Exhibit 21

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF FLORIDA

In Re: JANUARY 2021 SHORT SQUEEZE TRADING LITIGATION	Case No. 21-2989-MDL-ALTONAGA/Damian

This Document Relates to: All Actions Concerning the Federal Securities Laws

REBUTTAL REPORT OF DR. ADAM WERNER

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I, Adam Werner, declare and state, under penalty of perjury, that the following is true and correct to the best of my knowledge, information, and belief. If called to testify, I could and would testify competently to the following facts.

I. INTRODUCTION

1. In my declaration dated February 16, 2023 ("Werner Declaration"), I examined whether the securities of the Affected Companies, AMC Entertainment Holdings, Inc. ("AMC"), BlackBerry Limited ("BB"), Express, Inc. ("EXPR"), GameStop Corp. ("GME"), Koss Corporation ("KOSS"), Tootsie Roll Industries, Inc. ("TR"), Bed Bath & Beyond Inc. ("BBBY"), and the American Depositary Shares of foreign-issuers Nokia Corporation ("NOK") and trivago N.V. ("TRVG"), traded in efficient markets during the period from January 28, 2020 through January 27, 2021, inclusive.

2. In the Werner Declaration, I showed that each of the *Cammer* and *Krogman* factors supports a finding that the markets for seven[1] of the nine Affected Companies' stocks were efficient (the "Seven Affected Companies"). For the Seven Affected Companies, the *Cammer* and *Krogman* factors were satisfied, and I demonstrated – through collective empirical studies – that the prices of these seven companies' securities reacted to information, which is the hallmark of an efficient market. The other two companies, KOSS and TR, while still satisfying many of the *Cammer* and *Krogman* factors, were less consistent in their *Cammer* and *Krogman* results. To the extent that not all *Cammer* and *Krogman* factors need to be satisfied for a finding of market efficiency, the securities of KOSS and TR could be characterized as possessing some indicators of trading in efficient markets.

[1] These seven stocks were: AMC, BB, BBBY, EXPR, GME, NOK, and TRVG.

3. In the Werner Declaration, I also explained how damages in this matter are subject to a common methodology that can be calculated on a class-wide basis for all Class members in connection with their claims under Sections 9(a)(2) and 10(b) of the Securities Exchange Act of 1934 (the "Exchange Act") and U.S. Securities & Exchange Commission ("SEC") Rule 10b-5 adopted thereunder.

4. I was subsequently asked by The Rosen Law Firm, counsel for the Plaintiffs, to consider and evaluate the arguments and conclusions in the Report of Daniel R. Fischel, dated February 16, 2023 ("Fischel Report") and in the Expert Report of Professor Steven Grenadier, dated February 16, 2023 ("Grenadier Report"), both submitted by the Defendants in this matter.

5. This declaration presents my analysis and conclusions relating to the arguments set forth in the Fischel Report and the Grenadier Report.

6. I have not been asked to opine on loss causation or conduct a damages analysis, although some of the analysis I conducted for this report bears on the issue of loss causation. I will comprehensively address the issue of loss causation at the appropriate stage should I be asked to do so. Similarly, I will compute damages at the appropriate stage should I be asked to do so.

7. Documents that I reviewed and relied upon in preparing this report aside from those already cited in the Werner Declaration are listed in Exhibit-2. My credentials and compensation are presented in the Werner Declaration, as is a list of previous testimony I provided. Testimony that I have provided since the Werner Declaration is identified in Exhibit-1.

8. I reserve the right to amend, refine, or modify my opinion and report, including in the event any new or additional information or analysis becomes available.

9. I understand that as an expert witness in this proceeding, my duty in providing my declaration is to the Court and that this duty overrides any obligation to the parties who have

engaged me, from whom I have received instructions or compensation. I confirm that I have complied with this duty.

II. SUMMARY OF OPINIONS

OPINION 1: Neither the Fischel Report nor the Grenadier Report motivates me to change my conclusion that seven of the nine Affected Companies' stocks traded in efficient markets from January 28, 2020 through January 27, 2021.

OPINION 2: Both the Fischel Report and the Grenadier Report failed to consider the *Cammer* and *Krogman* factors for the Affected Companies. This oversight renders both experts' opinions and conclusions unscientific.

OPINION 3: A focused examination of the *Cammer* and *Krogman* factors for the periods that Mr. Fischel and Dr. Grenadier examined leads to a conclusion of market efficiency.

OPINION 4: The narrative constructed by Mr. Fischel and Dr. Grenadier to explain trading in the Affected Companies in January 2021 is unscientific and inaccurate.

OPINION 5: The Fischel Report fails to levy any reliable scientific evidence that shows the markets for the Affected Companies were inefficient prior to Robinhood's alleged market manipulation beginning on January 28, 2021.

OPINION 6: The Grenadier Report fails to levy any reliable scientific evidence that shows the markets for the Affected Companies were inefficient prior to Robinhood's alleged market manipulation beginning on January 28, 2021.

OPINION 7: Neither the Fischel Report nor the Grenadier Report affects my conclusion that, with expert assistance, the finder of fact in this matter will be able to compute damages using a common class-wide methodology that applies to the calculation of damages for each and every Class member.

III. THE *CAMMER* AND *KROGMAN* FACTORS COMPEL A CONCLUSION OF MARKET EFFICIENCY FOR SEVEN OF NINE AFFECTED COMPANIES

10. Neither the Fischel Report nor the Grenadier Report examines the *Cammer* and *Krogman* factors, which are often used by courts to determine market efficiency. In the Werner Declaration, I examined the *Cammer* and *Krogman* factors for the one-year period prior to January 28, 2021. As I explained in the Werner Declaration, due to the short length of the Class Period,

and the allegations of market manipulation that occurred during the Class Period, I used the one-year period prior to the Class Period to test for the efficiency of the nine Affected Companies. I chose to examine a one-year period so that any inferences made on data would be based on an adequately large sample size. I chose to focus this one-year period on the year prior to the Class Period as this is the period that had not yet been affected by the alleged market manipulation.

11. This analysis showed the following for the Seven Affected Companies:

a. The average weekly trading volume of all seven stocks as a percentage of shares outstanding was higher than the 2% required to meet the strong-presumption-of-efficiency benchmark set forth by the court in *Cammer v. Bloom*;[2]

b. Seven or more securities analysts followed each of the seven stocks and there were a multitude of news stories, and press releases published about, and SEC filings published by, each company;

c. All seven stocks traded on either the NYSE or the NASDAQ, and each had numerous market makers;

d. A substantial portion of the shares of all seven companies were owned by institutional investors;

e. All seven companies were either eligible to file a Form S-3 Registration Statement (a Form F-3 Registration Statement for foreign issuers Nokia and Trivago), with the SEC or did file a Form S-3 Registration Statement;

f. Empirical analyses that study the relationship between information flow and security price movements demonstrate that a cause-and-effect relationship existed between news flow and movements in the stock price of the seven companies;

[2] *Cammer* v. *Bloom*, 711 F. Supp. 1264 (D.N.J. 1989).

g. All seven companies had market capitalizations of at least $100 million;

h. All seven companies had float capitalizations of at least $75 million;

i. A review of data obtained from the Center for Research in Securities Prices ("CRSP") indicated that the bid-ask spreads for six of the seven stocks were narrower than market average bid-ask spreads.[3]

12. Rather than performing an analysis of the individual *Cammer* and *Krogman* factors, Mr. Fischel entirely ignored what he called a "well-known method used by courts to determine market efficiency."[4] Dr. Grenadier, on the other hand, appears to argue that the *Cammer* and *Krogman* factors are unreliable when applied to "periods of unusual trading activity".[5] In other words, neither expert performed a *Cammer* and *Krogman* analysis, which is the most common analysis that courts employ to determine market efficiency for class certification in a securities fraud class action.

13. While Dr. Grenadier at least provided a reason for why he did not examine the *Cammer* and *Krogman* factors, the logic of his reasoning is circular. Dr. Grenadier assumes, prior to running any tests, that the trading activity in the Affected Companies was "unusual".[6] Dr. Grenadier's assumption, however, fails to establish a critical link between his assumed "unusual" trading activity and market inefficiency. In fact, as I explore in more detail in Section V and Section VII below, the alternative analyses Dr. Grenadier performed instead of a

[3] The Center for Research in Security Prices is a widely-used and generally accepted database for obtaining daily data on publicly-traded securities.

[4] Fischel Report, FN 70.

[5] Grenadier Report, ¶69.

[6] Grenadier Report, ¶69.

Cammer/*Krogman* analysis cannot test for market inefficiency. The only test Dr. Grenadier performed that directly assessed market efficiency was an observational examination of *Cammer* factor 5 for his chosen relevant period, an examination that violated fundamental principles of event study methodology. Contrary to Dr. Grenadier's conclusions, I show in Section IV.E below, that, when examined correctly, the results of *Cammer* factor 5 support a conclusion of market efficiency.

14. None of Mr. Fischel nor Dr. Grenadier's opinions change my conclusion that the *Cammer* and *Krogman* analysis compels a conclusion of market efficiency for the Seven Affected Companies.

IV. AN EXAMINATION OF THE *CAMMER* AND *KROGMAN* FACTORS FOR THE JANUARY 4, 2021 THROUGH JANUARY 27, 2021 PERIOD DEMONSTRATES THAT THE EQUITY MARKETS FOR THE SEVEN AFFECTED COMPANIES WERE EFFICIENT.

15. While both Mr. Fischel and Dr. Grenadier neglected to perform a *Cammer* and *Krogman* analysis for the respective periods of their studies, I perform this analysis for the Seven Affected Companies below. Both Mr. Fischel and Dr. Grenadier examined slightly different time periods in their reports. Dr. Grenadier examined the period from January 28, 2021 through February 4, 2021[7] as well as the period from January 21, 2021 through January 27, 2021.[8] Mr. Fischel examined the period from January 4, 2021 through January 27, 2021.[9]

16. As an initial matter, the period of study examined by both Mr. Fischel and Dr. Grenadier is extraordinarily short. Mr. Fischel studies a period of only 17 trading days while Dr.

[7] Grenadier Report, ¶4.

[8] Grenadier Report, FN 1.

[9] Fischel Report, FN 44.

Grenadier studies a period of only 11 trading days. In statistical and economic analysis, it is generally advised for scientific studies to examine at least 30 observations so that the size of the sample is large enough to lead to robust conclusions.[10] A low number of observations is more likely to exhibit extreme outcomes simply due to random chance. Thus, while I do examine the *Cammer* and *Krogman* factors for Mr. Fischel and Dr. Grenadier's study periods, I place relatively less weight on the results of this study due to the extraordinarily low number of trading days each expert chose to examine.

17. Furthermore, because Plaintiffs allege that Robinhood manipulated the market for the Affected Companies by imposing trading restrictions and impediments beginning on January 28, 2021, I do not examine the period from January 28, 2021 through February 4, 2021 for market efficiency. Market manipulation and enforced trading impediments would very likely affect the efficiency of said markets. It would be unsurprising if the efficiency of the market for the nine Affected Companies waned following Robinhood's interference; inclusion of this period would therefore bias any test against a finding of market efficiency. Therefore, for purposes of the *Cammer* and *Krogman* analysis I perform herein, I focus on the period from January 4, 2021 through January 27, 2021 ("the Immediate Pre-Class Period"), which is Mr. Fischel's period of choice and encompasses Dr. Grenadier's pre class period. I chose to use Mr. Fischel's period of study as this is the relatively longer period of study. Given the small sample issues already inherent in both Mr. Fischel's and Dr. Grenadier's work, a choice to study the relatively longer period seemed reasonable.

[10] *Reference Manual on Scientific Evidence*, 3rd ed., Washington: The National Academies Press, 2011, p. 255.

18. My findings with respect to the *Cammer* and *Krogman* factors for the Seven Affected Companies during the Immediate Pre-Class Period are presented next and in Exhibit-3.

A. Trading Volume

19. As I explained in the Werner Declaration, the first *Cammer* factor examines whether a security's "average weekly trading volume … [would be] in excess of a certain number of shares."[11] More specifically, the court credited Bromberg who recognized that "turnover measured by average weekly trading of 2% or more of the outstanding shares would justify a strong presumption that the market for the security is an efficient one; 1% would justify a substantial presumption."[12]

20. For the Seven Affected Companies, Table-1 below shows the average weekly trading volume, the average weekly trading volume as a percentage of their stock outstanding, and the *Cammer* benchmark that was satisfied, if any.

[11] *Cammer,* 711 F. Supp. at 1286 ("the reason the existence of an actively traded market, as evidenced by a large weekly volume of stock trades, suggests there is an efficient market is because it implies significant investor interest …. Such interest, in turn, implies a likelihood that many investors are executing trades on the basis of newly available or disseminated corporate information").

[12] *Cammer,* 711 F. Supp. at 1293.

Table-1: Weekly Trading Volumes During the Immediate Pre-Class Period

Affected Company	Average Weekly Trading Volume (Shares)	Average Weekly Trading Volume as a % of Shares Outstanding	Passes 1% Benchmark?	Passes 2% Benchmark?
AMC	864,247,514	500.83%	Yes	Yes
BB	431,331,110	76.66%	Yes	Yes
BBBY	124,418,120	102.64%	Yes	Yes
EXPR	222,677,428	342.86%	Yes	Yes
GME	288,253,812	413.29%	Yes	Yes
NOK	584,421,969	75.87%	Yes	Yes
TRVG	14,755,097	26.36%	Yes	Yes

Sources: CRSP and SEC filings of Affected Companies.

21. During the Immediate Pre-Class Period, for all Seven Affected Companies, the level of average weekly trading volume exceeds the *Cammer* benchmark of 2% necessary for a "strong presumption" of market efficiency and exceeds the benchmark of 1% necessary for a "substantial presumption" of market efficiency. Thus, one can make a strong presumption of market efficiency during the Immediate Pre-Class Period for all the Seven Affected Companies based on average trading volume.

B. Analyst Coverage

22. I explained in the Werner Declaration that the *Cammer* Court found that "it would be persuasive [if] a significant number of securities analysts followed and reported on a company's stock." [13] If investment professionals were closely monitoring a firm's information and subsequently making buy/sell recommendations to their clients based on that information, "the market price of the stock would be bid up or down to reflect the [company's] financial

[13] *Cammer,* 711 F. Supp. at 1286.

information…as interpreted by the securities analysts."[14] This suggests that the more analysts who followed a security, the greater the likelihood that a security traded in an efficient market. Barber *et al.* [1994] found that coverage by one or two analysts strengthened the presumption of efficiency for a publicly traded stock.[15]

23. Of the analysts that covered the Seven Affected Companies presented in the Werner Declaration, Table-2 below shows the number of analyst firms that issued at least one report during the Immediate Pre-Class Period.

Table-2: Analyst Coverage During the Immediate Pre-Class Period

Affected Company	Analyst Firms Publishing Reports	Possessed Analyst Coverage?
AMC	4	Yes
BB	5	Yes
BBBY	17	Yes
EXPR	2	Yes
GME	8	Yes
NOK	8	Yes
TRVG	1	Yes

Source: Refinitiv.

24. For all Seven Affected Companies, the analyst coverage supports a finding of market efficiency. Importantly, that the period of study (January 4, 2021 through January 27, 2021) is very short relative to typical examination periods (which are at least one-year long) heavily biases this *Cammer* factor against finding any analyst reports. It is well-known that analyst reports typically follow major Company-announcements and to expect a major company announcement

[14] *Cammer,* 711 F. Supp. at 1286.

