

Title: Analysis - Gamestop short interest is ~3 Billion shares

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A couple weeks ago, I made a post showing why I believe the short interest in GME is on the order of magnitude of ~3 Billion shares.

I got a bit of flack for not detailing out the process well enough so I will try do that in this post.

I will attempt to give a step-by-step guide on the methods I used predict the GME short interest and it will hopefully allow everyone to replicate my data and tell me if I am completely out of left field, or if it seems reasonable. I tried posting over in stonk sub but automod was too powerful.

All of the volume and price data pulled is located here:

[\[https://finance.yahoo.com/quote/GME/history/\]](https://finance.yahoo.com/quote/GME/history/)(<https://finance.yahoo.com/quote/GME/history/>)

[\[https://ycharts.com/\]](https://ycharts.com/)([https://ycharts.com/companies/AMC/shares\\_outstanding](https://ycharts.com/companies/AMC/shares_outstanding)) (for shares outstanding)

To start off, I decided to try and find the point in time where GME started getting shorted to the ground. To do this, I plotted volume vs. closing price over time and looked for anything that stood out.

<https://preview.redd.it/qd3k7v0gwpw91.png?width=1054&format=png&auto=webp&s=2833dde16d0394fd221c306dc9660707c9240cc4>

As you can see, there really isn't any indication in the volume to show when GME started getting naked shorted, but the price started steadily declining somewhere in the 2015 timeframe. There is a small lull in volume then it picks up as the price drops. The decline in price appears to coincide with their 2015 Q3 earnings report that shows a global slowdown in sales.

[\[https://news.gamestop.com/news-releases/news-release-details/gamestop-reports-third-quarter-2015-results\]](https://news.gamestop.com/news-releases/news-release-details/gamestop-reports-third-quarter-2015-results)(<https://news.gamestop.com/news-releases/news-release-details/gamestop-reports-third-quarter-2015-results>)

Since I like to look at multiple tickers to find patterns, I looked at our friend.. (\*Let's see how many comments I get hating on me for even entertaining this\*):

<https://preview.redd.it/6z88lrohwpw91.png?width=1345&format=png&auto=webp&s=caac99db53507deb05c490a5c3b781489561819>

This was a hit, since it gives me a reasonable starting point I can use for 0 short interest on a stock. That stock started getting blatantly shorted starting on exactly 2/8/2017 (\*speculation, obviously\*). I decided to then play a little game and look at what an exponential decay curve would look like assuming neutral market conditions (50% buy/50% sell) with different percentages of the daily volume turning into naked shorts.

My method is as follows:

Starting price is the price at 2/8/2017. Exponential decay curve was calculated using this equation:

<https://preview.redd.it/pqr0gvpiwpw91.png?width=849&format;=png&auto;=webp&s;=7dde9acc43eaa953930a9fc8a1f92062304d5d2d>

Note: I had to adjust the shares outstanding occasionally as more shares were added or removed due to corporate actions.

Here is the curve I got:

<https://preview.redd.it/hq922lqjwpw91.png?width=1017&format;=png&auto;=webp&s;=17eb117d3448bf34ea55a04873d549e047603622>

What is extremely interesting to me is that I independently decided that 6.5%-7.5% was a good decay curve assuming the line it followed and something very interesting happened in Jan 2021. The number of naked shares that existed almost exactly equaled the number of shares that the float was increased by. In my decay curve, I made the assumption that the additional shares added to the pot were consumed by naked shorts alone (closing the naked positions). As you can see in the chart, the decay curve price skyrockets to almost exactly the peak that was hit on Jan 27, 2021. This resulted in the number of naked shares in existence to be near 0.

Also, before this date, there was very little correlation between the two stocks.

<https://preview.redd.it/c6apzrzlwpw91.png?width=982&format;=png&auto;=webp&s;=b124143282c92014ab970432e1a9564849631836>

The Pearson coefficient (calculated using an excel function) is approximately .150 (\*low positive correlation\*). Post sneeze, the two track like they are fraternal twins. (\*you can calculate the coefficient post-sneeze on your own, but I promise it is >>>0.85\*)

Something happened on 1/28/2021 that caused these stocks and a handful of other stocks to start moving in dead unison with each other and the swap data was completely deleted from the repositories for ONLY THAT DAY, but that isn't the purpose of this post, so I will leave that alone for now... I will actually add 1 more stock to show just for funsies.

