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What follows is a DELIBERATELY LOW estimate, I personally suspect the buy/sell ratio is much higher than the value indicated in this post and therefore the number of shares amassed by retail during the time period gone over in this post is SIGNIFICANTLY higher. **However, I also feel that it is better to have hard evidence for a low estimate than shaky evidence for a high estimate.** This helps to establish a minimum baseline, but allows insight into higher buy/sell ratio situations.

This post includes many abbreviations. None of this post is financial advice and I am not a financial advisor.

* CADV – Consolidated Average Daily Volume
* CTA – Consolidated Tape Association
* DMM – Designated Market Maker
* GME – GAMESTONK
* MPL – Mid-Point Passive Liquidity ([MPL Image](https://imgur.com/DIiE0is))
* NYSE – New York Stock Exchange
* OBV – On Balance Volume
* RLP – Retail Liquidity Providers
* RMO – Retail Member Organizations
* RPI – Retail Price Improvement ([RPI Image](https://imgur.com/CsAjdBF))
* SHF – Shitty/Short Hedge Funds
* SLMM – Supplemental Liquidity Market Maker
* SLP – Supplemental Liquidity Provider
* SLP-PROP – Supplemental Liquidity Provider Proprietary

TLDR

The NYSE runs a program called the retail liquidity program which handles orders marked by brokers as originating from retail. Citadel is almost guaranteed to be the RLP for GME. These orders are filled within the program as much as possible, but are generally cancelled within the program depending on how the broker marks the order. I have heard nothing about mass cancelling of orders (according to the data here, 80%+ of orders in the retail liquidity program are cancelled), so orders are going through anyways. **The most conservative estimate of retail interest (a 60% buy to sell ratio) using only the orders that were placed through the retail liquidity program indicates that retail purchased AT LEAST 1-1.2 million additional shares (i.e buy orders minus sell orders) from April 26th to June 25th.**

Retail continues to amass more and more shares as time goes on.

TLDR DONE

Previous Attempts at This

There have been a few attempts on Superstonk at examining retail interest in GME. I believe u/HomeDepotHank69 was examining orders submitted with the first 30 minutes of the day to look at retail interest, but the results seemed to be inconclusive. (https://www.reddit.com/r/Superstonk/comments/nu9qq9/hanks_big_bang_quant_apes_glitch_the_simulation/)

I remember reading a post by u/jsmar18 (https://www.reddit.com/r/Superstonk/comments/nar8dc/odd_lots_show_that_gme_interest_is_not_subsiding/) that was examining GME trades using odd lots as a marker for retail interest. He correctly acknowledges that both retail and HFT firms use odd lots frequently,

however the data that I've looked at here indicates that a specific program run by the NYSE for retail orders only (called the retail liquidity program) *seems to be filling retail orders in aggregated larger batches*. While it could be a statistical anomaly of large retail whales skewing up the average, but I don't really think this is the case after looking at average number of shares per executed order within the program.

Data Source

All data was obtained from https://www.nyse.com/publicdocs/nyse/NYSE_Group_RLP.xlsx (clicking that link will download data) found on https://www.nyse.com/markets/liquidity-programs over the past several weeks.

I was able to collect 6 out of the last 9 weeks of data just by checking back every week for it.

Unfortunately, there doesn't seem to be a place to collect these documents (the historical ones), I didn't realize this when I started to examine the data. I started to log them at https://web.archive.org/web/*/https://www.nyse.com/publicdocs/nyse/NYSE_Group_RLP.xlsx (clicking that link may try to download data) since the NYSE doesn't seem to make this available or post it anywhere after the week they are posted is complete. I would encourage others to try to help log this going forwards as I missed a couple of weeks due to life.