[15] "The Fraud-on-the-Market Theory and the Indicators of Common Stocks' Efficiency," by Brad M. Barber et al., *The Journal of Corporation Law*, 1994.

of enough magnitude to warrant an analyst to issue a report in such a relatively short period of time is highly conservative. However, that analysts did publish reports during this short period for all Affected Companies highlights the dense information content of this time period. Clearly, analysts warranted the information in January 2021 as being of enough importance to disseminate their opinions for market participants.

25. In the Werner Declaration, I also considered news media coverage. News media coverage facilitates the flow of material information to the marketplace, which promotes efficiency. For all Seven Affected Companies, Table-3 below shows the number of news articles published for each company during the Immediate Pre-Class Period.

Table-3: News Coverage During the Immediate Pre-Class Period

Affected Company	News Article Count	Possessed News Coverage?
AMC	211	Yes
BB	174	Yes
BBBY	303	Yes
EXPR	95	Yes
GME	652	Yes
NOK	450	Yes
TRVG	16	Yes

Source: Factiva.

26. For all Seven Affected Companies, the dissemination of information about these companies from company press releases and from the news media supports a finding of market efficiency.

C. Market Makers and Exchange Listings

27. In the Werner Declaration, I also examined the third *Cammer* factor. The third factor considered by the *Cammer* court to indicate market efficiency is that a security had

numerous market makers.[16] Specifically, the *Cammer* court stated, "the existence of market makers and arbitrageurs would ensure completion of the market mechanism; these individuals would react swiftly to company news and reported financial results by buying or selling stock and driving it to a changed price level."[17] Citing Bromberg and Lowenfels, the *Cammer* court noted that "[t]en market makers for a security would justify a substantial presumption that the market for the security is an efficient one; five market makers would justify a more modest presumption."[18]

28. Market making data from Bloomberg is available on a monthly basis. For all Seven Affected Companies, Table-4 below shows the number of market makers that made a market in each of the Seven Affected Companies' stocks during the month of January 2021 and the exchange each of the Seven Affected Companies traded on.

Table-4: Market Makers During January 2021

Affected Company	Exchange Listing	Market Maker Count	Possessed more than Ten Market Makers?
AMC	NYSE	108	Yes
BB	NYSE	85	Yes
BBBY	NASDAQ	99	Yes
EXPR	NYSE	80	Yes
GME	NYSE	111	Yes
NOK	NYSE	106	Yes
TRVG	NASDAQ	62	Yes

Source: Bloomberg.

[16] *See*, *e.g.,* "The Fraud-on-the-Market Theory and The Indicators of Common Stocks' Efficiency," by Brad M. Barber et al., *The Journal of Corporation Law*, 1994, p. 291.

[17] *Cammer*, 711 F. Supp. at 1286-1287.

[18] *Cammer*, 711 F. Supp at 1293 (quoting Bromberg & Lowenfels, Securities Fraud and Commodities Fraud §8.6 (1988))

29. All Seven Affected Companies satisfied the *Cammer* benchmark of at least ten market makers required for a "substantial presumption" of market efficiency.

30. Furthermore, as the *Cammer* court considered market-making infrastructure as indicative of the efficiency of a security's market, that a stock trades on either the NYSE or NASDAQ further supports a finding of market efficiency because these exchanges are some of the most renowned, most liquid, and most efficient stock trading forums in the world.

31. The *Cammer* court explicitly acknowledged the importance of either a NASDAQ or NYSE listing and the implications of such a listing for market efficiency, explaining that market efficiency can reasonably be presumed for securities traded on these markets.

> "We think that, at a minimum, there should be a presumption – probably conditional for class determination – that certain markets are developed and efficient for virtually all the securities traded there: the New York and American Stock Exchanges, the Chicago Board Options Exchange and the NASDAQ National Market System."[19]

32. As shown in Table-4 above, all Seven Affected Companies traded on either the NYSE or NASDAQ exchanges.

33. A related indication of market efficiency is the presence of institutional investors – sophisticated and professional full-time investors – in the market, have long been presumed "to be better informed about the securities they hold and better able to interpret new information than individual investors."[20]

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[19] *Cammer*, 711 F. Supp. at 1292 (quoting Bromberg and Lowenfels [1988], §8.6).

[20] "The Fraud-On-The-Market Theory and The Indicators of Common Stocks' Efficiency," by Brad M. Barber et al., *The Journal of Corporation Law*, 1994, p. 292. For discussion of the role of institutional investors in incorporating information into equity prices, *see*, *e.g.*, "The Influence of Analysts, Institutional Investors, and Insiders on the Incorporation of Market, Industry, and Firm-

34. For all Seven Affected Companies, Table-5 below shows the number of unique institutional investors that held each company's stock on both quarterly reporting dates: December 31, 2020, and March 31, 2021.

Table-5: Institutional Holdings as of December 31, 2020 and March 31, 2021

Affected Company	Unique Institutional Investors as of			Held By Institutions?
	12/31/2020	3/31/2021	12/31/2020 & 3/31/2021	
AMC	235	304	159	Yes
BB	450	464	370	Yes
BBBY	435	383	333	Yes
EXPR	97	120	78	Yes
GME	311	311	205	Yes
NOK	530	579	441	Yes
TRVG	42	57	27	Yes

Source: Refinitiv.

35. All Seven Affected Companies were held by institutional investors before and after the Immediate Pre-Class Period. That the Seven Affected Companies all possessed numerous market makers, traded on major stock exchanges, and were held by professional, institutional investors supports a finding that the stocks of these companies traded in an efficient market during the Immediate Pre-Class Period.

D. S-3 Registration Eligibility

36. The fourth *Cammer* factor is a firm's ability to file a Form S-3 Registration Statement, or for foreign issuers, a Form F-3 Registration Statement. For a company to be eligible to file a Form S-3, which is simplified compared to a Form S-1 Registration Statement, the SEC requires 12 months of filings and at least $75 million of float. A company with less than $75 million of float and 12 months of filings is eligible to file a Form S-3/F-3 registration so long as

Specific Information into Stock Prices," by Joseph D. Piotroski and Darren T. Roulstone, *The Accounting Review*, vol. 79, no. 4, 2004, pp. 1119-1151.

the company has "a class of common equity securities listed and registered on a national securities exchange, and the issuers do not sell more than the equivalent of one-third of their public float in primary offerings over any period of 12 calendar months."[21] Despite the fact that the SEC has loosened the $75 million float requirement, courts continue to focus on the $75 million float benchmark when analyzing this *Cammer* factor.[22]

37. The *Cammer* court noted that Form S-3 Registration Statement eligibility is indicative of market efficiency because the filing requirement ensured that financial data were available to market participants, and the public float requirement indicated that many market participants would have examined the information.[23]

> "Proposed Form S-3 recognizes the applicability of the efficient market theory to the registration statement framework with respect to those registrants which usually provide high quality corporate reports, including Exchange Act reports, and whose corporate information is broadly disseminated, because such companies are widely followed by professional analysts and investors in the market place. Because of the foregoing observations made by the SEC, the existence of Form S-3 status is an important factor weighing in favor of a finding that a market is efficient."[24]

> "The 'public float' aspect of the Form S-3 requirements ensures that enough investors have in fact read the previously filed document."[25]

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[21] "Revisions to The Eligibility Requirements for Primary Securities Offerings on Forms S-3 And F-3," SEC Release No. 33-8878, December 19, 2007.

[22] *See*, *e.g.*, *Nguyen v. Radient Pharm. Corp.*, 287 F.R.D. 563, 573 (C.D. Cal. 2012).

[23] *Cammer*, 711 F. Supp. at 1284-85.

[24] *Cammer*, 711 F. Supp. at 1284-85.

[25] *Cammer*, 711 F. Supp. at 1285.

> "Again, it is the number of shares traded and value of shares outstanding that involve the facts which imply efficiency."[26]

38. For all Seven Affected Companies, Table-6 below presents each company's average float, whether it had consistently filed its SEC filings for at least 12 months.

Table-6: S-3 Eligibility During the Immediate Pre-Class Period

Affected Company	Average Float ($)[1]	Exceeds $75 Million Benchmark?	12-Months of Financial Information Available?
AMC	$631,224,605	Yes	Yes
BB	$6,217,581,955	Yes	Yes
BBBY	$3,106,789,111	Yes	Yes
EXPR	$122,853,171	Yes	Yes
GME	$4,034,239,890	Yes	Yes
NOK	$3,296,147,434	Yes	Yes
TRVG	$117,143,520	Yes	Yes

Source: SEC Filings and Refinitiv.

[1] The daily number of shares in float is calculated as: shares outstanding *less* shares held by insiders. Float capitalization is calculated as: shares in float *multiplied by* daily closing prices.

39. All Seven Affected Companies were eligible to file a Form S-3/F-3 and thus possessed the characteristics associated with market efficiency for this *Cammer* factor.

E. Empirical Demonstration of Price Reaction to Information

40. While both Dr. Grenadier and Mr. Fischel performed event studies for the Affected Companies, they also made the same error in conducting their studies. Both Dr. Grenadier and Mr. Fischel conducted what is typically known as a "backwards event study." In a backwards event study, there is no *a priori* event selection. In other words, there are no specific events being identified to be tested to determine whether a stock responds to new information about the

[26] *Cammer*, 711 F. Supp. at 1287.

company being studied. Rather, in a backwards event study, the regression analysis is performed first, such that the expert already knows which days during their study period are statistically significant (and which days are not) prior to examining any actual event. The issue with this form of event study approach is that any event examined after the fact is biased by the expert's prior knowledge of the statistical results of their test, rendering the event study analysis unscientific and meritless.

41. That both Dr. Grenadier and Mr. Fischel erred in applying a backwards event study is evident in the absence of any *a priori* selection criteria explained or employed by either expert prior to testing for statistical significance. I examined both the Grenadier Report and the Fischel Report, and I was unable to identify anywhere in their reports where an event selection process or methodology was provided, or even assumed. Rather, both experts first ran a regression analysis to determine significant and non-significant days for the Affected Companies and then sought to explain the significance or non-significance by looking for news. This is a textbook example of a backwards event study, that is highly biased and does not comport with the proper event study methodology.

42. The proper event study methodology must first select an event, or events, of interest to test. The type of event selected is determined by the researcher and can vary depending on the hypothesis being assessed but it is key to select the event(s) prior to running any statistical tests. For example, in the Werner Declaration, the events I chose to examine were Company-specific news articles disseminated by the news aggregator, Factiva. It was subsequent to this event selection that I ran my regression analyses and then determined whether certain days were statistically significant or non-significant. This proper event study methodology is supported by

the academic literature (which is the same literature Mr. Fischel cites to in his documents reviewed and relied upon):

> "The initial task of conducting an event study is to define the event of interest and identify the period over which the security prices of the firms involved in this event will be examined – the event window. For example, if one is looking at the information content of an earnings with daily data, the event will be the earnings announcement and the event window will include the one day of the announcement."[27]

43. This proper event study methodology, of first selecting the events to be tested, is also supported by legal authorities:

> "2. Conducting a Proper Event Study Analysis.
>
> For an event study to be admissible it has to be proper so as not to constitute junk science. The traditional definition of an event study is 'a statistical regression analysis that examines the effect of an event, such as an allegedly fraudulent statement or omission, on a dependent variable, such as a company's stock price.' Event study methodology is founded on the efficient market hypothesis, a hypothesis endorsed by the Supreme Court. Under the efficient market hypothesis, a security's price reflects all publicly available information. Thus, in terms of an event study, a change in stock price in light of a public announcement is owing to the arrival of new information in the market provided by that announcement. A proper event study consists of four general steps:
>
> Step One. Identify the Event.
>
> First, an event study must identify the 'event' that causes investors to change their expectations about the value of the company."[28]

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[27] "Event Studies in Economics and Finance," by A. Craig MacKinlay, *Journal of Economic Literature*, March 1997, p. 14.

[28] "Regressing: The Troubling Dispositive Role of Event Studies in Securities Fraud Litigation.," by Michael J. Kaufman and John M. Wunderlich, 15 Stan. J.L. Bus. & Fin. 183, 190–93 (2009).

44. Because Mr. Fischel and Dr. Grenadier's event studies were not properly conducted, neither of their event studies can be said to have tested any hypothesis. That is, their event studies provide only anecdotal observations that cannot be extrapolated into meaningful implications for the Seven Affected Companies.

45. Nevertheless, I attempt in this report to rectify Mr. Fischel and Dr. Grenadier's methodological errors by providing an actual testable hypothesis. Because their studies have already been performed, selecting individual events to examine now would subject the analysis to the same unscientific and biased backwards event study approach their studies suffer from. Instead, I apply a broad selection criterion to Mr. Fischel and Dr. Grenadier's methodology without modifying the results of their study. To execute a more scientifically sound event study, I begin by treating all days on which either Mr. Fischel or Dr. Grenadier identified as days on which a news article was published as a "news day". As long as either Mr. Fischel or Dr. Grenadier identified a news day during the overlapping period of their study, I considered the day of that article's release as a "news day" for purposes of my study.

46. I identified news days considered by Mr. Fischel for each of the Seven Affected Companies by including those news days that Mr. Fischel has identified in Appendix D of the Fischel Report, titled "Summary of Company Specific News".[29] For Dr. Grenadier, I identified news days for the Seven Affected Companies by including those news days that Dr. Grenadier has identified in Appendix E of the Grenadier Report, titled "Potentially Value-Relevant Information During the Run-Up Period 1/21/21 – 1/27/21."[30]

[29] Fischel Report, Appendix D.

[30] Grenadier Report, Appendix E.

47. Through this process, for the five trading days during the overlapping period of January 21, 2021 through January 27, 2021, I am able to separate the trading days for each of the Seven Affected Companies into two distinct categories of "news" and "no-news" events, thereby generating a selection criteria that isolates a test sample of "news" days. Exhibit-4 presents the "news days" that both Dr. Grenadier and Mr. Fischel identified for each Affected Company. Notably, as shown in Exhibit-4, it appears that Mr. Fischel and Dr. Grenadier disagree as to which days should be identified as news for five out of the Seven Affected Companies. For example, for BBBY and for the period of January 21, 2021 through January 27, 2021, Dr. Grenadier identified news being published on January 21th, January 25th, and January 27th. Mr. Fischel on the other hand identified news being published on only January 26th and January 27th. That is, even for such a short period, the event study methodology employed by Defendants' experts produce vastly different results. Such inconsistency is not limited to BBBY – it is also present in the experts' news analysis for BB, EXPR, GME, NOK, and TRVG. These inconsistencies highlight the importance of conducting a proper event study as explained above.

48. To resolve this inconsistency, I included as news days, any days identified as news days by either Mr. Fischel or Dr. Grenadier.