<https://preview.redd.it/g7e3kutmw91.png?width=1099&format;=png&auto;=webp&s;=5d2706e424ca267689620a87b591041356a7447d>

Getting back to the calculations...

Continuing on past January using the same 7.5% decay, the pattern breaks down:

<https://preview.redd.it/qypz2nwnwpw91.png?width=1249&format;=png&auto;=webp&s;=634d19bb55f3cf127c63988d7fd9304fc5770503>

So I added step functions where I believe there was extreme buying pressure for one reason or another.

<https://preview.redd.it/gkaai7powpw91.png?width=1279&format=png&auto=webp&s=7e1a73041ae6d438d4c3edf2975ccb1bdbaa6e21>

Weird how decay curve jumps in September, 2021 (more shares diluted) and price jump follows

During November 2021, the price started plummeting, so I made the guess that there was an increase in naked shorting. The best fit curve I found is approximately 50% of the daily volume being attributed to naked shorts. At the time the ape thing was announced, my calculation for total naked shares in that stock was between 2.5-7.5 Billion shares with a median at ~5 Billion. Interestingly enough, the exact number of authorized apes is 5 billion (\*hmmm\*).

<https://preview.redd.it/1lw3uljpwpw91.png?width=742&format=png&auto=webp&s=3d1250bfe0c31dffcd535d1fbf78249861260209>

The same November drop-off appears to be true for GME, but to a much lesser extent. At a quick glance, it really doesn't look like too much of a change happened, but there is definitely a drop-off.

I compared the two stocks together by normalizing both of their prices to 1 starting 11/1/2021.

<https://preview.redd.it/qabn6j4rwpw91.png?width=895&format=png&auto=webp&s=aa82a6b49619dd2015bc125dfdae7ffe4dd75a5d>

There is an obvious divide, but what if GME was actually being naked shorted to the tune of the same 50% of daily volume? This means that there are more naked shorts by % of shares outstanding in GME vs. popcorn (\*since many naked shorts closed positions in recent dilutions\*).

The number of total shares (authorized + naked) for popcorn on 11/1/2021 was approximately 4.5x the authorized shares, according to my decay calculation. If GME is decaying at a lower rate, it means that the number of naked shorts + shares outstanding is greater than 4.5x the authorized shares.

Total number of shares at that point was calculated by using this equation:

<https://preview.redd.it/s3fu4gqtxpw91.png?width=410&format=png&auto=webp&s=cf466ad4a5ac99d04436f9d1b81c188d3e071a2e>

\*\*Since my assumption is that I know the total number of shares in popcorn and the two stocks behave similarly, I can extrapolate that data to guess the number of shares for GME.\*\*

\*(This is the entire premise of my post and if this is wrong, then everything else is wrong)\*

If I assume that there is 7x the float, thus calculating  $(4.5/7) \times (\text{Outstanding} + \text{naked})$  at 11/1/2021, the two graphs line up near perfectly.

<https://preview.redd.it/bc8p2hxrwpw91.png?width=1332&format=png&auto=webp&s=a1ba1e5cbde17d6c4964109759c4a7d636b7e556>

So if on 11/1/2021 there was 7x the float in circulation then GME got naked shorted at a rate of 50% of every day's total volume, that would put us currently at around 11.8x the number of authorized shares in circulation, or approximately 3.6 Billion shares.

I decided to do a quick check of my work by back testing the number of diluted shares in GME to see where the zero crossing is. The way I did it was to subtract 6.5% - 7.5% of the daily volume from 11/1/2021 (\*the date I assumed 7x the shares outstanding\*).

<https://preview.redd.it/a3691yitwpw91.png?width=1114&format;=png&auto;=webp&s;=69d62a39b6dd963c92991de6b60502b222f950eb>

Depending on the percent (I used 7% for this chart), the zero crossing lands right in early 2016, or right when the price started making its long descent. This nearly perfectly lines up with the assumption from earlier where GME started getting naked shorted at the end of 2015. Obviously there is a ton of wiggle room, such as daily naked shorts not being a flat number, or my guesstimated naked short % could be off.

Let me know your thoughts!

Also let me know if I screwed up anywhere or made any terrible assumptions that are out of line.

TL;DRS - Gamestop short interest is ~3 Billion shares