Title: Sifting through SEC Form 13F filings to determine how many GME shares, options (underlying shares) and corresponding voting authority were reported for Q2, Q3, and Q4 2021
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Inspired by a comment by u/RocketApes in a Spielstopp (DACH ape sub) daily thread from 10 February 2022, I have extracted relevant filings of SEC Form 13F and prepared them for further analysis.

As many of you will know, Form 13F filings are publicly available and stored on EDGAR (https://www.sec.gov/edgar/about) in XML/XBRL format. Institutional investment managers (...) that invest over $100 million in Section 13(f) securities must file Form 13F, for four periods per calendar year:

>The first such filing is due within 45 days after the end of the fourth quarter of the calendar year, *i.e.,* the quarter ending December 31 of the same calendar year that you meet the $100 million filing threshold. The filing is due within 45 days after December 31, or, stated differently, by February 14 of the subsequent calendar year.
>
>Rule 13f-1(a)(1) also requires that you submit three additional Form 13F filings during the subsequent calendar year. Each filing is due within 45 days after the end of the calendar quarter, *i.e.*, the calendar quarters that end on March 31, June 30, and September 30.

Section 13(f) securities include GME. Form 13F is of course named after Section 13(f)(1) of the Securities Exchange Act. Further information is available in a very detailed FAQ of the SEC: https://www.sec.gov/divisions/investment/13ffaq.htm

The SEC has set up 'data.sec.gov' to host RESTful APIs that deliver JSON-formatted data to external clients and to websites on SEC.gov. No authentication or API keys are required to access these APIs. Unfortunately, 'data.sec.gov' currently only provides access to Form 10-Q, 10-K, 8-K, 20-F, 40-F, and 6-K filings, but does not (yet?) provide access to Form 13F filings. However, SEC API (https://sec-api.io/) provides a relatively user-friendly query API that also includes Form 13F filings and kindly converts EDGAR filings from XML/XBRL to JSON (it does however require a key).

I used the associated Python package (https://pypi.org/project/sec-api/) to query EDGAR for relevant filings (using the tutorials from SEC API).

Criteria for the first query: Form 13F-HR (see SEC FAQ on the meaning of HR) with GME (CUSIP: 36467W109) filed for the reporting period ending 30 June 2021.

I chose this period because u/RocketApes mentioned the last annual meeting in his comment and only shareholders of record at the close of business on 15 April 2021 were entitled to vote at the annual meeting (see GameStop DEF 14A dated 22 April 2021).

Criteria for second and third queries respectively: as above, only for the reporting period ending 31 December 2021 (these are the most recent data - due date for filings was yesterday, 14 February 2022) and 30 September 2021 respectively.

I put the downloaded filings (a total of 833) into a small SQL database to make it easier to work with the data and also to easily add more filings if necessary. I created the database in sqlite3. The entity-relationship diagram for it is shown here:
https://imgur.com/a/2yVQzwP. Besides the Python standard library, sec_api and sqlite3, I used pandas for DataFrames and plots, and pendulum for date string parsing and datestamps. I then wrote some SQL queries to read out only the data relevant to GME shares and options from the filings.

Data

In Q2 2021, a total of 278 different institutional investment managers (hereafter referred to as funds for simplicity) filed a Form 13F listing GME shares and/or options. In Q3 2021, this number was 287, and in Q4 2021, 257.

I saved the respective data for the three quarters in separate CSV files:

Q2: https://www.swisstransfer.com/d/968315cf-310f-40bc-bb69-fbc5307789b3

Q3: https://www.swisstransfer.com/d/5ad92bbf-59fb-4d39-81a2-15523136689d

Q4: https://www.swisstransfer.com/d/81387141-2d32-4c08-9e26-7fc23dfd3f58

Table 1: GME shares and/or options (as listed in column 5 of Form 13F) and corresponding voting authority (as listed in column 8 of Form 13F), by filing fund: shares_as_filed_2021-xx-xx.csv

Table 2: GME shares (excluding options) and corresponding voting authority, by fund: shares_2021-xx-xx.csv

Table 3: Total number of GME shares (excluding options) and corresponding voting authority, by fund, in descending order of total number of shares: shares_agg_2021-xx-xx.csv

Table 4: GME options (underlying shares) and corresponding voting authority, by fund: options_2021-xx-xx.csv

Table 5: As Table 1, but with an additional column showing the difference between the reported voting authority and the number of GME shares and/or options: shares_diff_2021-xx-xx.csv

Summary of the filings

Important: Please read the remarks below regarding options and voting authority!

Please note that the notation is 'European' where the separator for thousands is a full stop (.) and not a comma.

For phone or tablet users: --> table continues.

Category	Quantity (Q2 2021)	Quantity (Q3 2021)	Quantity (Q4 2021)
Total shares and options (underlying shares)	50.284.180	39.697.655	40.398.200
.thereof shares	*23.053.865*	*20.009.987*	*26.997.594*
.thereof options (underlying shares)	*27.230.315*	*19.687.668*	*13.400.606*
..thereof puts	*16.791.415*	*10.387.705*	*7.717.105*
..thereof calls	*10.438.900*	*9.299.963*	*5.683.501*
Total voting authority sole	27.761.760	20.348.819	17.520.330
.thereof for shares	*14.764.660*	*11.809.656*	*12.669.424*
.thereof for options (underlying shares)	*12.997.100*	*8.539.163*	*4.850.906*
Total voting authority shared	1.989.711	1.974.821	3.225.788
.thereof for shares	*1.039.511*	*1.244.921*	*1.442.388*
.thereof for options (underlying shares)	*950.200*	*729.900*	*1.783.400*
Total voting authority none	7.545.785	6.871.435	12.863.586
.thereof for shares	*7.196.370*	*6.850.730*	*12.847.986*
.thereof for options (underlying shares)	*349.415*	*20.705*	*15.600*