49. After the "news" days were identified, I utilized a statistical testing tool called a binomial test to assess whether the security prices of the Seven Affected Company reacted more often to new days than one would expect from a random sample of days. Under a null hypothesis that a company's stock does not behave any differently on dates with company-specific news (equivalent to a null hypothesis of market inefficiency, generally), there would be only a 5% chance that a seemingly statistically significant stock return would occur on a date when there was company-specific news. If, alternatively, the market for the Seven Affected Companies are

efficient, the security prices would reflect information, such that significant stock returns would occur more frequently on dates with company-specific news. The binomial test is also particularly useful in this case as it is a non-parametric test, meaning there are no underlying assumptions made about the distribution of news days' returns. This element of the binomial test is important due to the extraordinarily short period of time being examined. Other statistical testing techniques that rely on assumed distributions can yield unreliable results when the number of testing observations is so low, as is the case here.

50. Table-7 below presents the results of the Binomial Test for all Seven Affected Companies. Binomial Test P-Values equal to, or less than, 5.0% are statistically significant.

Table-7: Binomial Test Results

Affected Company	News Dates	Statistically Significant News Days	Binomial Test P-Value
AMC	4	4	0.00%
BB	3	2	0.71%
BBBY	4	2	1.35%
EXPR	1	1	5.00%
GME	3	3	0.01%
NOK	4	2	1.35%
TRVG	1	0	95.00%

51. As shown in Table-7, for all Seven Affected Companies except TRVG, the Binomial Test finds that the frequency of statistically significant price movements on days with Company-specific news is too unlikely to be considered random. Thus, we can reject the null hypothesis that the companies' security prices behave no differently on days with company-specific news than on days without company-specific news. Instead, we can conclude that for AMC, BB, BBRY, GME, EXPR, and NOK, the prices of these companies' securities did react to company-specific information, demonstrating market efficiency. This is further evidence that the

market for these companies did not ignore information but rather incorporated information into their stock prices. This is the definition of an informationally efficient market.

52. While the test results for TRVG were inconclusive, one needs to take into consideration that the period of study was extraordinarily short. As I explained above, when a data sample is too low in the number of observations, the data is much more likely to exhibit extreme, and potentially inaccurate, outcomes. Given that my empirical analysis of TRVG in the Werner Declaration did find that TRVG's stock price reacted to information when the data sample was much larger, I am inclined to place more weight on the results of the more robust study performed in the Werner Declaration.

F. Market Capitalization

53. As I explained in the Werner Declaration, the court in *Krogman* held that "[m]arket capitalization, calculated as the number of shares multiplied by the prevailing share price, may be an indicator of market efficiency because there is a greater incentive for stock purchasers to invest in more highly capitalized corporations."[31] In addition, some investors such as pension funds are often restricted to owning securities whose market capitalization is sufficiently high.

54. For all Seven Affected Companies, Table-8 below presents the average market capitalizations, and the respective percentile ranks versus the market capitalizations of all publicly traded companies during the Immediate Pre-Class Period.

[31] *Krogman*, 202 F.R.D. 467 at 478.

Table-8: Market Capitalization During the Immediate Pre-Class Period

Affected Company	Average Market Capitalization	Percentile vs. All Other U.S. Stocks' Market Capitalizations
AMC	$641,224,732	55.8%
BB	$6,302,494,714	86.1%
BBBY	$3,151,440,218	78.3%
EXPR	$124,717,160	27.3%
GME	$4,079,171,510	81.3%
NOK	$3,298,465,669	78.9%
TRVG	$127,475,296	27.7%

Sources: CRSP and SEC Filings of the Affected Companies.

55. The Seven Affected Companies' market capitalizations ranged from sizable to large. Consistent with the *Krogman* opinion, these companies' market capitalizations throughout the Immediate Pre-Class Period are further evidence of market efficiency.

G. Float

56. Float excludes shares held by insiders and affiliated corporate entities. For all Seven Affected Companies, Table-9 below presents the average float and the respective percentile rank versus the market capitalizations of all publicly traded companies during the Immediate Pre-Class Period.[32]

[32] As float capitalization is always lower than market capitalization, comparing the Affected Companies' float capitalization to the market capitalization of all other publicly traded companies is conservative.

Table-9: Float Capitalization During the Immediate Pre-Class Period

Affected Company	Average Float Capitalization	Percentile vs. All Other U.S. Stocks' Market Capitalizations	Above $75 Million?
AMC	$631,224,605	55.6%	Yes
BB	$6,217,581,955	85.9%	Yes
BBBY	$3,106,789,111	78.1%	Yes
EXPR	$122,853,171	27.0%	Yes
GME	$4,034,239,890	81.2%	Yes
NOK	$3,296,147,434	78.9%	Yes
TRVG	$117,143,520	26.2%	Yes

Sources: CRSP and SEC Filings of the Affected Companies.

57. The magnitudes of these companies' floats are indicative of the efficiency of the market for their stock during the Immediate Pre-Class Period.

H. Bid-Ask Spread

58. As I had explained in the Werner Declaration, a narrow bid-ask spread for a particular security is also often associated with efficiency because it implies that there is a large number of investors willing to buy or sell a security, thus the cost of executing a trade is lower, all else being equal.

59. For all Seven Affected Companies, Table-10 below shows the average bid-ask spread during January 2021 in dollar and percentage terms. Table-10 also presents the average month-end bid-ask spread over the course of January 2021 for all stocks in the CRSP database.[33]

[33] This calculation is based upon averaged month-end data from CRSP for January 2021.

Table-10: Bid-Ask Spreads During January 2021

Affected Company	Average Bid-Ask Spread (%)	Average Bid-Ask Spread ($)	Narrower Than Market %?	Narrower Than Market $?
AMC	0.39%	$0.01	Yes	Yes
BB	0.11%	$0.01	Yes	Yes
BBBY	0.05%	$0.01	Yes	Yes
EXPR	0.67%	$0.01	No	Yes
GME	0.10%	$0.07	Yes	Yes
NOK	0.25%	$0.01	Yes	Yes
TRVG	0.60%	$0.01	No	Yes
All CRSP Stocks	**0.50%**	**$0.25**		

60. While only five of the Seven Affected Companies' bid-ask spreads were narrower than the market-wide bid-ask spread on a percentage basis, all Seven Affected Companies' bid-ask spreads were narrower than the market average on a dollar basis. Given the strength of the other *Cammer* and *Krogman* factors for the Seven Affected Companies, it is my opinion that the bid-ask spread measure favors a finding of market efficiency for the Immediate Pre-Class Period. Notably, it is the dollar bid-ask spread that investors actually pay as a cost to their transactions. Both companies that had a wider percentage bid-ask spread, EXPR and TRVG, had a dollar bid-ask spread of only $0.01, which is an objectively low transaction cost.

V. THE NARRATIVE CONSTRUCTED BY MR. FISCHEL AND DR. GRENADIER TO EXPLAIN TRADING IN THE AFFECTED COMPANIES IN JANUARY 2021 IS UNSCIENTIFIC AND INACCURATE

61. Both Mr. Fischel and Dr. Grenadier appear to adopt the popular media narrative that the events of January 2021 and early February 2021 were driven by unsophisticated and misinformed retail investors seeking to make an easy profit from short squeezes on the Affected Companies. Both experts repeatedly reference media commentary labeling the Affected

Companies as "meme stocks",[34] media commentary categorizing the trading in the Affected Companies as "extreme social media driven enthusiasm"[35] or "coordinated trading through social media",[36] and media commentary that attributed the price increases in the Affected Companies in January 2021 to "short squeezes".[37] While both experts are correct in identifying that the news media indeed disseminated these narratives, neither expert has proved that the underlying assumptions of these narratives were accurate or that somehow information was prevented from entering into the market prices of the Affected Companies' stocks.

1. The Affected Companies Were Held and Traded By Institutional Investors

62. As an initial matter, while both Mr. Fischel and Dr. Grenadier attribute the January 2021 price movements in the Affected Companies to retail investors, and more specifically coordinated retail trading through social media, the fact remains that retail investors were only a portion of the shareholders for the Affected Companies. The SEC examined the trading activity of some of the Affected Companies prior to and during the class period, with a focus on GME.[38] The SEC was motivated to issue a report examining market structure conditions following the events of January 2021.[39] In this report, the SEC confirms that "In addition to individual investor activity,

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[34] *See*, e.g., Grenadier Report, ¶9 and Fischel Report, ¶9.

[35] Fischel Report, ¶23.

[36] Grenadier Report, ¶24.

[37] *See*, e.g., Fischel Report, ¶23 and Grenadier Report, ¶73.

[38] "Staff Report on Equity and Options Market Structure Conditions in Early 2021," U.S. Securities and Exchange Commission, October 14, 2021.

[39] "Staff Report on Equity and Options Market Structure Conditions in Early 2021," U.S. Securities and Exchange Commission, October 14, 2021.p. 1

there was significant participation by institutional investors, including several hedge funds that purchased GME."[40] The SEC also noted that "quantitative and high-frequency hedge funds, joined the market rally to trade profitably."[41]

63. Mr. Fischel and Dr. Grenadier's narrative of the events of January 2021 leaves out the role institutional investors, hedge funds, and high-frequency traders played in those events.[42] Attributing the January 2021 price movements solely to retail investors paints an inaccurate and potentially misleading picture of why prices were moving as they did. Contrary to Mr. Fischel's and Dr. Grenadier's opinions, sophisticated and well-informed market participants did transact in the Affected Companies and therefore retail investor transactions could not have been the only driver of the price movements in January 2021.

2. Retail Investors Were Neither Unsophisticated Nor Uninformed

64. While citing to a two-decade old article, Dr. Grenadier states in his report that "By contrast [to institutional investors], academic research on individual retail investors suggests that they are less informed."[43] While Mr. Fischel made no commentary on the characteristics of retail investors in the Fischel Report, he has in the past referred to retail investors as "uninformed or

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[40] "Staff Report on Equity and Options Market Structure Conditions in Early 2021," U.S. Securities and Exchange Commission, October 14, 2021.p. 21

[41] "Staff Report on Equity and Options Market Structure Conditions in Early 2021," U.S. Securities and Exchange Commission, October 14, 2021.p. 22

[42] "Staff Report on Equity and Options Market Structure Conditions in Early 2021," U.S. Securities and Exchange Commission, October 14, 2021. pp. 21-22.

[43] Grenadier Report, ¶109.

noise traders."[44] Both Mr. Fischel's and Dr. Grenadier's depiction of retail investor characteristics are outdated and erroneous.

65. More recent academic studies have found that with the increasing role that social media plays in informing retail investors, retail investors "actively glean[] valuable information" from investment research posts on social media "rather than trading quickly on report sentiment."

> "We examine whether social media enhances the informativeness of retail investor trading. … The incremental information revealed by post-research retail trading is largely orthogonal to the information revealed by report tone and contributor investment position, consistent with retail investors actively gleaning valuable information from [Seeking Alpha] research rather than trading quickly on report sentiment. … These findings suggest that social media can play a positive role in informing retail investors."[45]

66. Other recent studies have noticed "suggestive evidence that retail marketable orders might contain firm-level information that is not yet incorporated into prices." That is, retail transactions can improve the information content of market prices.

> "We provide an easy method to identify marketable retail purchases and sales using recent, publicly available U.S. equity transactions data. Individual stocks with net buying by retail investors outperform stocks with negative imbalances by approximately 10 bps over the following week. Less than half of the predictive power of marketable retail order imbalance is attributable to order flow persistence, while the rest cannot be explained by contrarian trading (proxy for liquidity provision) or public news sentiment. There is suggestive, but only suggestive, evidence that retail

[44] "Efficient Capital Market the Crash and the Fraud on the Market Theory," by Daniel R. Fischel, *Cornell Law Review* 907, 1989, p. 913.

[45] "The Democratization of Investment Research and the Informativeness of Retail Investor Trading," by Michael Farrell, et al., *Journal of Financial Economics*, 145, 2022, p. 638.

> marketable orders might contain firm-level information that is not yet incorporated into prices."[46]

67. The accounting firm Deloitte has also done recent research into retail investors. Deloitte noted the "gathering of like voices in communal hubs" (i.e., social media) "have had profound effects, including the ability to improve market liquidity..." and provide a "stabilizing force" during periods of market turmoil.

> "Retail investors seem to have reached a watershed moment in which access to real-time information and increasingly sophisticated investment tools have made them more empowered than ever before. This new source of empowerment may increasingly stem from the gathering of like voices in communal hubs, where flouting conventional wisdom and the willingness to go against orthodox trading approaches isn't just suggested, it's celebrated. These social forces have had profound effects, including the ability to improve market liquidity, for instance. In fact, retail investors acted as a stabilizing force when COVID-19 first disrupted markets in March 2020, since they didn't pull back when stock prices fell and more traditional investors balked."[47]

68. Beyond the recent literature, there is also evidence of retail investor sophistication directly related to this case. As evidence, I searched social media websites www.reddit.com/r/wallstreetbets as well as Twitter for postings about the Affected Companies. Appendix-A shows a sample of the posts social media users made regarding the Affected Companies prior to Robinhood's alleged market manipulation. Appendix-A also presents the congressional testimony provided by Mr. Keith Gill, a retail investor asked to testify before Congress on his understanding and involvement in the events of January 2021.

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[46] "Tracking Retail Investor Activity," by Ekkehart Boehmer, et al, *Journal of Finance*, Vol 76, No. 5, p. 2249.

[47] "The Rise of Newly Empowered Retail Investors," Report from the Deloitte Center for Financial Services, p. 1.

69. As can be seen in these posts and Mr. Gill's testimony, the analyses and market commentary that was disseminated through social media were far from unsophisticated or uninformed. Rather, this group of retail investors employed widely-used and generally accepted financial models to justify their valuations of the Affected Companies. While the degree of sophistication in such analyses are not of the same magnitude or scope as the analyses employed by institutional investors, labelling retail investors broadly as "unsophisticated" or "uninformed" goes too far. Clearly, retail investors did consider a wide array of financial valuation tools when transacting in the Affected Companies' stocks, which included fundamental valuation analyses.

70. Furthermore, market participants, including retail investors, did attempt to ascertain the "appropriate" value of the Affected Companies' stocks. That retail investors did consider typical valuation metrics when analyzing the Affected Companies demonstrates that information was not ignored. That retail investors believed the Affected Companies' stocks to be fundamentally worth much more than the market prices at the time and then transacted on this belief proves that information was incorporated into the securities' prices. This is the definition of an informationally efficient market.

3. The Narrative That a- Short Squeeze Was the Sole Driver (or Even the Primary Driver) of the January 2021 Price Movements Has Been Refuted by the SEC

71. Both Mr. Fischel and Dr. Grenadier argue that it was effectively a coordinated effort by retail investors to short squeeze the Affected Companies which caused the observed price movements during the Immediate Pre-Class Period. Dr. Grenadier's support for his opinion is that "analyst reports attributed the price movements to retail investor coordination and short squeezes or attempted short squeezes" as well as a draft working paper by Franklin Allen.[48] Mr. Fischel

[48] Grenadier Report, ¶¶102 and 110.

opines that "market commentary attributed the price increases in the affected stocks to short squeezes and extreme social media driven enthusiasm."[49] Other than news media, analyst commentary, and an unpublished working paper, no other evidence was provided by either expert in arguing that a short squeeze may have been the cause of the January 2021 price movements.

