Twitter Thread by Compound248

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Dear Media,

What's happening with RobinHood?

A quick primer.

This is a "plumbing" issue. It is esoteric, even for those on Wall Street.

A very long thread on how the toilet is clogged.■■■

Read on
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First: RH was not the only brokerage to restrict buying in $GME et al. Much of the below applies to many brokerages. I'm going to use "RH" in my writing for simplicity and because it's the most prominent, but it's not fair to call this a RobinHood issue, per se.

The restrictions impacted retail AND institutional players – many institutional prime brokers ("PBs") did the same thing to their hedge fund clients.

Why?

Surely PBs can't be trying to punish their own clients just to benefit Citadel. There must be something else happening...

Let's talk plumbing. ■■

Most RH clients (& all HFs) use "margin" accounts, not "cash" accounts. RH's sign up process nudges new customers into margin accounts by default.

Whether RH should do that is worthy of discussion another day.

This is a story of lending and capital.

Margin accounts are Wall Street's way of denoting lending accounts.

Practically speaking, in margin accounts, the client does NOT own *any* securities. Rather, margin account holders "own" a promise from their broker.

Yay.

When an RH'er buys $GME, a whole bunch of things happen behind the scenes, all of which are the ugly plumbing of Wall Street.

I'm simplifying, but because the buyer does not know who the seller is, the brokers for both buyer & seller use a 3rd company called DTCC to actually match & "clear" stock transactions, moving title from selling broker to buying broker while ensuring proceeds are moved on time.

Side Note for Later:

For equity options contracts (puts and calls), the primary clearing entity is OCC (Options Clearing Corp). I'm going to refer to "DTCC" below, but know that the same story can be told for options with OTC.

Clearing for US equities is generally a "T+2" process: settlement takes no more than 2 days from the trade. But the Buyer's & Seller's brokerage accounts generally reflect the transaction immediately - behind the scenes, there is lending. Lending means "counterparty credit risk."

DTCC provides its balance sheet to guarantee settlement. But its balance sheet isn't that big, so it has to tightly manage counterparty risk to guarantee accurate settlement.

In this way, DTCC is both a central repository for Title, and also the guarantor of Title.

This guarantee is typically an extremely low risk proposition.

However, "low risk" does not equal "no risk"

Generally, DTCC holds the “physical” title to your stock. This speeds up settlement: DTCC simply assigns title from one DTCC client to another, to clear the transaction.

DTCC clients are the brokers, and so the title is held in "Street name" (the broker's name), not your name.

So, you bought $GME in your RH margin account: what's happens behind the scenes?

1) You buy
2) At day’s end, RH nets all the money it needs to send to DTCC
3) If RH is a net sender, it generally borrows that money cheaply via interbank lending, & sends it to DTCC
4) DTCC sends net proceeds to brokers due to receive
5) Formal settlement happens within 2 days

If you look at that, there are different windows of credit risk.

1) RH vs. DTCC: Between transaction time (e.g., you buy @ 9:45am) and close of business (when net proceeds go to DTCC);
2) DTCC vs. DTCC: Between the time DTCC sends net proceeds & formally settles the transaction

3) Selling Broker vs. Selling Client: Selling Broker fronts its client credit for the proceeds immediately upon transaction;
4) DTCC vs. Selling Broker: DTCC owes the selling broker proceeds at day's end;
5) RH vs. RH Client: (see next Tweet)

RH vs. RH Client:

You deposit $10,000 in your RH account to open it. It’s a margin account. You start buying stocks for zero commission.

You're not paying anything, so RH doesn't make any money on that…or do they?

It's actually not particularly important to the story, but we all know RH’s real customer is not you - you are the product.

RH’s *real* customers are buyers of “order flow”, the largest of whom is Citadel (the same Citadel that bailed out Melvin Capital with Point72 on Monday)

Just because you aren’t RH’s real customer doesn’t mean they don’t care about you – they need you to be happy and active in order to continuously sell you to Citadel.

