After the selloff, competing theories on dealer gamma

Tier1 Alpha sees $74 billion short gamma catalyst; SG says rapid return to positive territory had calming effect

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Whenever stocks drop violently, dealers' gamma positioning is often at the top of any investigation into potential culprits.

The equity market selloff in 2018, dubbed 'volmageddon', and the Covid-related rout of 2020 offer prime examples of the havoc banks' options hedging activities can wreak in jittery markets. Last week's meltdown may be different, however, with market strategists offering competing theories on the role gamma positioning played when the S&P 500 shed 6% in three days.

Analysts at BNP Paribas say the at-the-money gamma profile of options dealers, which has been strongly positive for much of the year, turned negative when the S&P 500 crossed 5,300 on the morning of Monday, August 5. They calculate that after stocks rallied the following day and then sold off again to close below 5,200 on Wednesday, dealers were short roughly $3 billion notional of gamma per 1% move in the index – suggesting that hedging activity exaggerated price swings over this period.

Quant researchers at Societe Generale tell a different story – that dealer gamma became negative the previous week and quickly returned to positive territory after the initial selloff, helping to calm the market.

Nomura strategist Charlie McElligott says dealers narrowly avoided their gamma profiles flipping negative based on Monday's 5,186.33 close, according to a Bloomberg report.

A fourth view, espoused by options research firm Tier1 Alpha, is that dealers flipped to a short gamma profile when the S&P 500 dipped below 5,500 on Thursday, August 1 and became more negative as the selloff accelerated, leaving them short roughly $74 billion of gamma across all expiries at the close on Tuesday, August 6.

The diverging theories lead to radically different conclusions about why markets sold off as they did and what happens next.

Seeing the Vix up at 60 is a sign of people being forced to do things they don't want to do

Greg Boutle, BNP Paribas

Gamma represents the rate of change in options delta for a single-point move in the underlying. Dealers that are long gamma trade against the prevailing market action to hedge their risks, suppressing volatility, while a short gamma profile leads to more violent moves and wider trading ranges.

"When dealer gamma is as large as it was a month ago and you flip all the way to being short gamma, that will have an impact in terms of whether volatility is suppressed – as it was when gamma was very high – or exaggerated," says Greg Boutle, head of US equity and derivatives strategy at BNP Paribas.

Strategists at Bank of America say SPX gamma hit a record net long of $24 billion on July 5, though this had fallen to just $11 billion a week later. Data from UBS show gamma positioning hit an intraday record of $36 billion on the afternoon of July 10, but quickly fell to single-digit billions.

The different findings reflect, in part, differences in research design. The team at BNP Paribas reverse engineered the gamma profile of dealers using Cboe data on at-the-money options, which have the highest gamma values. They then looked at public information on the assets and strategies of volatility-selling exchange-traded funds (ETFs) and mutual funds to calculate how much gamma they are selling to dealers. Analysis of both data sets shows dealer gamma turning negative on Monday and remaining short through the close on Wednesday.
"Part of the reason we have confidence in our numbers [is] because we have done this two ways," says Greg Boutle, head of US equity and derivatives strategy at BNP Paribas.

Researchers at Societe Generale measured the "realised gamma" by tracking how prices behave around the close. "The idea is simple: if there is a continuation of the day's price action into the close, dealers and systematic traders are short gamma. If there is a reversal of the price action into the close, they are long gamma," says Sandrine Ungari, the bank's head of cross-asset quant research.

The idea that dealers swiftly returned to a long gamma posture after the initial selloff "is consistent with the reversals we've seen around the close the past few days," Ungari told *Risk.net* on August 8.

Tier1 Alpha did not respond to several requests for an explanation of its methodology. It is unclear whether the firm's analysis focused on at-the-money options, which have the highest gamma exposure, or all positions. Several sources that spoke to *Risk.net* were sceptical that dealers would run such a short gamma position without putting hedges in place.

Evidence of dealers actively hedging a large short gamma position, though, is hard to find.

"If dealers had continually delta hedged their negative gamma exposure, that would have caused more downward volatility," says Tobias Hekster, co-chief investment officer at the volatility hedge fund True Partner Capital.

Hekster also notes that past instances of dealers frantically hedging short gamma positions have caused sharp, V-shaped moves, with markets plunging and then rebounding once options books were rebalanced – similar to the Nikkei's 10% jump after its 12% drop on Monday.

The S&P 500's rebound was far less dramatic.

"Most of [Tuesday], the movement up was so grinding," Hekster says. "With a lot of short gamma in the market, one would have expected something more rapid. This rise reminds me of other days when there was good news and lots of dealer gamma."

BNP Paribas's Boutle, though, argues the dramatic rise in the Vix – which surged over 180% on Monday morning to an intraday high of above 65 in the biggest one-day spike in its 30-year history – was consistent with dealers frantically hedging a negative gamma position.

"Seeing the Vix up at 60 is a sign of people being forced to do things they don't want to do," he says. "The Vix wasn't trading up at 60 because people thought that was a good level for it to be at. It's because people were being forced to unwind things."

Don Dale at options consultancy Curved Edge Strategies agrees dealers rushed to delta hedge their gamma exposures during the furious selloffs on Friday, August 2, and the following Monday.
"To neutralise gamma, other derivatives with inverse gamma exposures need to be added to the position to reduce or eliminate that Greek exposure," says Dale. This could be done by buying at-the-money options or trading futures and options linked to the Cboe Volatility Index, or Vix.

"They [dealers] didn't alter the convexity in their positions," he adds.

BNPP's Boutle concedes a shift in gamma profile of the magnitude estimated by his team would typically put more pressure on the S&P 500.

"It's very complicated, between all the different market participants having to hedge risk when things are going wrong. It's fair to say the dislocation in terms of the options parameters was much, much larger than the move in the market," says Boutle. "But I also think it's tough on a day [Monday] when the market moves 3% in the absence of any real macro or fundamental news to conclude anything other than this was people covering risk."

As last week drew to a close, attention shifted to whether dealers had effectively hedged their short gamma exposure and how they were positioned for future moves.

BNP Paribas's analysts estimated that, if the S&P 500 continued to trade around its closing level on Wednesday, it would take roughly four weeks for dealers to rebuild their long gamma profile by purchasing options from volatility-selling ETFs and mutual funds. However, Boutle says the situation could change rapidly if markets moved sharply in one direction or the other.

"If we find ourselves a couple of percent higher, that gamma profile can rebuild and starts to have a suppressing impact on vol," he says. "That doesn't mean vol is going back to the lows. A lot of people have probably had a pretty tricky time over the last week or so. But at the margin, that supply of vol in an environment where the market is trading back in a range, it will continue and will make vol lower than it otherwise would be."

As of Wednesday, August 7, Hekster at True Partner Capital was still concerned that dealers' gamma positioning might create more volatility: "The short gamma position may indeed be bad for dealers if volatility does persist and might add to more jittery movements."

Another rally on Friday, when the S&P 500 gained 0.47% to close above 5,300 – the level at which BNPP's analysts estimate dealer gamma profile turned negative – helped ease some nerves. Curved Edge Strategies' Dale, who was previously concerned "the market could get violent around this negative gamma", also noted that dealers' gamma profile would "start to curve back up" when the S&P regained 5,300, bringing some much-needed support for the market after a wild week of selloffs and reversals.

Editing by Kris Devasabai