72. However, an actual examination of the market dynamics during the January 2021 period comes to a very different conclusion. In October 2021, the SEC released a report titled "Staff Report on Equity and Options Market Structure Conditions in Early 2021", which analyzed in detail the market structures and market dynamics during January 2021. The SEC's report made specific references to the media's narrative of "short squeezes," explaining:

> "Dynamics related to short selling are also an integral part of the GameStop story. Stocks seen by parts of the market as overvalued tend to exhibit significant short interest, and prior to January 2021, GameStop was no different in this respect. However, some in the media directly linked trading activity to the presence of short interest, characterizing trading in GameStop as an act of rebellion intended to humble short-selling professional investors who had allegedly targeted the stock."[50]

73. The SEC's conclusion, however, is very different from that of Dr. Grenadier and Mr. Fischel. Rather than simply parroting the media narrative, the SEC found that "a short squeeze did not appear to be the main driver" of the January 2021 price movements.

> "While a short squeeze did not appear to be the main driver of events, and a gamma squeeze less likely, the episode highlights the role and potential impact of short selling and short covering."[51]

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[49] Fischel Report, Section 3.A.

[50] "Staff Report on Equity and Options Market Structure Conditions in Early 2021," Securities Exchange Commission, dated October 14, 2021, pp. 30-31.

[51] "Staff Report on Equity and Options Market Structure Conditions in Early 2021," Securities Exchange Commission, dated October 14, 2021, p. 44.

74. The SEC report also explicitly cautioned against what Dr. Grenadier and Mr. Fischel did - i.e. relying on media sources to draw the conclusion that a short squeeze drove the market dynamics:

> "While short selling and calls on social media for short squeezes received a great deal of media attention, the interplay between shorting and price dynamics is more complex than these narratives would suggest."[52]

75. The narrative that a short squeeze was the sole cause, or even a primary cause, of the price movements in January 2021 cannot be assumed based on market commentary alone. As the SEC's report shows, detailed market structure analysis is required to arrive at a reliable answer to the role that short selling played during January 2021, and the answer to this question is not a simple "yes" or "no". The only clarity on this matter is offered by what the SEC ultimately concluded, which is that "a short squeeze did not appear to be the main driver of events."[53]

4. Trading in Anticipation of a Short Squeeze is Not a Sign of Market Inefficiency

76. Perhaps aware of the inaccuracy inherent in the assumption that a short squeeze was the driver of the January 2021 price movements, both Dr. Grenadier and Mr. Fischel also make the argument that even an *attempt* to short squeeze is a sign of market inefficiency. For example, Dr. Grenadier states:

> "The retail coordination discussed in Section VI.C.2 above was often framed by market commentators as a battle between Reddit users and short sellers, with retail

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[52] "Staff Report on Equity and Options Market Structure Conditions in Early 2021," Securities Exchange Commission, dated October 14, 2021, p. 44.

[53] "Staff Report on Equity and Options Market Structure Conditions in Early 2021," Securities Exchange Commission, dated October 14, 2021, pp. 30-31.

> investors coordinating to target companies with high short interest to try to force short squeezes."[54]

77. Mr. Fischel similarly explains:

> "The virtually certain awareness of many potential Class Members of the temporary nature of market manipulations such as short squeezes as well as market commentary attributing the Affected Stocks' price declines during the Class Period to the end of short squeezes again demonstrates that reliance on the integrity of the market price cannot be determined on a class-wide basis but requires individualized inquiry."[55]

78. Dr. Grenadier and Mr. Fischel err in drawing the conclusion that an attempt by investors to capitalize on a *potential future* short squeeze is a sign of market inefficiency. Indeed, that retail investors did consider the possibility of a short squeeze demonstrates that these investors did not ignore pertinent market information.

79. Trading based on expectations of future developments is a common practice in efficient markets. For example, consider a hypothetical merger announcement. It is well understood that in an efficient market, once a merger is announced, the subject companies of the merger will begin to trade as a merged company (with a discount provided based on the probability of merger consummation). Such examples are often cited by academics as evidence of market efficiency – the price of the to-be merged securities move to reflect the possibility of a future expected event.[56] This pricing behavior has many parallels with Dr. Grenadier's and Mr. Fischel's

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[54] Grenadier Report, ¶133.

[55] Fischel Report, ¶30.

[56] *See,* e.g., "Merger Momentum and Investor Sentiment: The Stock Market Reaction to Merger Announcements," by Richard Rosen, *The Journal of Business*, 2006; and "Evidence on the Capitalized Value of Merger Activity for Acquiring Firms," by Katherine Schipper and Rex Thompson, *The Journal of Financial Economics*, Vol. 11, 1983.

concerns that it may be the anticipation of a short squeeze that drove the price movements of January 2021.

80. Furthermore, the types of market participants that comprise the daily trading on major exchanges reflect a far more diverse set of investors than those who trade only based on fundamental value. It is not uncommon for market participants to trade based on something called "technical analysis". The CFA Institute defines technical analysis as: "a form of security analysis that uses price data and volume data, typically displayed graphically in charts. The charts are analyzed using various indicators in order to make investment recommendations."[57] Technical analysis is based primarily on historical pricing and volume data, not the fundamentals of the company. Such trading behavior pervades the market without making the market price any less efficient. To posit, as Dr. Grenadier and Mr. Fischel have, that *only* trading that is based on an analysis of fundamental value contributes to the efficiency of the market is far too restrictive.

81. In an analogous case where Mr. Fischel argued for market efficiency, the Honorable Shira Scheindlin, U.S.D.J, accurately pointed out that "In an efficient market, prices reflect all available information, including the information presented by tie-in trading, underwriter compensation, and analyst reports."[58] Similarly here, market participants were certainly informed that the media believed a short-squeeze was occurring. That investors traded on this belief demonstrates that new information was not ignored, but rather incorporated into the market price. The incorporation of information into the market price by market participants, rather than ignoring or disregarding information, is the hallmark of informational efficiency.

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[57] https://www.cfainstitute.org/en/membership/professional-development/refresher-readings/technical-analysis

[58] *In re: Initial Public Offering Securities Litigation*, Opinion and Order, dated June 10, 2009, p. 30.

5. An Informationally Efficiency Market is All That is Required

82. While neither expert explicitly admits this, Dr. Grenadier's and Mr. Fischel's analyses inappropriately requires that all of the Affected Companies' stocks be *fundamentally* efficient in order to establish that the market prices of the Affected Companies' stocks were reasonable proxies for information. Fundamental efficiency means that a market is only considered efficient if an asset's price is, at all times, a perfect representation of the present value of that asset's expected future cash flows.[59] That is, using fundamental efficiency as a standard means that the market for a security is inefficient unless that security price matches a specific target price derived from one specific valuation model. This is not the correct standard for evaluating market efficiency.

83. Mr. Fischel has discussed this fundamental efficiency concept in his own research. In fact, Mr. Fischel has also identified another standard for market efficiency, where "a market is efficient if it is impossible to devise a trading rule that systematically outperforms the market (net of transaction costs) absent possession of inside information."[60] Importantly, neither Mr. Fischel nor Dr. Grenadier claims that investors were able to devise a trading rule for any of the Affected Companies that would have outperformed the market. In his 1989 Article entitled "Efficient Capital Markets, The Crash, and the Fraud on the Market Theory," Mr. Fischel delineates between these two efficiency standards as follows:

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[59] *See,* e.g. "How Efficient Is Sufficient: Applying the Concept of Market Efficiency in Litigation," by Bradford Cornell and John Huat, *The Business Lawyer*, vol. 74, 2019; and "Efficient Capital Market the Crash and the Fraud on the Market Theory," by Daniel R. Fischel, *Cornell Law Review* 907, 1989, p. 913.

[60] "Efficient Capital Market the Crash and the Fraud on the Market Theory," by Daniel R. Fischel, *Cornell Law Review* 907, 1989, p. 913.

> "Much of the discussion of efficient capital markets suffers from ambiguity concerning what characteristics capital markets must satisfy to be considered 'efficient.' At least two definitions of 'efficient' capital markets exist. The first, as discussed in Part I, focuses on the speed with which market prices reflect publicly-available information and whether the price reaction to new information is without bias. Under this definition, a market is efficient if it is impossible to devise a trading rule that systematically outperforms the market (net of transaction costs) absent possession of inside information. In this essay, I refer to this definition as 'trading-rule efficiency.' There is general consensus that capital markets that list actively-traded securities are trading-rule efficient. The second definition of efficient capital markets focuses on the extent to which security prices reflect the present value of the net cash flows generated by a firm's assets. I refer to this definition of efficiency as 'value efficiency.'"[61]

84. In that same paper, Mr. Fischel also conceded the inseparability of value and price.

> "Unfortunately, no direct method exists for testing how closely prices reflect value because the 'value' of an asset cannot be measured apart from its price. "[62]

85. Mr. Fischel concludes this discussion by explaining that:

> "Value efficiency means that prices are typically the best indicators of underlying values (at least absent inside information). No evidence demonstrates that a better model exists for ascertaining the value of a publicly-traded firm's assets than looking at the prices of its securities."[63]

86. In this same paper, Mr. Fischel also expressed the opinion that the search for mispriced securities by market participants – analogous to retail investors trading on anticipation

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[61] "Efficient Capital Market the Crash and the Fraud on the Market Theory," by Daniel R. Fischel, *Cornell Law Review* 907, 1989, p. 913.

[62] "Efficient Capital Market the Crash and the Fraud on the Market Theory," by Daniel R. Fischel, *Cornell Law Review* 907, 1989, p. 914.

[63] "Efficient Capital Market the Crash and the Fraud on the Market Theory," by Daniel R. Fischel, *Cornell Law Review* 907, 1989, p. 911.

of a potential short squeeze – "is the mechanism whereby prices reflect information about underlying values."

> "Indeed, the constant search by market professionals for mispriced securities is the mechanism whereby prices reflect information about underlying values. And, to emphasize again, the critical question is not whether market prices are always a perfect proxy for the underlying value of assets but whether a better proxy exists on a consistent basis. Thus far the answer to this critical question is no."[64]

87. The inappropriate standard that is fundamental efficiency has also been rejected by the U.S. Supreme Court. The Court clarified in its *Halliburton II* decision that the correct standard for market efficiency in a securities case is *informational* efficiency – whether prices react to, and therefore reflect, new information.

> "Even the foremost critics of the efficient-capital-markets hypothesis acknowledge that public information generally affects stock prices. … Debates about the precise degree to which stock prices accurately reflect public information are thus largely beside the point. 'That the...price [of a stock] may be inaccurate does not detract from the fact that false statements affect it, and cause loss,' which is 'all that Basic requires.'"[65]

> "To recognize the presumption of reliance, the Court explained, was not 'conclusively to adopt any particular theory of how quickly and completely publicly available information is reflected in market price.' The Court instead based the presumption on the fairly modest premise that 'market professionals generally consider most publicly announced material statements about companies, thereby affecting stock market prices."[66]

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[64] "Efficient Capital Market the Crash and the Fraud on the Market Theory," by Daniel R. Fischel, *Cornell Law Review* 907, 1989, p. 915.

[65] *Halliburton Co. V. Erica P. John Fund, Inc.*, 573 U.S. 258 (2014).

[66] *Halliburton Co. v. Erica P. John Fund, Inc.*, 573 U.S. 258 (2014)

VI. THE ANALYSES PRESENTED IN THE FISCHEL REPORT CANNOT ESTABLISH MARKET INEFFICIENCY

1. Mr. Fischel's Claim That a Disconnect Between Analyst Price Targets and the Actual Market Price Implies Market Inefficiency is Erroneous

88. Mr. Fischel suggests that the market for the Affected Companies' stocks may have been inefficient during the Immediate Pre-Class Period because the trading prices exceeded analysts' target prices for the stock. Mr. Fischel's suggestion is flawed and misleading.

89. Mr. Fischel's analysis requires that, in an efficient market, the current market prices of a given security will always match the analysts' consensus price target for that security. This is rarely the case. Analyst prices targets are typically substantially above or below contemporary trading prices, depending on whether the analyst in question has a bullish or bearish view on the stock. It is rare for an analyst to opine that their valuation of a given security is equal to its current market price. This assumption alone renders Mr. Fischel's analysis flawed.

90. Exhibit-5 presents analysts' price targets for the Affected Companies based on the analyst reports produced by both Mr. Fischel and Dr. Grenadier. As shown in this exhibit, the analyst price targets Mr. Fischel observes are not for the same period of time as the market prices they purportedly should reflect. Mr. Fischel's analysis observes the trading prices of the Affected Companies' stocks from January 4, 2021 through January 27, 2021 – a 23 calendar day period. Analysts do not typically offer a target price that they think the security price will correspond to within 23 calendar days. Rather, as shown in Exhibit-5a through Exhibit-5g, analysts' target prices for the Affected Companies are all estimates of future prices between six and eighteen months out. Thus, Mr. Fischel's analysis is further flawed as it requires current market prices to comply with projected values that analysts expect will only be reached over time.

VII. THE ANALYSES PRESENTED IN THE GRENADIER REPORT CANNOT ESTABLISH MARKET INEFFICIENCY

1. Dr. Grenadier's Reverse Event Study Analysis Does Not and Can Not Establish Market Inefficiency

91. Dr. Grenadier opines that the "extreme price runups and subsequent reversals that the At-Issue Stocks collectively experienced over the Relevant Period cannot be explained by new, value-relevant information,"[67] and suggests that therefore, the market for those securities must be inefficient. Dr. Grenadier supports his opinion by conducting a backwards event study on two multi-day windows at the end of, or directly following, the Immediate Pre-Class Period. However, his analysis is flawed and does not establish inefficiency of the markets for the Affected Companies' stocks during the Immediate Pre-Class Period.

92. As an initial matter, the Werner Declaration did demonstrate a "cause and effect" relationship between the release of Company-specific information and movements in each respective security price. As explained in the Werner Declaration, for each of the Affected Companies' stocks, there was a statistically significant difference in the incidence rates of significant returns on days with high information flow compared to low information flow days. More plainly, the empirical analysis in the Werner Declaration showed that when information about the Affected Companies entered the market, the stock prices of those companies reacted. This analysis demonstrated a cause (the new information) and effect (significant stock price movements) relationship during the Relevant Period.

93. Dr. Grenadier takes the opposite approach, which is commonly referred to as a "backwards" event study, which I have discussed above. He observes large stock price movements

[67] Grenadier Report, ¶73.

(the effect) and tries to determine what caused these movements (information or some other factor). Dr. Grenadier purportedly supports this analysis with statements from the Affected Companies and analysts that discuss the *magnitude* of the stock price movements compared to the information released. However, these statements do not say that there was no information that could have impacted the securities prices, they simply state that the stock price reaction exceeded what the analysts and company would expect based on the information content. For example, in paragraph 102 of his report, Dr. Grenadier cites the following commentary from Scotiabank analysts:

> Our view is that the move in BlackBerry's shares appears to be ***overdone*** in the short-term given fundamentals of the business relative to the movement in the underlying share price.[68]

94. The premise of informational market efficiency dictates that information will be incorporated into the trading price of a security; it does not mean that all market participants must agree on the valuation implications of that information. Nor does it imply that the market must have gotten it right. There are always traders and analysts that believe the market price is too high or too low, or that the market reacted too much or too little to specific news.

95. While Dr. Grenadier did identify dates on which there was new information associated with the significant price changes for at least five of the nine Affected Companies' stocks, his concern is that the magnitude of the change was too large. Dr. Grenadier's identification and subsequent analysis on the magnitude of valuation impact associated with this information is an exercise in applying the *fundamental* market efficiency standard. As I have discussed above,

[68] Grenadier Report, ¶102, citing "Lowering Recommendation on Significant Market Move," Scotiabank, analyst report, January 27, 2021.