Total voting authority (sole, shared, and none)	37.297.256	29.195.075	33.609.704
.thereof for shares	*23.000.541*	*19.905.307*	*26.959.798*
.thereof for options (underlying shares)	*14.296.715*	*9.289.768*	*6.649.906*
Difference (ref. Table 5)	12.986.924	10.502.580	6.788.496
.thereof for shares	*53.324*	*104.680*	*37.796*
.thereof for options (underlying shares)	*12.933.600*	*10.397.900*	*6.750.700*

In Q2 2021, funds held 23,053,865 GME shares (long positions) as well as puts for 16,791,415 shares and calls for 10,438,900 shares.

In Q3 2021, funds held more than 3 million fewer GME shares (long positions) than in Q2. They also held puts for about 6 million fewer shares and calls for about 1 million fewer shares in comparison. Furthermore, in terms of underlying shares, there were fewer puts relative to calls.

In Q4 2021, funds again held significantly (almost 7 million) more GME shares (long positions) but the options underlying shares (both puts and calls) continued to decline. The sharp decline in options since Q2 is clearly visible (see here: https://imgur.com/a/ChDH6Fa).

However, the above summary does not take into account any amendments via Form 13F-HR/A. Such 'amendments' are filed for various reasons (see FAQ). Therefore, it is necessary to retrieve the relevant form on EDGAR to determine the impact on shares and voting authority. This is relatively easy to do using the name of the fund. For Q2 2021, two funds have filed such a form:

BOOTHBAY FUND MANAGEMENT, LLC (filed 2021-08-17): 17,000 put options (underlying shares) with shared voting authority. The GME information is unchanged from the original filing. This Form 13F-HR/A is a restatement of the original filing. So 17,000 put options would need to be subtracted from the total to avoid double counting. However, this is only about 0.1% of the put options.

LIBERTY WEALTH MANAGEMENT LLC (filed 2021-08-13): 10 shares. Original GME position: 2,141 shares (2,141 listed under 'voting authority none'). This Form 13F-HR/A is a restatement of the original filing. So 2,131 shares would need to be subtracted from the total. However, this number seems insignificant compared to the total number of shares.

No Form 13F-HR/A has yet been filed for Q3 or Q4 2021.

Note regarding options

The options figures above and in the tables refer to the shares underlying the options and not to the options themselves. According to the SEC, funds should not report put or call options they write themselves. This means that their short positions in options, like their short positions in shares, are not reported on Form 13F or deducted from a long position in the same issuer.

In addition, the SEC provides the following instructions (https://www.sec.gov/about/forms/form13f.pdf):

>10. A Manager may omit holdings otherwise reportable if the Manager holds, on the period end date, fewer than 10,000 shares (or less than $200,000 principal amount in the case of convertible debt securities) and less than $200,000 aggregate fair market value (and option holdings to purchase only such amounts).
>
>11. A Manager must report holdings of options only if the options themselves are Section 13(f) securities. For purposes of the $100,000,000 reporting threshold, the Manager should consider only the value of such options, not the value of the underlying shares. **The Manager must give the entries in Columns 1 through 5 and in Columns 7 and 8 of the Information Table, however, in terms of the securities underlying the options, not the options themselves.** The Manager must answer Column 6 in terms of the discretion to exercise the option. The Manager must make a separate segregation in respect of securities underlying options for entries for each of the columns, coupled with a designation "PUT" or "CALL" following such segregated entries in Column 5, referring to securities subject respectively to put and call options. A

Manager is not

Note regarding voting authority

To avoid giving a false impression, here is a brief explanation with reference to SEC FAQ 50a:

The SEC considers an investment manager that exercises voting authority only in certain 'routine' matters but not in 'non-routine' matters to be 'voting authority none' in the context of Form 13F.

Non-routine matters, according to the SEC, include a contested election of directors, a merger, a sale of material assets, an amendment to the articles of incorporation affecting shareholder rights, and a change in fundamental investment strategy.

Routine matters include the selection of auditors, an uncontested election of directors, and the approval of an annual report.

So 'voting authority none' does not equal "no voting rights at all".

How exactly voting authority for options works is not entirely clear to me. If anyone can contribute to this topic, I would be grateful. So far I have found a paper (http://papers.ssrn.com/abstract=874098) from 2007 ("Hedge Funds, Insiders, and the Decoupling of Economic and Voting Ownership: Empty Voting and Hidden (Morphable) Ownership"). Excerpt from the abstract:

>Most U.S. public companies have a single class of voting common shares: voting power is proportional to economic ownership. Linking votes to shares is often thought to be desirable, because, as residual claimants, shareholders have an incentive to exercise voting power well. The linkage also facilitates the market for corporate control. On the other hand, decoupling is efficient in some situations. Equity derivatives and other capital market developments now allow shareholders to readily decouple voting rights from economic ownership of shares, often without public disclosure. Hedge funds are prominent users of decoupling. Sometimes they hold more votes than economic ownership (a situation we term empty voting). Sometimes they hold undisclosed economic ownership without votes, but often with the de facto ability to acquire votes if needed (a situation we term hidden (morphable) ownership).

In addition, there appear to be certain inconsistencies in the reporting of voting authority, with the difference (shares and options minus voting authority) being significantly greater for options than for shares.

Further use

I have not analysed the dataset any further (so far), but am happy to make it available to anyone who is interested (please cite the source and acknowledge my contribution).

Please post any comments/questions on the data below.