Citadel et al get a sneak peak at RH's order flow (ie, pending trade activity) & use that to “provide you liquidity” (ie, front-run your trade).

Citadel makes tiny amounts on each transaction (on average), slightly reducing the quality of your execution (on average), but allowing you to pay no explicit commission.

So now you own $GME stock in the margin account.

Actually, you don’t - RH owns the stock and simply passes through many of the rights of ownership to you, crediting you with quasi-ownership.

This is important because if RH failed, you would not “own” your stocks, per se. You would be a creditor with a claim against RH. This is a key risk of margin accounts.

See Lehman Brothers.

When you signed your customer agreement and terms of service, you gave RH the ability to take the stock you bought and lend it out to others to short. Depending on how “hard to borrow” that stock is, RH gets paid a variable rate for this stock loan.

While many brokers share the proceeds of stock lending w/ clients, RobinHood does not. RobinHood keeps it all.

This is a critical way RH gets paid. This payment can be VERY large on hard to borrow names.

Lending $MSFT, which is easy to borrow, pays very little.

Lending $GME, which is very hard-to-borrow may pay 50-100% (or more) per year. The “borrow rate” is set by the market and is frustratingly opaque. The rate gets reset daily as the difficulty of borrow goes fluctuates.

Shorting In practice:

Somebody wants to short $GME. Most HFs that short-sell first ping their PB to “locate borrow”.

In order to meet legal requirements, the broker has to find un-lent shares (so the same shares aren’t lent twice). The PB will “tag” those shares, indicate to the client the prevailing cost to borrow, and provide the client a “locate ID” that guarantees that client those shares.

Information in hand, the HF manager decides whether to go forward. If she wants the short, she instructs her trader to sell, and provides the trader the Locate ID (tagged to the shares that were shorted) to match with that transaction, so that everything works on the back-end.

Let's look at the HF’s transaction:

- The PB lent the HF specific $GME shares, which the HF immediately sold, receiving cash.

- The HF balance sheet is: owes shares and has cash...

- The HF receives money market interest on the cash in its account (called “short rebate” - this is nominal in today’s ZIRP world, but can be meaningful in a high interest rate environment)

- The HF pays borrow cost on the owed shares

As you know, because the HF owes shares, and not money, its performance moves precisely inverse to the share price movement (profit on decline, lose on increase).

Behind the scenes, the PB deals with plumbing. The PB needed to find someone who owned the $GME shares with clean title. Ideally, the PB found those “in house” (from another client of the same brokerage), but often they locate them from a 3rd party (like RH or another PB)...

The PB pays RH daily for the borrow, and charges its HF client daily.

Now zoom out:

RH’s margin client (a retail investor) *thinks* he own shares. He never did, because it’s a margin account.
RH itself actually owned the shares (in Street name). RH lent those shares to a HF PB (aka “hypothecation”), in exchange for daily borrow fees.

That loan creates a debit/credit relationship between RH and PB. The PB took those borrowed shares and re-lent them to its client, who sold them to a 4th party. The RH client and the 4th party simultaneously "own" the same shares.

Summary from various perspectives:
- The RH Client has a stock *credited* to its margin acct. This is actually a promise from RH

- The HF owes GME stock + borrow interest. It owns "cash" from the short sale, which is credited to its margin account. It receives interest on that cash (even that cash is actually just a promise from its PB)

- RH has a security loan to PB, and collects variable borrow interest in the meantime

- PB owes RH stock and daily borrow interest. PB holds HF client margin account assets as collateral. HF pays PB a daily borrow rate. PB scrapes a vig off the borrow rate and pays the balance to RH

- A 4th party owns the actual shares that the RH client thinks *they* own

And
- DTCC is recording the ownership chain and ensuring cash from purchase and to sale flows through.

DTCC's main worry is that someone mid-chain hits a problem. If that happens, the problems flow all the way up the chain to RH's client and down the chain to DTCC.

In this way, RH is at risk to downstream problems.