Halliburton II held that this is not the correct standard of market efficiency to be applied in securities cases – the correct standard being *informational* market efficiency. Applying the correct market efficiency standard, Dr. Grenadier's identification of new information being associated with statistically significant price movements is additional evidence that the prices of the Affected Companies' stocks reacted to information.

96. Furthermore, although most of Dr. Grenadier's report is dedicated to the premise that the large stock price increases at the end of the Immediate Pre-Class Period were caused exclusively by retail investor coordination and a short squeeze, he presents a contradictory opinion in Section VII of the Grenadier Report. When evaluating Robinhood's removal of the very same retail investor demand for the Affected Companies' stock by its millions of customers, Dr. Grenadier writes, "I see no reason why restrictions on a subset of retail investors that account for a fraction of the overall market would have 'artificially distorted' the stock price throughout the proposed Class Period."[69] If one were to accept Dr. Grenadier's arguments, then it logically follows that retail investors could not have impacted the prices of the Affected Companies' stocks during the Immediate Pre-Class Period via purported short squeezes as these retail investors also did not account for the entirety of trading volume in the Affected Companies.

2. Dr. Grenadier's Opinion that Robinhood's Trading Restriction Had No Impact, or Very Little Impact, is Erroneous

97. Dr. Grenadier's opinion that restricting the trading of a subset of investors would have no impact on securities prices is also at odds with the principles of finance. The equilibrium price of any publicly traded security is a function of the aggregate buying and selling pressure of all market participants and investors. By removing a portion of the buying interest and pressure,

[69] Grenadier Report, ¶149.

as Robinhood did, there will be an impact on the equilibrium price of a security. Whether 1% or 100% of potential buying volume is removed, there will be some impact. The *magnitude* of the impact of trading restrictions on subsets of investors can be analyzed and debated (however, Dr. Grenadier did not do this), but the *presence* of some unquantified impact when only buying interest is removed (and selling interest is not equally impacted), is largely beyond debate. Thus, Dr. Grenadier's opinion that the Robinhood restrictions had *no* impact is incorrect and at odds with financial principles.

98. This dynamic has been explored by recent research focusing on the January 2021 Robinhood trading restrictions. Jones, Reed and Waller [2021] [70] found that, "equity and options trading restrictions ha[d] large and significant effects on the affected asset markets" and specifically that, "in the equity markets, … the restrictions are associated with sharp price declines."[71]

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[70] "When Brokerages Restrict Retail Investors, Does the Game Stop?" by Charles M. Jones, Adam V. Reed, and William Waller, Columbia Business School Research Paper Forthcoming, 2021, https://ssrn.com/abstract=3804446.

[71] See, also in Jones, Reed and Waller [2021] (at pp. 25-26): "The estimated return effects are large and negative, which is likely consistent with expectations given that these restrictions are usually designed to limit or prohibit equity purchases. For example, the imposition of a Robinhood-like trading restriction by a Set 1 brokerage firm leads to a one-time daily return of -59.4%. The imposition of TD Ameritrade-like margin restrictions by a Set 2 brokerage is associated with a daily return of -24.9%, and when we include both Set 1 and Set 2 restrictions in the same regression, both coefficients remain strongly significant. … The imposition of any sort of restriction leads to an immediate 15-minute return of -0.64%, a Robinhood-like Set 1 trading restriction is associated with a 15-minute return of -0.80%, and a TD Ameritrade-like Set 2 margin restriction leads to an immediate 15-minute return of -0.64%. All are significant at the 1% level, and both Set 1 and Set 2 restrictions are separately significant and negative when both dummies are included in the same specification."

99. Consequently, Dr. Grenadier's opinion that Robinhood's enforced trading restrictions did not cause any impact on the prices of the Affected Companies' stocks is at odds with both financial principles and recent academic research.

a. ***Dr. Grenadier Ignores that Investors Responded to the Robinhood PCO Restrictions as New, Important Negative News***

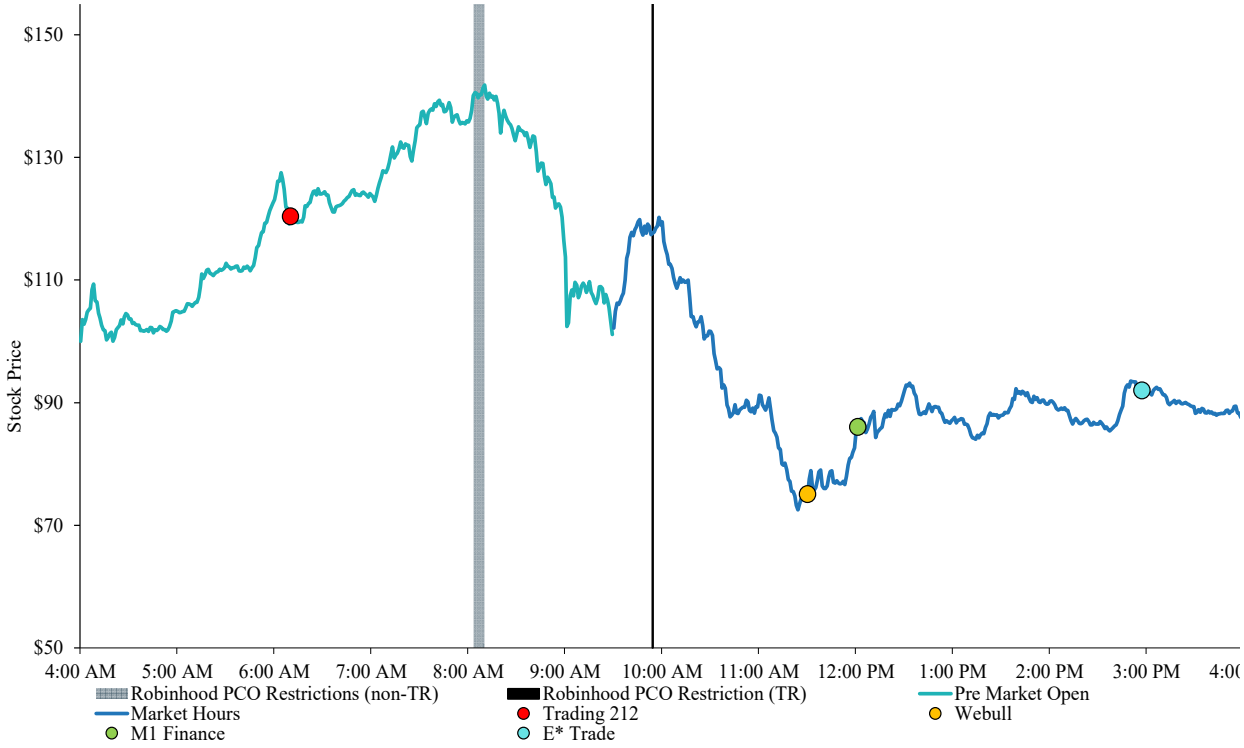
100. Dr. Grenadier's opinion that Robinhood's restrictions had very little impact on the prices of the Affected Companies' stocks, if any, is erroneous because it fails to consider that investors reacted to the announcement of Robinhood's position closing only restrictions on equities (the "Robinhood PCO Restrictions") during the morning of January 28, 2021 as new, important company-specific news. Below, I first clarify the distinction between PCO restrictions and other types of restrictions placed on the Nine Affected Companies and clarify the timing of the Robinhood PCO Restrictions relative to PCO Restrictions from other brokerage firms. Then, I analyze how the market reacted to the Robinhood PCO restrictions. Together, this evidence supports the conclusion that the impact from the announcement of the Robinhood PCO Restrictions can be verified and quantified, contradicting both Dr. Grenadier's and Mr. Fischel's opinions.

101. As background, the Robinhood PCO Restrictions are restrictions such that an investor could not purchase an equity, or common stock and may only close their position (or, in other words, sell current holdings). Relative to other types of trading restrictions implemented on the Affected Companies' stocks between January 13, 2021 and January 27, 2021, such as increasing initial purchase or maintenance margins, the Robinhood PCO restrictions were far more restrictive. Both the Grenadier Report and Fischel Report discuss these multiple types of

restrictions from the relevant brokerages on the Affected Companies' stocks, but do not analyze investor reactions to any restrictions.[72]

102. In Table-12 below, I present an intraday price chart of an equal-weighted index of the Affected Companies on January 28, 2021, annotated with the announcement of PCO restrictions from all brokerages on that day, including the Robinhood PCO Restrictions:

Table-12: Equal-Weighted Index of Affected Companies' Stocks Indexed to $100 Annotated with PCO Equity Restrictions January 28, 2021 4:00 AM - January 28, 2021 4:00 PM



Sources: Tick Data, RHMDL00047970, and HFSC Report.

103. Table-12 summarizes that, beginning shortly after the first Robinhood restrictions were imposed on AMC, BB, BBRY, EXPR, GME, KOSS, NOK, and TRVG starting at 8:03AM

[72] Grenadier Report, ¶46-48; Fischel Report, ¶11-12.

ET on January 28, 2021, the prices of the Affected Companies' stocks declined prior to the market open at 9:30AM ET on that day.[73] Then, following the final Robinhood PCO Restriction, implemented on TR, at 9:54AM ET, the Affected Companies' share prices continued to decline in price into the late morning. Finally, the Nine Affected Companies reached an apparent end to their decline shortly after 11:00AM ET, prior to the announcement of PCO restrictions on equity purchases of AMC, GME, and KOSS announced by other brokerages, such as Webull at 11:30AM ET and M1 Finance Restriction at 12:01PM ET, both through Twitter posts from brokerage executives.[74,75] Finally, almost seven hours after Robinhood's PCO restriction were first imposed on eight of the nine Affected Companies, E-Trade's restriction of purchases for AMC and GME occurred just before 3:00 PM on January 28, 2021.[76]

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[73] I note that Trading212 announced PCO equity restrictions prior to Robinhood on January 28, 2021 for only AMC and GME.

[74] I note that Dr. Grenadier discusses the restrictions by Apex, which were communicated to brokerages Webull and M1 Finance at 10:30AM ET. However, "GAME STOPPED: How the Meme Stock Market Event Exposed Troubling Business Practices Inadequate Risk Management, and the Need for Legislative and Regulatory Reform," U.S. House Committee on Financial Services, June 2022 ("HSFC Report"), cited by Dr. Grenadier, at ¶48 FN 72, states "Webull complied with this instruction [received from Apex at 10:30AM ET] and at 11:30EST announced the imposition of these instructions via posts on social media, specifically on Webull's Facebook page and via its Twitter account.[] Webull did not distribute notice of these restrictions in any other manner." (HSFC Report, pp. 78 and 80). Further, the HSFC Report, at page 81 and footnote 394, states that "Functionally, it is the introducing broker that can permit or restrict trading for individual trading clients and, therefore, once Apex communicated its directives to restrict trading and then lift trading restrictions on the relevant stocks, each introducing broker would have implemented such instructions in accordance with its own practices. As a result, each introducing broker would have imposed and lifted restrictions at different times."

[75] Timing of Robinhood PCO Restrictions for each At-Issue Security per Grenadier Report, Exhibit 2.

[76] Grenadier Report, ¶48 citing: "E-Trade confirms it halted GameStop and AMC stock, will let you buy some Friday," The Verge, January 28, 2021.

104. In Exhibit-6a through Exhibit-6i, I show intraday price charts annotated with PCO restrictions for the same time period for each of the Nine Affected Companies. These exhibits show that there was a negative stock price reaction following the announcement of the Robinhood PCO Restrictions for each of the Nine Affected Companies. Indeed, as shown in the Grenadier Report, each of the Affected Companies' stocks experienced a negative, statistically significant abnormal return on January 28, 2021.[77]

105. News coverage of the Affected Companies' stocks on the morning of January 28, 2021 attributed the decline in their stock prices to the Robinhood PCO Restrictions. For example:

> "Robinhood restricts trading in GameStop, other names involved in frenzy
>
> Robinhood told clients in a blog post that it would close out some positions automatically if the client was at risk of not having the necessary collateral. The Menlo-Park, CA based said it plans to allow limited buys of these securities on Friday. After the announcement, shares of GameStop initially reversed their gains, sliding quickly into negative territory. The stock, which traded above $500 at one point in premarket trading, closed down 44% on Thursday."[78]

> "Robinhood bans buying GameStop, AMC and other Reddit darlings
>
> Citing 'recent volatility,' Robinhood said it will only allow users to close out their positions in those stocks, which include Best Buy, Bed Bath & Beyond, Express and Nokia. Following the move by Robinhood, shares of GameStop (GME) lost all of their premarket gains and turned sharply negative."[79]

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[77] Grenadier Report, Figure 7.

[78] "Robinhood restricts trading in GameStop, other names involved in frenzy," *CNBC*, dated January 28, 2021 at 9:19 PM ET.

[79] "Robinhood bans buying GameStop, AMC and other Reddit darlings," *CNN Business*, dated January 28, 2021 at 10:00 AM ET.

106. Together, the evidence above indicates that investors, including arbitrageurs, widely interpreted the Robinhood PCO Restrictions as news of an imposed endpoint to the stock price increases from days prior. This context explains how the Robinhood PCO Restrictions resulted in artificially distorted prices for the Nine Affected Companies' stocks, as in the absence of these restrictions there was some non-zero probability that the endpoint to the stock price increases in the Nine Affected Companies would have continued into January 28, 2021 and throughout the Class Period. This explanation contradicts Dr. Grenadier's opinion that in an efficient market he "see[s] no reason why restrictions on a subset of retail investors that account for a fraction of the overall market would have 'artificially distorted' the stock price throughout the proposed Class Period."[80]

b. ***The Robinhood PCO Restrictions were the Only PCO Restrictions Placed on Six of the Nine Affected Companies***

107. Both Dr. Grenadier and Mr. Fischel ignore the fact that the Robinhood PCO Restrictions were the *only* PCO restrictions to be announced and implemented for six of the Nine Affected Companies, namely BB, BBBY, EXPR, NOK, and TRVG. In Table-13 below, I show the PCO restrictions by security for each restricting brokerage:

[80] Grenadier Report, ¶149.

Table-13: Equity PCO Restrictions Announced on January 28, 2021 For the Affected Companies

Brokerage	Pre-Market Open	AMC	BB	BBBY	EXPR	GME	KOSS	NOK	TR	TRVG
[1] Trading 212	Yes	X				X				
[2] Robinhood	Yes	X	X	X	X	X	X	X	X	X
[3] Webull	No	X				X	X			
[4] M1 Finance	No	X				X	X			
[5] Ally Financial	No	X				X	X			
[6] SoFi	No	X				X	X			
[7] E*TRADE	No	X				X				

Notes: TR is the only Robinhood restriction set after Market Open. The TR restriction was set at 9:54 AM. Additionally, I note there is evidence that Interactive Brokers implemented PCO equity restrictions for BB, NOK, EXPR, KOSS, AMC, BBBY, and GME on January 28, 2021, but I have seen no public announcement or news coverage of these restrictions, and therefore they could not be reflected in the stock prices of the At-Issue Securities. See HFSC Report, at footnote 478 and 479.

Sources: Brokerage list per Grenadier Report, ¶48 and Fischel Report, ¶40.