Background

The NYSE runs a program called the retail liquidity program. Brokers who are eligible as RMO's (Retail Member Organizations) can mark orders sent to the NYSE as coming from retail, which are then serviced by the NYSE Retail Liquidity Providers (RLP's). This is carried out with tons of securities and recorded against the tape run daily by the CTA. The program itself is not only for GME. **GME is on Tape A if you'd like to look at the data yourself.**

To become a Retail Liquidity Provider at the NYSE, you need to be either a Designated Market Maker (DMM) or an SLP (Supplemental Liquidity Provider). However, the NYSE doesn't actual reveal who their RLP's are – I scoured the website, if you can find it I will add it to the post but I couldn't. So, let's infer who it could be.

Citadel is the likely RLP for GME

Here's the evidence for this.

NYSE DMM's

* Citadel Securities LLC
* GTS Securities, LLC
* Virtu Americas LLC

NYSE SLP's (SLP-PROR or SLMM)

* HRT Financial LLC
* IMC Chicago LLC
* Latour Trading, LLC
* Tradebot Systems, Inc.
* Virtu Americas LLC
* Citadel Securities LLC (SLMM)
* Goldman, Sachs and Company (SLMM)
* Virtu Americas LLC (SLMM)

Citadel and Virtu account for nearly 22.8% of market share by volume as individual firms, and then they also carry out special roles at the NYSE which accounts for another portion of 19.9% of the market share. ([https://qz.com/1969196/citadel-securities-gets-almost-as-much-trading-volume-as-nasdaq/](https://qz.co

m/1969196/citadel-securities-gets-almost-as-much-trading-volume-as-nasdaq/))
Based on previous claims that Citadel Securities completes nearly half of U.S retail volume (they say 47%) and 26% of all U.S equities volume (https://www.citadelsecurities.com/products/equities-and-options/).

Virtu also claims to handle approximately 25% of all retail order flow in the US. (https://www.virtu.com/market-making/client-market-making/) Virtu is also the preferred execution service for IBKR Retail Equity Volume (https://s21.q4cdn.com/422114427/files/doc_financials/2021/q1/Virtu-Financial-Earnings-Presentation-2021-Q1.pdf, see pg. 10). Just for clarity, Virtu Americas LLC's parent organization is Virtu Financial LLC.

Based on these pieces of evidence, it is highly likely that the two larger RLP's for the NYSE are Virtu Americas LLC and Citadel Securities LLC. Based on the statistics above, it's nearly 75% of retail order flow going through these two companies. Not surprising, but it's good to back things up with evidence. (Also HOLY FUCK that's some gatekeeping for retail.)

RLP's are also tied to specific securities, so it is likely one or the other in this case for GME. **I personally suspect Citadel is the RLP for GME since they are also the DMM for GME** (courtesy of u/dlauer)(https://www.reddit.com/r/Superstonk/comments/n68ooc/did_you_know_citadel_is_the_nyse_dmm_for_gme/). It would be an easy addition for them and does not make sense for Virtu to poach this one from them given that Citadel dwarfs them in size and Citadel would want control over the ticker that they shorted into the ground.

A Note About the Data

I didn't realize right away that I couldn't access old data once it was gone (I thought I could get it from https://ftp.nyse.com/ but no dice), so I have some missing data points with no apparent way to reconcile these. As I said earlier in the post, I have been archiving the files as they are posted now each week so hopefully will be able to continue examining this going forwards.

Average Daily/Weekly Data for the RLP

[Table 1 - Hard Data for RLP](https://imgur.com/KGyTkn0)

[Table 2 – Hard Data for RLP with Shares per Order](https://imgur.com/AJhzAQR)

You'll notice something very interesting here. The fill rate for these orders is all sub 20%, which implies over an 80% cancellation ratio. So only 1 out of 5 retail orders that are placed are actually being executed in the retail liquidity program.