The plumbing metaphor is apt: when you flush, a downstream clog causes a mess that backs up into your toilet. Don't handle that clog well & you end up with a mess on your floor. Handle it *really* poorly & you burst a pipe - wastewater seeps into your walls.

To avoid this, DTCC has risk-weightings based on the counterparty and the securities. When $GME became the most volatile asset in the world, it created massive risks to the system. Likewise, DTCC views transactions from margin accounts as riskier than from cash accounts.

From the broker's perspective, its risk w/r/t margin accounts is mitigated by the broker's ability to close clients out of positions, liquidating them when risk thresholds are breached.

Stocks that are extremely volatile increase the odds of breaches.

To mitigate the risk of a failure to get paid, DTCC requires brokers (like RH and PB) to keep collateral on deposit at DTCC (cash and Treasuries) in proportion to the risk that broker poses.

As more and more of a broker's DTCC assets increase in risk (e.g., $GME becomes disproportionately part of RH's assets), DTCC says to RH "you need to send us more collateral."

Collateral means liquidity.

Liquidity is the oxygen of financial markets. Accessing liquidity is easy when you don't need it and hard when you need it. So maintaining big buffers is important.

So far, I have skipped a MAJOR - perhaps THE MAJOR - part of the $GME story: Options.

If you've seen my Tweets from the past few days, I said the GME situation is no longer Retail vs. Hedge Fund - it is Hedge Fund vs. Hedge Fund.

The dollars at play are unbelievably massive in relation to the companies we are all talking about.

Everyone – both the longs and the shorts – knows that $GME, $AMC, et al are ALL shorts, in the long-run. In the meantime, they are trading footballs. The players are all punters and hunters.

The punters are gambling. Many gamblers are skilled, but most are patsies. The median punter loses money.

The hunters are trying to figure out how to capitalize on the inevitable long-run outcome, "I know GameStop will be lower in the long-run, how do I profit from that?" They tend to be choosy.

In the case of a short squeeze, the "long-run" is just the other side of the squeeze. It could be days; it's not likely to be many months. If you look at historical analogs, the collapses are as breathtaking as the squeeze.

This is where options come into play.

Buying options is a way of borrowing money, but capping your risk of loss: you cannot lose more than you put in but you receive nearly uncapped upside.

In exchange for capping your max loss and getting exposure to huge upside, options have fairly high odds of expiring worthless.

If buying options provides nearly uncapped upside, then - tautologically - selling options has nearly uncapped downside. Sellers collect premium up front, and most of the time you keep it. But, when you lose, it can be bad.

Selling options resembles an insurance contract from the insurer's perspective. Receive small up-front payments, and occasionally pay out big in disasters.

Selling options is the classic "picking up pennies in front of a bulldozer."

Some people joke that when you buy options, you join a group of people throwing pennies toward a guy in front of a bulldozer. If the bulldozer runs over the guy while he's picking up *your* penny, you get to keep all the pennies in his pocket.

As the $GME “short squeeze” took flight, anyone who had sold calls was in deep shit.

Their toilet was flooding (and flooding and flooding).

If in December, when $GME was at $15, I sold $20 strike calls on GME with a Feb expiration for $1.75, I’d have received $175/contract (each contract represents 100 shares).

Above $21.75, I start losing money.

With $GME at $300/share, that contract now sells for $280 ($28,000).

I'd have lost $27,825 per contract ($280 x 100 - $175).

That means I lost ~280x the premium I received.

No bueno. Even a TINY position could bankrupt you.

[I'm not going to go into this, but many market participants finance their option purchases (i.e., borrow on margin to buy the option).

Your head might explode if you think about that too long…]

Back to plumbing: Guess what type of account nearly all options sit in?

Hint: Margin accounts.

If I sold that call, I obviously could not wait until $300 to start managing my losses: my solvency and the market's rationality would be at loggerheads well before that, and my solvency would lose.

I'd be desperate to get long. If I didn't do it myself, my broker would do it for me. The broker would liquidate me as soon as I become a real credit risk to them. If they are nice, they might give me some warnings first, and let me try to cure.