[1] "GameStop & AMC Entertainment In Reduce-Only Mode," Trading 212, January 28, 2021, at https://community.trading212.com/t/gamestop-amc-entertainment-in-reduce-only-mode/41464.

[2] Grenadier Report, Exhibit 2.

[3] HFSC Report, p.79.

[4] M1 Finance Official Twitter, January 28, 2021, at https://twitter.com/M1Finance/status/1354837064072753152.

[5] Grenadier Report, ¶48; Fischel Report, ¶40; HCFS Report, p. 79.

[6] Grenadier Report, ¶48; HCFS Report, p. 79.

[7] HFSC Report, p.94; "E*Trade Restricts Purchases of Gamestop, AMC Shares," Bloomberg News, January 28, 2021, at https://www.bloomberg.com/news/articles/2021-01-28/e-trade-restricts-purchases-of-gamestop-amc-shares.

108. Dr. Grenadier describes that to provide a reliable methodology to calculate class-wide damages, Plaintiffs must provide a methodology that reliably estimates the but-for price of the Nine Affected Companies assuming that "other retail brokers would have still imposed restrictions." [81] Table-13 illustrates how these "fundamental challenges" presented by Dr. Grenadier to providing a reliable class-wide damages methodology are at least in part disingenuous. In this case, the impact of the PCO restrictions for six of the Nine Affected Companies can be reliably determined without any further steps, as no other PCO restrictions were announced and implemented on January 28, 2021 and Robinhood's various restrictions extended beyond January 28, 2021. [82] Furthermore, as is common when assessing "confounding information" in securities litigation, one could analyze elements and price reactions to each PCO restriction to estimate the impact from each, and when that impact occurred.

[81] Grenadier Report, ¶161.

[82] Grenadier Report, ¶¶46-48.

VIII. DAMAGES IN THIS MATTER CAN BE COMPUTED USING A COMMON METHODOLOGY

109. Dr. Grenadier and Mr. Fischel raise concerns regarding the existence of a common damages methodology in this case. While Mr. Fischel concludes that "Plaintiffs cannot provide a common methodology to calculate damages,"[83] Dr. Grenadier does not dispute that there is a common damages methodology, but rather that "Plaintiffs face fundamental challenges in providing a Class-wide damages methodology that is consistent with their theory of liability in this action."[84] As explained in the Werner Declaration, damages can be computed using a common class wide methodology.[85] None of the concerns raised by Dr. Grenadier or Mr. Fischel provide any reason to revise that conclusion.

110. Dr. Grenadier identifies four "fundamental challenges" that he opines will complicate the implementation of a damages methodology in this case: (1) "Plaintiffs face fundamental challenges in reliably determining the but-for price that would have prevailed had Robinhood not imposed restrictions, if it is ***assumed*** that the markets for the At-Issue Stocks were *not* efficient such that the trading restrictions could have affected stock prices"; (2) that any damages methodology would purportedly have to "reconcile why the trading restrictions would have affected the prices of the At-Issue Stocks (according to Plaintiffs' allegations), but not the prices of other stocks with similar restrictions"; (3) "that a damages methodology must be able to account for an additional complicating factor in that Robinhood's trading restrictions changed over the proposed Class Period"; and (4) the damages methodology for Section 9(a) claims must "be

[83] Fischel Report, Section IV.

[84] Grenadier Report, Section VIII.

[85] Werner Declaration, Sections III and IV.

able to calculate the but-for prices where the subset of alleged actions specifically connected to those claims were absent but the PCO restrictions and position limits were still in place."[86]

111. Mr. Fischel supports his opinion that no common damages methodology exists with three arguments: (1) "absent Robinhood's and other brokers' actions, there is no way to know in the but-for world whether prices would have kept rising, how long they would have remained artificially high, and how quickly they would have fallen to nonmanipulated levels";[87] (2) "small changes in the timing of trades could alter whether or not an individual incurred a loss as a result of a sale and therefore qualifies to be a potential Class Member";[88] and (3) "Plaintiffs also have no way of disentangling the effects of confounding events."[89]

112. I address these arguments below. There is considerable overlap between the arguments of Dr. Grenadier and Mr. Fischel, and where that overlap occurs, I address the arguments of both defense experts together.

113. As an initial matter, while I disagree with the foundations and relevance of Mr. Fischel and Dr. Grenadier's concerns, it is important to note that regardless of how such concerns are resolved, any form of resolution would apply on a Class-wide basis. While Mr. Fischel and Dr. Grenadier consider the potential valuation and computational complexities they raise to be insurmountable, which they are not, it is nevertheless the case that any valuation or computation

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[86] Grenadier Report, ¶163 (emphasis added).

[87] Fischel Report, ¶38. Of note, based off of his argument in paragraph 38 of his report, it appears that Mr. Fischel considers Robinhood's PCO restrictions to have impacted the prices of the Affected Companies' stocks.

[88] Fischel Report, ¶39.

[89] Fischel Report, ¶¶40-41.

adjustment made to accommodate these potential issues would be made on a Class-wide basis, and thus would not impact the class-wide applicability of the damages model.

A. The Market for the Seven Affected Companies Were Efficient At least Until Robinhood's Alleged Market Manipulation

114. Regarding market efficiency, I have demonstrated that Mr. Fischel's and Dr. Grenadier's claims of market inefficiency are without merit and that the markets for the Seven Affected Companies' shares were efficient under the *Cammer* and *Krogman* criteria at least until Robinhood's alleged market manipulation commenced on January 28, 2021. As such, Dr. Grenadier's "fundamental challenge" to computing damages that relies on his "assumption" that the markets for the Affected Companies' stocks were inefficient are similarly without merit.

115. Because these markets were efficient during the Immediate Pre-Class Period, there is no need to deviate from using market prices to establish the appropriate but-for price absent the alleged market manipulation. Mr. Fischel's speculation that prices may have continued to rise, or perhaps fallen, absent Robinhood's alleged manipulation is beside the point – the prices of the Affected Companies' stocks did fall from their January 27, 2021 closing prices following Robinhood's various restrictions, and any portion of that decline attributable to the allegedly improper restrictions would serve as the basis (subject to adjustments) of damages.

116. Furthermore, Mr. Fischel suggests that some Plaintiffs would not have traded in the but-for world and, therefore, "individualized inquiry is required". This critique is irrelevant to the existence of a common damages methodology. The but-for world focuses on the prices that the Affected Companies' stocks would have traded at absent any fraud or improper conduct, so that damages can be assessed for investors who did transact in these stocks. The damages methodology I presented in the Werner Declaration measures damages for Class members whose transactions did occur in the real world.

B. The Remainder of Mr. Fischel's and Dr. Grenadier's Concerns Will be Addressed at the Appropriate Stage of the Case

117. The remainder of Dr. Grenadier's and Mr. Fischel's concern the potential valuation complexities that may be encountered during the implementation of the damages methodology – namely, potential complexities such as confounding information[90] and time-varying inflation.[91] Issues of confounding information and time-varying inflation are common in securities class actions, and standard valuation tools are routinely applied to accommodate these potential valuation complexities.

118. Each of the complexities that Defendants' experts raise are appropriately addressed in an analysis of loss causation and damages, and none are insurmountable. To detail precisely how the implementation of the damage model will isolate damages attributable to the allegations, separating out losses caused by potential other factors, necessarily requires the full development of the record so that actionable allegations are confirmed and confounding information is designated as such. What both Defendants' experts state is necessary at the class certification stage is in effect the full loss causation and damages analysis, which I understand is premature and not required at this stage.

119. Dr. Grenadier also notes that "Robinhood imposed restrictions on 50 additional stocks on January 29, 2021,"[92] and that any damage methodology for the Affected Companies' stocks should also analyze the price reaction to these 50 additional securities. I am unaware of,

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[90] Grenadier Report, ¶¶173-174 and Fischel Report, ¶¶40-41.

[91] Grenadier Report, ¶¶171-172.

[92] Grenadier Report, ¶170. While Dr. Grenadier states that Robinhood imposed restrictions on 50 additional stocks, it is my understanding that these 50 stocks are inclusive of the nine Affected Companies.

and Dr. Grenadier does not cite to any, legal or academic authority that requires a damages methodology to take into account the security price changes for unrelated companies that are not at issue in the instant case. As such, Dr. Grenadier's argument about the "50 additional stocks" has no relevance to the existence of a damages model that can measure damages commonly on a Class-wide basis for the Affected Companies' stocks.

IX. LIMITING FACTORS AND OTHER ASSUMPTIONS

120. My analyses and opinions are based on the information available as of the date of this declaration. Should any additional data or information become available subsequent to the submission of this report, I reserve the right to supplement or amend this declaration based on this new information.

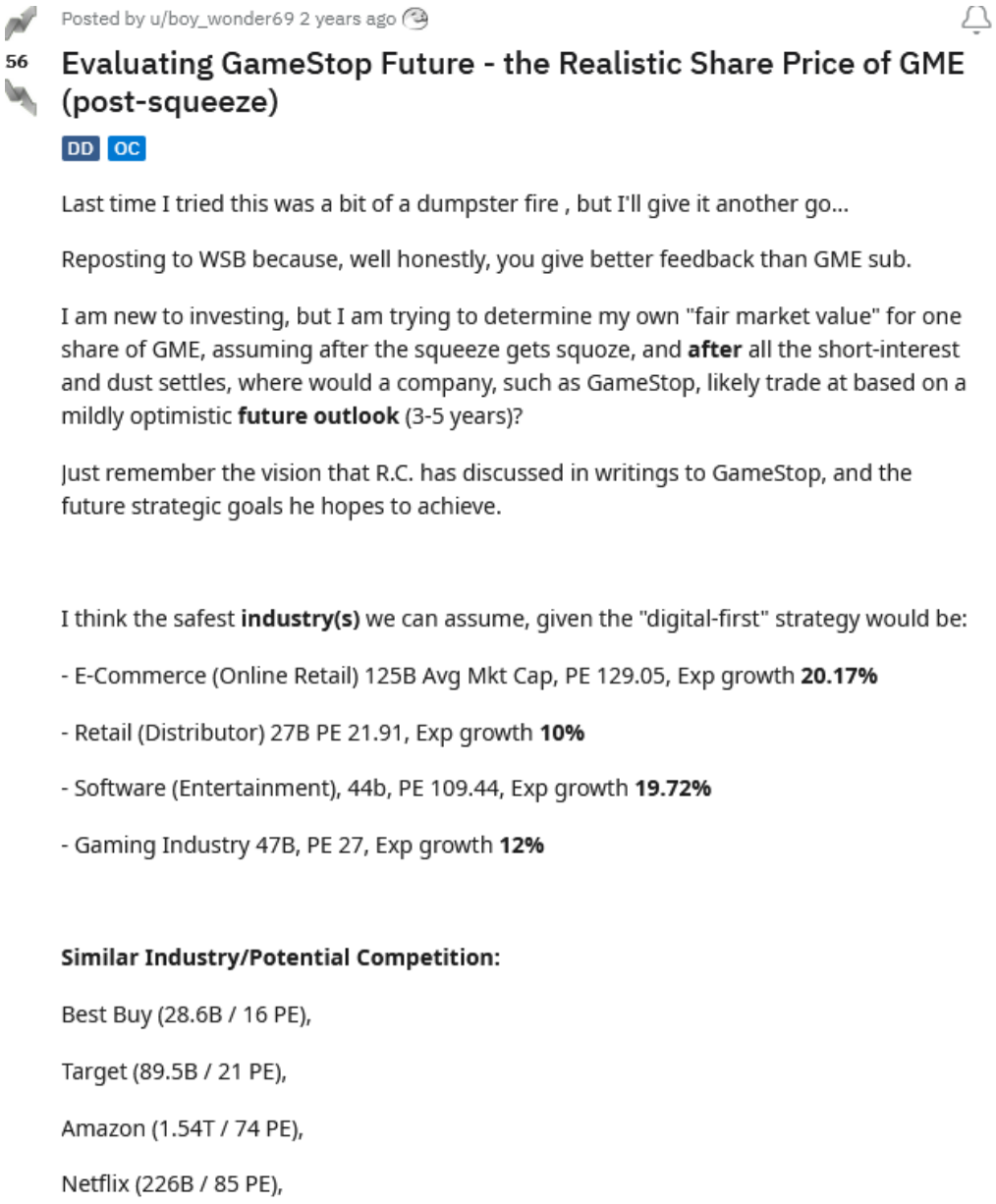
Dated: March 28, 2023

Adam Werner, PhD
Affiliated Expert,
Crowninshield Financial Research

APPENDIX A

A. Examples of Retail Investor Analyses from Wallstreetbets

1. Below are a sample of posts from the social media website www.reddit.com/r/wallstreetbets:



Posted by u/boy_wonder69 2 years ago

56

Evaluating GameStop Future - the Realistic Share Price of GME (post-squeeze)

DD OC

Last time I tried this was a bit of a dumpster fire , but I'll give it another go...

Reposting to WSB because, well honestly, you give better feedback than GME sub.

I am new to investing, but I am trying to determine my own "fair market value" for one share of GME, assuming after the squeeze gets squoze, and **after** all the short-interest and dust settles, where would a company, such as GameStop, likely trade at based on a mildly optimistic **future outlook** (3-5 years)?

Just remember the vision that R.C. has discussed in writings to GameStop, and the future strategic goals he hopes to achieve.

I think the safest **industry(s)** we can assume, given the "digital-first" strategy would be:

- E-Commerce (Online Retail) 125B Avg Mkt Cap, PE 129.05, Exp growth **20.17%**

- Retail (Distributor) 27B PE 21.91, Exp growth **10%**

- Software (Entertainment), 44b, PE 109.44, Exp growth **19.72%**

- Gaming Industry 47B, PE 27, Exp growth **12%**

Similar Industry/Potential Competition:

Best Buy (28.6B / 16 PE),

Target (89.5B / 21 PE),

Amazon (1.54T / 74 PE),

Netflix (226B / 85 PE),

4.2k

Posted by u/Kabdckmd 2 years ago

BrotherCramer Award

A Venture Capital Perspective on GME

DD OC

Hi everyone. Long time WSB lurker and I've learned a lot here, so I'd like to give back and hopefully add some value to this sub. I think it's worth spending a little time laying out my thoughts on why I'm investing in GME as an active early stage VC, and hopefully my insights can help people not paperhand before the real gains are made. I'll try to provide new insights that I haven't seen on this subreddit yet.

Full disclaimer- this is my personal money I'm investing. Positions are 678 shares at a $39.81 average as a starter and looking to open a more significant position in the next few months once a few questions have been answered for me on things I'm looking to see (which I'll discuss below).

Obligatory rockets: 🚀🚀🚀🚀🚀🚀🚀🚀. If a few things happen, this goes to the moon regardless of a short squeeze. I'll explain why below.

First, a quick overview at how most VC's do due diligence.