Second, the average order size of these is HIGH. The lowest is an average order size of 202 shares. So retail apes are dropping like $40k EACH per day on GME during this period? I doubt that. I think it is much more likely the RMO's are aggregating orders and submitting them to the RLP as a larger batch, which is then handling them as a grouped order. (could be PFOF as well) It could also be a statistical anomaly where there are retail whales submitting a monstrous order that averages against smaller apes picking up a few shares each but given the persistent nature of these average order sizes and the average number of shares executed per order, I don't think this is the case. When you look at the average shares executed per order being in the mid-30s for the retail liquidity program, I think this is a much more likely share order size for retail, given that it would be around the 4.5k to 6k purchase price. Have you had an order cancelled in this size? I don't think I've heard of this yet.

An interesting part of this data is that if you total the approximate weekly shares placed for the six weeks that contain hard data, you end up with a total number of share orders placed at 4,857,930. Of these orders placed, only 547,650 shares were executed from the 6 weeks of data I have from the retail liquidity program during the 9-week period.

Why does this cancellation ratio happen?

An important feature is that these retail orders as specially tagged by the RMO as NOT coming from an algorithm or HFT Firm. The orders listed in this data are from retail investors only and get classified one of three ways. (see pg. 369 of https://www.nyse.com/publicdocs/nyse/regulation/nyse/NYSE_Rules.pdf for complete descriptions, I include a few images and a summary)

[Retail Order Designation Image](https://imgur.com/PZibOUC)

Type 1 – the retail order will only interact with available contra-side (i.e. buy matched to a sell and vice versa) RPI orders and MPL (Midpoint Passive Liquidity) orders. If the order is not completely filled, the portion that does not execute is immediately and automatically cancelled.

Type 2 – the retail order will first interact with available contra-side (i.e. buy matched to a sell and vice versa) RPI orders and MPL orders. If the order is not completely filled, the remaining portion is the executed as a Reg NMS Immediate or Cancel Order. This would fill as much as possible in the NYSE Exchange book, then the remainder gets cancelled.

Type 3 - the retail order will first interact with available contra-side (i.e. buy matched to a sell and vice versa) RPI orders and MPL orders. If the order is not completely filled, the remaining portion is the executed as a NYSE Immediate or Cancel Order. This would fill as much as possible in the NYSE Exchange book and then through other markets if the execution is protected. Then the remainder of the order gets cancelled unless it is completed filled in other markets.

[IOC Image](https://imgur.com/A802uCL)

I list these order classifications here, because as you saw in the table a significant number of orders placed for GME are resulting in cancellations within the retail liquidity program due to how the orders are marked by the RMO and cancellations would happen when THERE ISN'T ENOUGH LIQUIDITY in the RPI and MPL order types. So even though over 80% of the retail orders were cancelled within the retail liquidity program, **I would hazard an educated guess that your orders got filled anyways**. Since the RMO is potentially submitting orders as batches, smaller orders are just straight up getting filled with no cancellations, while larger orders are potentially needing additional time to fill or are being cancelled out of the retail liquidity program.

I am positive it would have been posted about on Superstonk if people trying to purchase GME were consistently getting orders cancelled in line with the percentages indicated in this data. I can only conclude the orders are getting filled anyways.

It is unclear to me exactly how these "cancelled orders" from the retail liquidity program end up getting filled anyways, since it appears as though (after exhausting the RPI and MPL orders) they convert into order types that always end up with a portion that could get cancelled if the liquidity is not there. I look forward to someone wrinklier than I am explaining this part.

So how much volume is retail responsible for?

Since the retail liquidity program requires the broker to be an RMO and is unique to the NYSE, the following is likely a very LOW estimate of retail orders as a percentage of CADV. There are still other retail orders submitted through other exchanges like IEX, etc. (IF YOU CAN SEND ORDERS THROUGH IEX JUST DO IT)

[Table 3 of Retail Percentage Against CADV to Find Average](https://imgur.com/hM0sDIO)

Examining the daily shares placed against the CADV value and averaging it, you get approximately 1.7% of the CADV is retail orders within the retail liquidity program.