I (or my broker) could mitigate this risk by

- Adding additional collateral (infuse cash: see Point72 and Citadel with Melvin)

- Closing out the sold call (buy it back at a loss);

- Buying enough stock to offset the call (but I have a margin account...

... and that would increase my use of balance sheet); or

- Buy a call with a higher strike that has the effect of capping your loss (also a use of balance sheet, but arguably more efficient)

However, for you to buy that higher call, somebody else has to sell the call. In the midst of the squeeze, option sellers can see the shadow of the bulldozer, and are no longer sanguine.

Very few people want to sell calls on something they've watched go up 15x in two weeks, but gamblers might. This culls the supplier of option selling down.

Conversely, everyone wants to buy options. Hunters and punters alike scour the universe to buy cheap puts (puts win if the stock declines enough). Today, because demand is so high, put pricing has skyrocketed.

Importantly, buying puts creates implied short exposure, which means the implied notional short exposure for GME can be much, MUCH bigger than it looks like.

Recall, everybody believes the collapse is coming: hunters and punters alike. The question is when.

Nobody wants uncapped exposure to losses. This means that people who are selling options at one strike are likely buying options at another strike to limit their exposure. The total amount of option notional outstanding is growing and growing and growing.

Despite the high cost, options are the preferred method for sophisticated hunters to play. Everybody wants to own options on GameStop but nobody wants to sell them. Price goes up until they entice the marginal seller.

Sellers don’t want to pick up pennies, but they might be willing to pick up hundos.

This week, the strangest thing began happening in $GME options (actually earlier, but it became very obvious on Tuesday). Even as GameStop hit moonshot phase, the price of its puts barely budged.

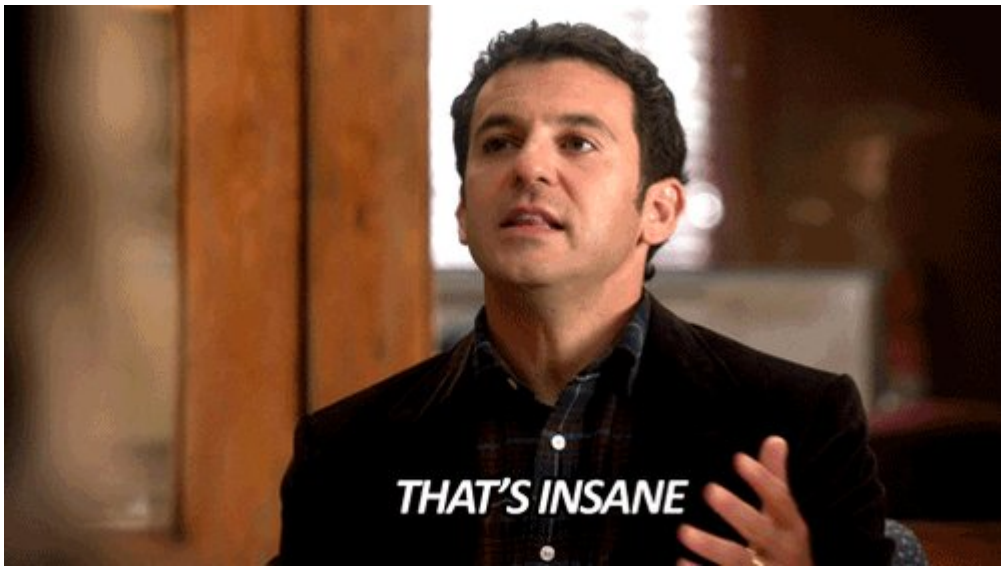
If you owned a Feb 19 $70 strike put on Monday, it traded for $20-$25. $GME stock closed at $77. At $20, the put price implied that the breakeven price for a new buyer of that put requires $GME stock falling by 1/3 and going to $50 by Feb 19th. A big move. Expensive options.

You will recall that on Tuesday, GameStop nearly doubled, closing at $148 and on Wednesday it more than doubled, closing +$200 at $348.