How VC's Invest

When we do due diligence on early stage investments (our Fund is a pre-seed and seed Fund with a few Series A deals), there's a few things we look for, especially when evaluating growth companies in tech are as follows:

1. What's the market size? There are three types of market sizes investors look at; TAM, SAM and SOM. Feel free to look up how sizing these markets works if you aren't familiar, this is a long post so I won't waste people's time. The important thing to remember here is that **the larger the TAM, the more room for growth and competition and the more interest there is to invest in a space.** This is very important for GME and we will come back to why later.
2. What's the CAGR? (Compound Annual Growth Rate). Basically, is the market expanding or shrinking, and how fast. Again, google this if not familiar.
3. Experience of the management team- have they actually been there before and demonstrated an ability to scale and exit a company in this space?
4. Unit economics- do the numbers make sense as this company grows? Is it actually going to be profitable? Every firm looks at these different. We look at CAC/LTV ratios and doubling time with tech companies. The TLDR of this is "how much money does it cost me to get a new customer, how long will they be my customer before they leave, how much money will they spend while they are my customer,

Posted by u/Brushermans 2 years ago

158

Full GME DCF: Conservative Fair Price $59

DD

Lot of discouraged GME folks since yesterday's failed launch, so wanted to share my own bullish outlook. Like u/ucjor's post here, I used the most conservative projections, but unlike u/ucjor, I continued the analysis down to the profit streams based on my interpretation of RC's strategic outlook for GME. Sorry for the finance hardo LARP but for those of you who can do math read past the TLDR.

TLDR considering RC's strategic vision, GME's future profits mean fair value/share is $58.53.

Store Closures and Brick & Mortar Revenues

RC's already said he's disgusted with GME's lack of action in closing stores and expanding ecommerce. Gamestop now plans to close 1000+ stores at the beginning of this year (source). Since GME leases all their stores on terms of 1-5 years, contracts can easily be dropped as they expire (source). In the following screenshot, I projected the amount of store closures for each year and evenly redistributed the remaining renewed leases to expire over 1-5 years. The results show that with the expiry scheduling, GME will be able to cancel a steady amount of stores every year, reaching below 1500 locations in 2026.

For the Fiscal Period Ending	12 months Feb-01-2020	12 months Feb-01-2021	12 months Feb-01-2022	12 months Feb-01-2023	12 months Feb-01-2024	12 months Feb-01-2025	12 months Feb-01-2026
Currency	*USD*	*USD*	*USD*	*USD*	*USD*	*USD*	*USD*
Stores at Beginning	5,830	5,509	5,047	4,047	3,247	2,547	1,947
Stores Opened	12	-	-	-	-	-	-
Leases Expiring	-	2333	1399	396	485	0	0
Previously Renewed Expiring	-	-	374	529	554	622	626
Leases Renewed	-	1871	773	125	339	22	126
Stores Closed	333	462	1000	800	700	600	500
Total Stores	5,509	5,047	4,047	3,247	2,547	1,947	1,447
Revenue/Store	$ 1.17	$ 0.72	$ 1.17	$ 1.17	$ 1.17	$ 1.17	$ 1.17
In-Store Revenues	$ 6,466.00	$ 3,624.56	$ 4,734.99	$ 3,798.99	$ 2,979.99	$ 2,277.99	$ 1,692.99

Posted by u/Beto_365 2 years ago 6 2

Some Fundamental Numbers on GME

DD

Here is a summary of the Statement of Operations for you folks that like the fundamental stuff.

You can see why the stock price has dropped heading into 2019, quarterly results continued to deteriorate. Most recently SG&A have decreased which should help any additional sales go straight to the bottom line(profit). Analysts consensus Estimate for Q4 2020 is $2290 million. Holiday sales disappointed with $1770 million which puts meeting analysts expectations at risk unless console inventory can be replenished and sold before the end of January. If not, then more demand and sales gets pushed into Q1 2021 (Feb and onward).

With SG&A decreasing from the closure of less profitable stores and other cost cutting measures and with the boost in Net Sales expected for Q4 2020, SG&A-to-Gross Profit (bottom left chart) should fall back below 100% as it should.

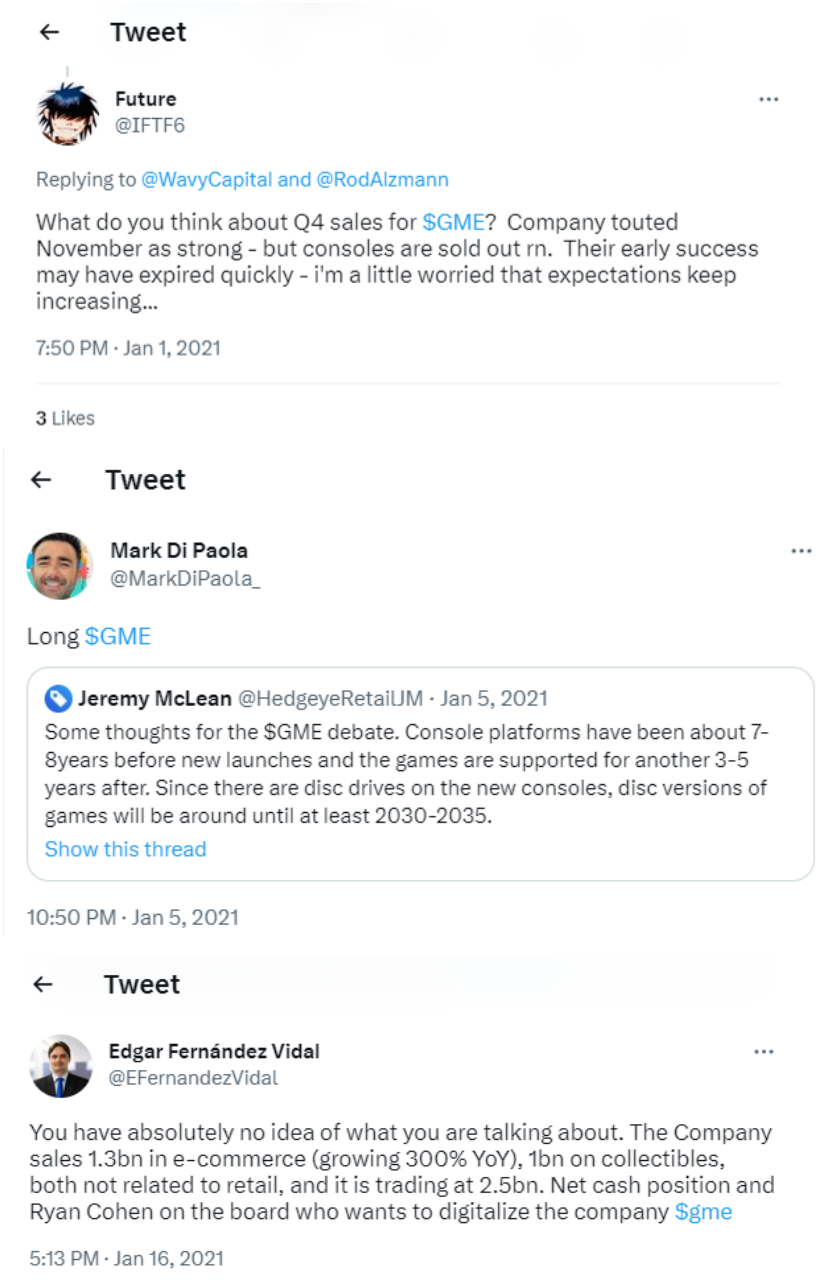
Consensus analyst expectations is for EPS of +1.42 which would be the highest its ever been in the last 3 years. It will also be the first profitable quarter without Asset or Goodwill Impairments hampering profits.

Edit: This means we'll have our 1st profitable quarter since Q1 2018 (not bankruptcy), once we have back-to-back profitable quarters, we will attract more mainstream investment firms. Watch out bears!

Snapshot (in $millions except share data)	2018				2019				2020				2021			
Published	Q1 May 31	Q2 Sept 6	Q3 Nov 29	Q4 Apr 2	Q1 June 4	Q2 Sept 10	Q3 Dec 10	Q4 Mar 26	Q1 June 4	Q2 Sept 9	Q3 Dec 8	Q4 Mar 24?	Q1	Q2	Q3	Q4
(+) Net Sales	1934.0	1646.7	2084.4	3063.0	1547.7	1285.7	1438.5	2194.1	1021.0	942.0	1004.7					
(-) Cost of Sales	1276.7	1050.6	1393.6	2314.2	1076.5	886.6	997.4	1596.8	738.6	689.8	728.4					
Gross Profit	657.3	596.1	690.8	748.8	471.2	399.1	441.1	597.3	282.4	252.2	276.3					
Gross Margin	34.0%	36.2%	33.1%	24.4%	30.4%	31.0%	30.7%	27.2%	27.7%	26.8%	27.5%					
(-) SG&A	566.1	542.3	566.6	527.4	430.6	459.3	451.8	511.7	386.5	348.2	360.4					
(-) Depreciation/Amort.	34.1	32.2	30.2	25.1	23.1	22.6	23.6	0.0	0.0	0.0	0.0					
(-) Asset/Goodwill Impair.	0.0	0.0	587.5	428.4	0.0	363.9	11.3	10.4	3.9	0.9	0.0					
(+)Gain on sale of assets	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.3	21.1					
Operating Profit(Loss)	57.1	21.6	-493.5	-232.1	17.5	-446.7	-45.6	75.2	-108.0	-85.6	-63.0					
(-) Interest Expense	13.7	13.9	13.0	10.5	7.7	7.0	6.0	6.5	6.7	7.5	9.7					
(-) Income tax Exp.(Benft.)	15.2	32.6	-17.9	25.9	2.3	-40.1	31.6	43.8	50.4	17.9	-53.9					
(+) Income from discont. Opr.	0.0	0.0	0.0	80.8	-0.8	-1.7	-0.2	-3.9	-0.6	-0.3	0.0					
Net Profit(Loss)	28.2	-24.9	-488.6	-187.7	6.7	-415.3	-83.4	21.0	-165.7	-111.3	-18.8					
Cash & Cash Equivalents	247	280	455	1624	543	424	290	499	570	735	446					
Short & Long-term debt	819	819	471	472	469	419	419	420	417	472	486					
Shares outstanding	102	102	102	102	103	100	82	66	65	65	65					
Adjusted P/L per share	0.38	0.05	0.49	1.60	0.07	-0.32	-0.49	1.27	-1.61	-1.40	-0.53					
Dividend payout per share	0.38	0.38	0.38	0.38	0.38											
Stock Price (@close b4 quarter)	$ 13.60	$ 16.14	$ 14.63	$ 10.10	$ 7.82	$ 5.09	$ 6.51	$ 4.41	$ 4.96	$ 7.35	$16.94					

B. Examples of Retail Investor Analyses from Twitter

2. Below are a sample of Twitter users' posts about one or multiple Affected Companies:



← Tweet

jmoneystonks
@jmoneystonks

Refusing to go below the 20EMA. HG setup. 95% institutional ownership. Declining volume to correspond with price action. Looking for above average volume/breakout of the falling knife pattern channel. New PS5 released, during Xmas, in a pandemic...@AOTtrades @traderstewie $GME



12:33 AM · Jan 6, 2021

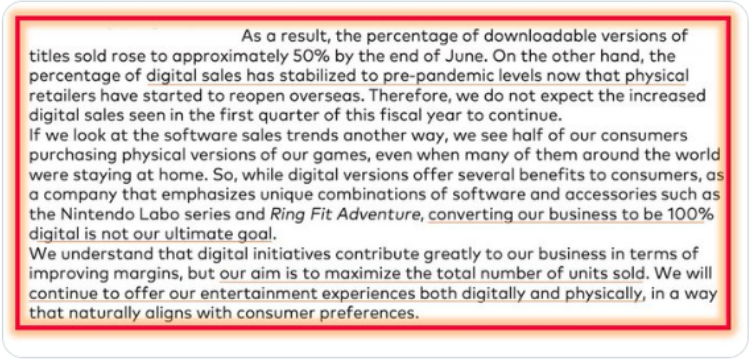
2 Quotes **5** Likes

← Tweet

Jeremy McLean
@HedgeyeRetailJM

Replying to @torontostewart @KeithMcCullough and @HedgeyeRetail

It's a great point. Digital is clearly better for the content creators in terms of margin and return on capital. But need to keep in mind what the consumer wants, not just the NTM bottom line. I think that's why consoles still have a disc drive. Nintendo says it well here. $GME



As a result, the percentage of downloadable versions of titles sold rose to approximately 50% by the end of June. On the other hand, the percentage of digital sales has stabilized to pre-pandemic levels now that physical retailers have started to reopen overseas. Therefore, we do not expect the increased digital sales seen in the first quarter of this fiscal year to continue.
If we look at the software sales trends another way, we see half of our consumers purchasing physical versions of our games, even when many of them around the world were staying at home. So, while digital versions offer several benefits to consumers, as a company that emphasizes unique combinations of software and accessories such as the Nintendo Labo series and *Ring Fit Adventure*, converting our business to be 100% digital is not our ultimate goal.
We understand that digital initiatives contribute greatly to our business in terms of improving margins, but our aim is to maximize the total number of units sold. We will continue to offer our entertainment experiences both digitally and physically, in a way that naturally aligns with consumer preferences.

1:11 PM · Jan 7, 2021

5 Likes **1** Bookmark

C. Examples of Retail Investor Analyses from the Congressional Testimony of Mr. Keith Gill

3. Below are a sample of Mr. Keith Gill's congressional commentary:

"As an individual investor, I use publicly available information to study the market and the value of specific companies. I consider a complex array of factors and track hundreds of stocks - all in search of market inefficiencies. Like many people, sometimes I post on social media my thoughts and analysis about individual stocks and whether they are correctly valued."[93]

"Between 2010 and 2014, I worked for a family friend at a start-up company in New Hampshire, trying to build a software program that would help investors analyze stocks and offer related research. We also tried to start an investment firm, which dissolved not long after it was created. My salary never exceeded $40,000, but I did learn something about investing. I learned how to do the tedious work of digging through a company's financials and focusing on its real long-term value, not prevailing market sentiment or headlines."[94]

"Two important factors, based entirely on publicly available information, gave me and many others confidence that GameStop was undervalued in 2019 and 2020. First, the market was underestimating the prospects of GameStop's legacy business and overestimating the likelihood of its going bankrupt. … Second, I believed – and I continue to believe – that GameStop has the potential to reinvent itself as the ultimate destination for gamers within the thriving $200 billion gaming industry. The new console cycle provides GameStop a unique opportunity to pivot from a traditionally brick- and-mortar mindset toward a technology-driven business that excels in gaming products, experiences and services. By embracing the digital economy, GameStop can pursue new revenues streams including larger gaming catalogs, digital content and community experiences, online trade-ins, streaming services, and Esports."[95]

"The idea that I used social media to promote GameStop stock to unwitting investors is preposterous. I was abundantly clear that my channel was for

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[93] https://www.washingtonpost.com/context/testimony-of-keith-patrick-gill-aka-roaring-kitty/dbb18b2e-400c-4a10-8fc5-156e8856cfd1/

[94] https://www.washingtonpost.com/context/testimony-of-keith-patrick-gill-aka-roaring-kitty/dbb18b2e-400c-4a10-8fc5-156e8856cfd1/

[95] https://www.washingtonpost.com/context/testimony-of-keith-patrick-gill-aka-roaring-kitty/dbb18b2e-400c-4a10-8fc5-156e8856cfd1/

educational purposes only, and that my aggressive style of investing was unlikely to be suitable for most folks checking out the channel. Whether other individual investors bought the stock was irrelevant to my thesis – my focus was on the fundamentals of the business."[96]

[96] https://www.washingtonpost.com/context/testimony-of-keith-patrick-gill-aka-roaring-kitty/dbb18b2e-400c-4a10-8fc5-156e8856cfd1/

Exhibit-1
Curriculum Vitae
Adam Werner, Ph.D.