[Table 4 of Average Fill Rate](https://imgur.com/xU9j6ZK)

I computed the average fill rate to be approximately 12.67%. Then after filling in the CADV values that were missed and then using the average fill rate and retail percentages, we can approximate the number of shares placed and executed in the missing weeks (I wish I had the full dataset, but we'll make do).

[Table 5 of Retail with Shares Placed Inferred for Missing Weeks](https://imgur.com/YZ9ATuQ)

This totals approximately 6,195,992 shares in retail orders placed for the weeks starting April 26-30 and extending until June 25 (last Friday). That's an average of 708,413 shares per week (for the last nine weeks) involved in retail trades. I consider this a low estimate since it's ONLY the trades that ended up in the retail liquidity program on the NYSE. Of those placed orders, only 717,177 shares were actually executed within the retail liquidity program.

Buy/Sell Ratios and Net Shares

[Table 6 of Buying and Selling Percentages](https://imgur.com/1NumlT1)

Unfortunately, we have no way to know the exact numbers of buys/sells involved in this data, so I just created a table that shows different numbers of shares bought and sold in this program at different buy ratios using both the hard data only and the data with estimates.

Using the buy/sell ratio of 60%, which given the buy/sell ratios I've seen from some brokers I would say is EXTREMELY CONSERVATIVE. Given that the number of shares calculated in this estimate is likely low since it is only the NYSE and retail liquidity program, that gives a lower bound estimate of placed orders for 2.9 million shares purchased, with 1.9 million sold during this period. Then the upper bound estimate of placed orders for 3.7 million shares bought by retail, with 2.5 million sold during the 9 weeks.

That leaves a net change of AT LEAST 1 million shares added to the retail pile as the lower bound and 1.2 million added to the retail pile as the upper bound for the 9 week period starting on April 26 and ending on June 25. Remember this is an extremely conservative estimate because it ONLY uses the retail liquidity program data and was deliberately selected to be LOW. You can use the table above to examine different buy/sell ratios.

Based on the OBV being stable for this period, I think the buy/sell ratio is SIGNIFICANTLY higher than the 60% used in this estimate here. OBV wouldn't be as stable as it has been if there was any reasonable selling pressure from retail. **I consider the estimate determined here to be the ABSOLUTE BARE MINIMUM that GME retail positions have increased.** (if you want to learn more about OBV, check out this post from today, https://www.reddit.com/r/Superstonk/comments/oa1sn0/gme_and_on_balance_volume_dd_bullish_or_selloff/)

If the ratio changes to a 90% buy/sell ratio using the RLP data only, retail would have accumulated a lower bound of 4.37 million to an upper bound of 5.57 million shares purchased vs. 485k and 620k shares sold. That's a net difference of AT LEAST 3.88 million to 4.95 million shares collected by retail during this 9-week period ONLY based on the retail liquidity program. **Like 15% of the free float (after share offerings) locked the fuck up in 9 weeks using this higher estimate, and that DOESN'T include the entire months of January, February, March and most of April.**

A Note About Share Price

The share price opened at $150.98 on April 26th was and closed at $209.51 on June 25th. GME has closed higher than the open price on April 26th every day since (except for May 10, 11 and 12). **This means that most of the shares purchased during these 9 weeks were at a minimum price of around $150**. The bulk of the shares were purchased during the weeks of May 24-28 (going from $175.85 to $222) and June 7-11 (going from $258 to $233.34).

There are 11 weeks (missing data from RLP) between January 29th and April 26th where the share price was consistently significantly lower (getting as low as $38.50 with the highest price being $348.50 on March 10). A lot of apes loaded up on shares here as the price was fairly stable at $100 or less until middle

of March where it moved up and tended to stay above $150. How many shares got added during that period?

Bottom line is that the data is clear. Apes are continuing to buy more shares and the noose is getting tighter and tighter since the amounts being accrued are significant.

Diamond hands baby.

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