at the same

time (or before) the long put customer exits. The flows even out, but the market is now lower, and staying there. No dealer is required to buy back shares, so no bullish flows occur. In this scenario, net put delta was ~0 (danger!) and "customer vanna" was pretty big relative to customer gamma (basically, one customer wanted long convexity, but the other didn't *really* want short convexity). This precipitates corrections, since the flows net out to a market that falls and doesn't immediately recover.

We find this fascinating, because it's everything that we *weren't* looking at before. Before, we were thinking exclusively about dealers managing their deltas. Here, we're thinking about what happens when two customers are managing their deltas *without* a dealer in the middle. Because they don't delta-hedge, there becomes a more dramatic opportunity for their delta sensitivities to get thrown off all at once, triggering new flows.

When the vanna of customers' paired-off OI is high, that means that there are a bunch of customers out there who are super-sensitive to changes in IV, and when those IVs shift, there's an implicit "order imbalance" in the market.

*Nerd note: Look at the "X marks the spot" scatterplot again. Customer vanna is at its relative highest to gamma when the VGR is nearest 0. Notice that when VGR is nearest zero is when the most dramatic stuff happens. When VGR is +3, that's when huge vol crushes occur. When VGR is -3, that's when huge vol spikes occur. Customer vanna!*

Right now, that order imbalance encourages IVs to be bought, and SPX to be sold, which is why we're getting long vol, short delta again.

Like we said at the beginning of this note, this is another failed attempt at figuring out what's going on. But we feel a lot closer now. Bear with us! (Hah. Pun intended.)

December E-minis are up 1.40% last we looked, around 3550. Good start?

Enjoy the week.

The SqueezeMetrics Team

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