

Url: https://www.reddit.com/r/GME/comments/ryqzr0/market_maker_risk_on_the_interplay_between/

* [REDACTED]

* Shitadel is stuck in a feedback loop at the moment. Whenever traders face constraints on their behavior that shortens their decision horizons this inherently brings feedback into the system. Their short decision horizon stems from the threat of insolvency: They must continue shorting and cannot lose an infinite

amount of money. This is unfortunately providing almost infinite liquidity at whatever the price may be, but we have seen many instances where they are not infallible (remember BBY buyback recently anyone?).

In sum: even when a stock is illiquid, buying odd lots probably won't move the price with the state of the current market (but don't stop buying and DRSing to lock the float - that is most important). DRSing your shares will reduce the size of the float, which increases market maker risk. The thing that moves the price most in liquidity black hole events is market maker risk, and their aversion to this risk (which I imagine is quite high for GME). Due to this risk, they will hedge ever-greater proportions of the contracts whenever ITM options are purchased - This *will* increase the price because it's part of the market maker hedging to stay solvent.

Having resting limit orders at extremely high prices adds liquidity to the order book above the current price level. Since a single extremely volatile event can consume all available liquidity very quickly in an illiquid stock, this can cause a liquidity black hole event whereby all available liquidity is consumed at one price level. And so the price, liquidity seeking as it is, seeks the next value up or down depending on the asymmetry of the order book. Who remembers late 2020 when everyone had 420.69 limit orders set and active? Who remembers brokerages suddenly changing their rules to prevent greater than a few percent above market price limit orders? If an event occurs where the order books liquidity is consumed at one level and there are resting orders in the order book providing further liquidity ***much higher up***, **the price will seek that much higher level**.

Please note: I am not advocating that anyone sell for anything less than life changing money, I am just trying to illustrate how price is a liquidity seeking phenomenon; The above paragraph likely now only applies once the short squeeze actually begins due to the rampant fuckery and fact that the market makers will go bankrupt if it happens, so they will do everything in their power to prevent it. It is still true, though, and people should be aware of how price discovery happens.

Here's a thought experiment from a post of mine that seems to have been lost to superstonkbot:

For each share, let V be some random variable with mean v representing the price some hodler sells a share at. Let the price on date X be $v - cs$, and be v on date $X+1$; $c = r \cdot \sigma^2$ encodes: the variance, σ^2 , of the fundamentals (enormous given the pending transformation) and market makers collective absolute risk aversion, r ; c can be interpreted as a representation of the degree of illiquidity in the market, as it is the slope of the residual demand curve facing active traders. A high degree of illiquidity, c , means apes are hodling. Keep hodling til the peak and this cannot go tits up.

Let $q_i = \theta + \eta_i$ be hedgie i 's personal loss limit. A drowning naked short is a map $(v, q_i) \rightarrow \{\text{cover, hold}\}$. But for a threshold strategy it's convenient to view it as the choice of a threshold for q_i as a function of v . Thus, let q be the threshold margin call limit (point at which all shorts r fuk) for a fixed v . The area enclosed between q and an individual hedgies q_i has meaning: Just as apes are aware of their environment and have taken into account the limited liquidity in the superstonk, we must assume the hedgies equilibrium strategies also take into account this illiquidity. The ones practicing proper risk management (are there any?) may as a result of this drop out of the game in anticipation of someone elses margin call sooner than their loss limits would allow (they definitely don't want to be the last to cover), in turn causing a bank run on the collective pool of short sellers, the MOASS. We saw something analogous to this in the Bill Hwang case, no one wants to go full Plotkin.

When accounting for each hedgie trying to predict one anothers loss limits, there exists a unique equilibrium threshold for hedgie i *given by the d^* solving: $d - q_i = c(\exp((q_i - d)/(2(d + q_i))))$. This d is the equilibrium threshold value at which hedgie i will cover in this model. Proof is left as an exercise for the reader. (Remember this is coming from a toy model that clearly doesn't represent precisely how the MOASS will play out, it's a simplified scenario, eg we assume a continuum of shorts - which may not be a simplification after all these months ■ - and only consider a single day ahead).

The expected return for one share from date X to $X+1$ is $v/(v - cs)$. When a substantial enough margin call

comes in, ie one such that other shorts with strongly correlated loss limits are also margin called, we are essentially in the limiting case where proportion of shorts covering, $s \in [0,1]$, $s = (\theta + \epsilon - q) / (2 * \epsilon)$, equals 1. (θ is from a uniform distribution encoding loss limit commonalities between hedgies and ϵ is the absolute value of the boundary of the support of the family of uniform distributions, η_i , encoding idiosyncratic loss limit data. They don't really matter for the post but do represent real things.)

If we encounter a liquidity black hole on date X, then the expected return is strictly greater than the actuarial fair rate of 1 for a risk-neutral trader, so it's worthwhile for every risk-neutral trader to slap the ask on the way up as long as they intend on selling close to or after the peak. This makes things worse for the shorts and increases collective market maker risk aversion. We get more feedback in the system. The larger the value of c , the bigger the squeeze will be.

When we cross the event horizon of the liquidity black hole, the synthetic superstonk will have changed hands from monke to swine, neutralizing all those -1's... until any day trading and paperhanding dries up. Beyond that, if no one is selling, you set the ask. eg $v = 420.69$ million. As c approaches v price spreads cease to exist, and call options further bias the random walk to the upside. Volatility will consume the market and break it.