That same $70 strike put closed Wednesday at $19. The stock was up $270!!! and the put only declined one dollar!!!

The perceived risk of loss to an option seller for that $70 strike option was basically unchanged even as GME went from $77 to $370.

Crazy.



A put that is 72% out of the money and expires in 3 weeks normally trades for pennies, not $19. Arguably it was trading for 100x a more standard price for a put that far out of the money and with that little time left before expiring.

Options use lots of "Greeks": delta, theta, gamma.

It is not practical to get into implied vol and gamma in a Tweet, but suffice it to say, “something broke.”

On Thursday, as $GME's stock price fell >$150, that put increased in value, which makes sense. But only by $2, to $21. Hardly a budge. Insane.

With the stock price not behaving like anything normal, the options market basically told the stock market “I don’t believe you.”

It was as if the out of the money puts market simply ignored multi-hundred dollar stock price swings.

Go back to the broker or client: they're using options to hedge equity positions (or vice versa), but all of the sudden there is no meaningful correlation between the two.

All the "normal" relationships shattered.

This is quantitative risk management death. You die and go to balance sheet hell. At the River Styx awaits Citadel, saying "oh, you need a ride?"

So now, what?

You either have to unwind or… do more.

More exposure is the answer and the problem. You can't do it but you feel like you can't not do it. Instead, you de-gross. Sell anything you have that is liquid. Sell your Microsoft. Sell your Facebook. Sell it all. Get exposure down.

The amount of capital at play in $GME et al, through options, is astounding. Because the expected relationship between the equity and options markets is failing, we have what I have been calling a “Gamma War.”

Thomas Petterfy, the founder of Interactive Brokers (a better alternative to RH, IMO), said the following to CNBC (https://t.co/wk7aApU7pR).

Quoting from the article:

“We are concerned about the ability of the market and the clearing systems, through the onslaught of orders, to continue to provide liquidity. And we are concerned about the financial viability of intermediaries and the clearing houses,” he added.

“The broker stands between these customers and the clearing house,” said Peterffy. “So when some option holders make money, the clearing house has to give us the money to give it to our customers...

"...while other option holders, sellers or buyers on their own side lose money we have to collect money from them and give it to the clearing house. If our customers are unable to pay for their losses we have to put up our own money.”

Interactive Brokers has $10 billion in equity to cover these payments if need be, but Peterffy said he can’t say the same about other brokers with full confidence.
[end quote]

If you made it this far, you will realize it is those last few sentences that say it all.

Worse yet, if you are a brokerage where your clients are:

a) zooming in on the same small set of securities that, all of which are correlated (e.g., GME, AMC, BB); and

b) all taking the same side of the trade,

then with each new trade, your brokerage is onboarding more of the same risk. The capital required for the broker to fulfill more and more of the same, without risking the business, is large.

Your clients are all taking the same side - collateral is flowing one way. You aren't receiving enough of the expected netting benefits from some of your clients taking the opposite side of the same trade.

It's almost like a casino's sports book where all the customers are betting the same team. Even as the line moves gets worse and worse, theoretically incentivizing bets on the other side, your clients just keep taking more of the same.

The House's risk is building & building.

At a *systemic* level, this all basically nets out. But, at any given counterparty, it may not. That counterparty might be the client (a HF or individual) or the broker (RH or PB). Depending on where you are in the chain, you have different worries.

This is what Risk Management processes and systems are designed to mitigate. However, if your system did not consider this type of event, and you did not override with commonsense early on, you can be caught offsides.

Badly. Lethally.

There have been huge winners already. But if you are only a winner on paper, your story is not yet finished. The game is not over until the whistle blows. You need to ultimately be a winner in *realized* gains held in a safe brokerage.

Sophisticated players know this. They care about the quality of their counterparties and risk-manage their own portfolios.

…and that all brings us back to RobinHood.

Questions abound. Answers will be revealed in the fullness of time.

[End - phew]