EDUCATION

1998	Northwestern University, Kellogg Graduate School of Management Ph.D. in Finance
1992	Oberlin College B.A. in Economics

TEACHING EXPERIENCE

2014 – Present	Cal Poly San Luis Obispo Orfalea College of Business San Luis Obispo, CA Lecturer in Economics

BUSINESS EXPERIENCE

2015 – Present	Crowninshield Financial Research
2018 – 2021	Pismo Beach Planning Commission
2009 – 2015	Gnarus Advisors/Berkeley Economic Consulting
2008 – 2009	LitiNomics
2004 – 2008	CRA International
2000 – 2003	National Economic Research Associates, Inc.
1998 – 2000	Cornerstone Research
1992 – 1993	Federal Reserve Bank

PAPERS AND PUBLICATIONS

"The Impact of Underwriter Reputation on Equity Offering: An Empirical Study." Thesis, 1999.

"The Long-Run Performance of Underwriters and its Impact on Seasoned Equity Offerings." 1999.

"Dynamic Measures of Underwriter Reputation: A Study of IPO's." 1999.

"CAFE Economics: A Note on the Limits and Effectiveness of Fuel Economy Regulation." With Stephen Sheppard, 1992.

"Trading Models Underestimate Securities Class Damages." with Narinder Walia, Law360, 2019.

"More 'Dark Pools" Deepen Litigation Issues." Law360, 2013.

"Recent Trends in Securities Class Action Litigation: Will Enron and Sarbanes-Oxley Change the Tides." with Elaine Buckberg, Todd Foster and Ronald Miller, 2003.

"The Effects of the PSLRA and Subsequent Events on Securities Litigation." With Fred Dunbar and Todd Foster, prepared for the New York City Bar Association, 2003.

"The Energy Tax: Who Pays?" joint with Mark Schweitzer, in Federal Reserve Bank of Cleveland's Economic Commentary, 1993.

PRESENTATIONS

"Cause or Effect: Are Settlement Statistics Driving Down Settlements?" Presentation to Robbins Geller Rudman & Dowd, LLP in San Diego, CA on October 10, 2013, Wolf Popper, LLP in New York, NY on September 18, 2013, Abraham, Fruchter & Twersky, LLP in New York, NY on September 17, 2013, Robbins Geller Rudman & Dowd, LLP in Melville, NY on September 11, 2013, Entwistle & Cappucci, LLP in New York, NY on September 10, 2013, and Faruqi & Faruqi, LLP in New York, NY on September 10, 2013.

"The Economics of Securities Litigation." Sidley & Austin in Los Angeles, CA on March 14, 2007.

"The Global Cost of Capital." Panel discussion on valuing assets in foreign countries at the University of Texas School of Law VALCON conference in Las Vegas on February 8, 2007.

"Economic Damages in Securities Fraud Matters." NERA Luncheon Seminars with Alan Cox given at the Fifth Avenue Suites Hotel in Portland, OR on November 19, 2002 and at the W Hotel in Seattle, WA on November 20, 2002.

"Shareholder Class Actions: Calculation of Damages." Presentation to Skadden, Arps, Slate, Meagher & Flom, LLP in San Francisco, CA on October 30, 2002, Marsh FINPRO in San Francisco, CA on September 18, 2002, Marsh Risk & Insurance Services in San Diego, CA on September 17, 2002 and Marsh FINPRO in Los Angeles, CA on September 13, 2002.

"Capital Formation: Class Action Litigation and Prevention." Speech and panel discussion focusing on securities class action litigation, which sometimes arise from

initial public offerings and/or market volatility in the aftermarket. Presented at the 2002 CALBIO Summit in San Diego, CA on April 23, 2002.

"Shareholder Class Actions after the NASDAQ Bubble." Speech given to the Securities Litigation Sub-Committee of the Colorado Bar Association at Holland & Hart, LLP in Denver, CO on April 17, 2002.

"Trends in Litigation: How Claims and Losses Are Valued." Speech at the American Bankers Association Insurance Risk Management Annual Conference in San Diego, CA on February 4, 2002.

"Recent Trends in Securities Litigation." "Basic Economic Analysis in Securities Class Action" and "Challenging the Efficient Market Assumption in Securities Class Action Matters." presented to Cooley Godward in San Diego, CA on November 28, 2001. "Recent Trends in Securities Litigation." presentation with Marcia Mayer given at Howard, Rice, Nemerovski, Canady, Falk & Rabkin in San Francisco, CA on November 27, 2001.

"Recent Trends in Securities Litigation." presentation given to Marsh USA in Denver, CO on November 8, 2001, and Thelen, Reid & Priest in Los Angeles, CA on November 6, 2001.

"Financial Economics in Litigation." speech presented to Simpson, Thacher & Bartlett in Palo Alto, CA on July 31, 2001, Baker & McKenzie in San Diego, CA on July 18, 2001, Brobeck, Phleger & Harrison in San Francisco, CA on June 25, 2001 and to Latham & Watkins in San Francisco, CA on June 26, 2001.

"Economic Analysis in Securities Fraud Cases." Speech with Alan Cox delivered to Morrison & Forester, San Francisco, CA on July 25, 2001.

"Recent Trends: Shareholder Class Actions Five Years After the PSLRA." speech presented to Shearman & Sterling in San Francisco, CA on May 23, 2001, O'Melveny & Myers in Los Angeles, CA on May 30, 2001 and Gray, Cary, Ware & Freidenrich in San Diego, CA on June 6, 2001.

EXPERT REPORTS AND TESTIMONY

In re XL Fleet Corp. Securities Litigation. Issued a declaration on market efficiency and damages methodology in a securities class action (2023). (U.S.D.C. Southern District of New York).

In re January 2021 Short Squeeze Trading Litigation. Issued a declaration on market efficiency and damage methodology in a securities class action (2023). (U.S.D.C. Southern District of Florida).

Exhibit-1
Curriculum Vitae
Adam Werner, Ph.D.

In Re: NIO, Inc. Securities Litigation. Issued a declaration and provided deposition testimony (2022) on market efficiency and issued a rebuttal declaration (2022) on market efficiency and price impact in a securities class action. (Eastern District of New York).

Gelt Trading LTD. v. Co-Diagnostics, Inc., et al. Issued a declaration (2022) on market efficiency and issued a rebuttal declaration (2022) on price impact in a securities class action. ” (District of Utah, Central Division).

6D Global Technologies, Inc. Securities Litigation. Issued a declaration (2022) on loss causation and damages in a securities class action. (Southern District of New York).

Securities and Exchange Commission v. Bradley C. Davis. Issued a report (2021), a rebuttal report (2021), provided deposition testimony (2021), and provided trial testimony (2022) on materiality in a case brought by the SEC (U.S.D.C. Central District of California).

In Re: Omega Healthcare Investors, Inc. Securities Litigation. Issued a declaration (2022), provided deposition testimony (2022), and issued a rebuttal declaration (2022) on market efficiency in a securities class action. (Southern District of New York).

Andrew Trampe v. CD Projekt S.A. Issued a declaration (2022) on aggregate damages in a securities class action. (Central District of California).

In re Global Brokerage, Inc. f/k/a/ FXCM Inc. Issued a report (2020), a rebuttal report (2020), provided deposition testimony (2020) and testified (2020) on market efficiency in a securities class action. Issued a report (2021), a rebuttal report (2021) and provided deposition testimony (2021) on loss causation and damages (U.S.D.C. Southern District of New York).

George Barney, et al. v. Nova Lifestyle, Inc., et al. Issued a report on market efficiency in a securities class action (U.S.D.C. Central District of California, 2021).

Peter Voulgaris, et al. v. Array Biopharma Inc., et al. Issued a declaration on market efficient in a securities class action (District of Colorado, 2021).

In re Innocoll Holdings Public Limited Company Securities Litigation. Issued a report (2020), provided deposition testimony (2020) on market efficiency, and issued a rebuttal report (2020) in a securities class action (U.S.D.C. Eastern District of Pennsylvania).

Michael Tietz, et al. v. Crytobloc Technologies Corp., et al. Issued a report on price impact in a securities class action (Supreme Court of British Columbia, 2020).

In re Horsehead Holding Corp. Securities Litigation. Issues a report (2020) and provided deposition testimony (2020) on market efficiency in a securities class action (U.S.D.C. District of Delaware).

Bing Li, et al. v. Aeterna Zentaris, Inc., et al. Issued a declaration (2016), a report (2017), and provided deposition testimony (2017) on market efficiency in a securities class action. Issued a declaration (2019) a reply report (2019), and provided deposition testimony (2020) on loss causation and damages (U.S.D.C. District of New Jersey).

In re Patriot National Inc. Securities Litigation. Issued a declaration (2019) and a supplemental declaration (2019) on damages in a securities class action (U.S.D.C. Southern District of New York).

Hamza Ramzan, et al. v. GDS Holdings Limited, et al. Issued a declaration on NASDAQ microstructure in a securities class action (U.S.D.C. Eastern District of Texas, Marshall Division, 2019).

Ivan Nibur, et al. v. SandRidge Mississippian Trust I, et al. Issued a declaration (2018), a reply declaration (2018), a supplemental reply declaration (2018), and provided deposition testimony (2018) on market efficiency in a securities class action. Issued a declaration (2019) a rebuttal declaration (2019), and provided deposition testimony (2019) on loss causation and damages (U.S.D.C. Western District of Oklahoma).

In Re Insys Theraputics, Inc. Securities Litigation. Issued a report on market efficiency in a securities class action (U.S.D.C. Southern District of New York, 2019).

In Re Spectrum Pharmaceuticals, Inc. Securities Litigation. Issued a declaration (2019) and provided deposition testimony (2019) on market efficiency in a securities class action (U.S.D.C. District of Nevada).

Amanda Beezley et al. v. Fenix Parts, Inc., et al. Issued a declaration on market efficiency in a securities class action (U.S.D.C. Northern District of Illinois, Eastern Division, 2019).

Michael Desta, et al. v. Volkswagen Aktiengesellschaft, et al. Issued a declaration regarding benefits to firms that have ADRs listed in a securities class action (U.S.D.C. Eastern District of New York, 2018).

Michael Desta, et al. v. Wins Finance Holdings Inc., et al. Issued a declaration (2018) and provided deposition testimony (2018) on market efficiency in a securities class action (U.S.D.C. Central District of California).

Andrew Meyer, et al. v. Concordia International Corp., et al. Issued a declaration (2018), a reply declaration (2018), and provided deposition testimony (2018) on market

efficiency in a securities class action. Issued a declaration (2018), a reply declaration (2018), and provided deposition testimony (2018) on loss causation and damages (U.S.D.C. Southern District of New York).

In re: K12 Securities Litigation. Issued a declaration (2018) and provided deposition testimony (2018) on market efficiency in a securities class action (U.S.D.C. Northern District of California).

Robert Colman, et al. v. Theranos, Inc., et al. Issued a declaration on damage methodology and price impact in a securities class action (U.S.D.C. Northern District of California, San Jose Division, 2018).

In re: CytRx Corporation Securities Litigation. Issued a declaration (2017) and provided deposition testimony (2018) regarding market efficiency in a securities class action (U.S.D.C. Central District of California).

Lord Abbett Affiliated Fund, Inc., et al. v. American International Group, Inc. Issued a report regarding market efficiency, loss causation, and damages in a securities case (U.S.D.C. Southern District of New York, 2017).

Xiaolin Chi, et al. v. Qiao Xing Universal Resources, Inc., et al. Issued a report on damages in a securities class action (District Court of the Virgin Islands, St. Croix Division, 2017).

John Hosey v. Twitter, Inc., et al. Issued a declaration (2017) and provided deposition testimony (2017) regarding rebuttal to Defendants' Motion for Summary Judgement in a securities class action (Superior Court of the State of California, County of San Mateo).

Gwyn R. Hartman Revocable Living Trust v. Southern Michigan Bancorp, Inc. et al. Issued a report on damages arising from alleged exclusions in a proxy solicitation (U.S.D.C. Western District of Michigan, 2017).

Fred Kelsey, et al. v. Textura Corporation, et al. Issued a declaration (2017) and provided deposition testimony (2017) on market efficiency in a securities class action (U.S.D.C. Northern District of Illinois).

Dave Carlton, et al. v. Fred Cannon. Issued a declaration on market efficiency in a securities class action (U.S.D.C. Southern District of Texas, Houston Division, 2016).

James Middlemiss v. Penn West Petroleum LTD., et al. Issued a report on damages in a securities class action (Superior Court of Justice Ontario, Canada, 2016).

David Loritz, et al. v. Exide Technologies, et al. Issued a report on damages and loss causation in a securities class action (U.S.D.C. Central District of California, 2015)

Exhibit-1
Curriculum Vitae
Adam Werner, Ph.D.

Manishkumar Khunt, et al. v. Alibaba Group Holding Limited, et al. Issued a declaration on potential investor damages in a securities class action (U.S.D.C. Southern District of New York, 2015).

Biotechnology Value Fund, L.P. et al. v. Celera Corporation et al. Issued a report (2014), a reply report (2014), a supplemental report (2014), and provided deposition testimony (2014) on damages arising from a merger (U.S.D.C. Northern District of California).

In re: Hi-Crush Partners L.P. Securities Litigation. Issued a declaration (2014), a supplemental declaration (2014), and provided deposition testimony (2014) regarding market efficiency in a securities class action (U.S.D.C. Southern District of New York).

Ian Mausner v. MarketByte LLC, et al. Issued a declaration about investment advisor incentives and liquidity needs in a securities class action (U.S.D.C. Southern District of California, 2014).

Artes Medical, Inc. v. Lemperle et al. Provided deposition testimony on behalf of defendants about alleged damages caused by a proxy contest (Superior Court of the State of California, County of San Diego, Central District, 2013).

In re: Ebix Inc. Securities Litigation. Issued a declaration (2012) and provided deposition testimony (2013) regarding market efficiency in a securities class action (U.S.D.C. Northern District of Georgia, Atlanta Division).

Erik Poole and William Rhody v. Alange Energy Corp., et al. Issued a report (2012) and a reply report (2013) on market efficiency and damages in a securities class action (Superior Court of Justice Ontario, Canada).

In re: Hecla Mining Securities Litigation. Issued a declaration on investor losses in a securities class action (U.S.D.C. District of Idaho, 2012).

Mark Henning, Roman Zaretski and Chrisitan Stillmark v. Orient Paper, Inc. et al. Issued a declaration (2011), a supplemental declaration (2012) and provided deposition testimony (2012) regarding market efficiency in a securities class action (U.S.D.C. Central District of California).

Carlos Munoz et al. v. China Expert Technology, Inc., et al. Issued a declaration (2012), a supplemental declaration (2012) and provided deposition testimony (2012) in a securities class action regarding market efficiency (U.S.D.C. Southern District of New York).

Theodore Dean, et al. v. China Agritech, Inc., et al. Issued a declaration (2012), a supplemental declaration (2012) and provided deposition testimony (2012) in a case

regarding market efficiency in a securities class action (U.S.D.C. Central District of California).

Robert Michael Shenk, Derivatively on Behalf of Sirius XM Radio Inc. v. Melvin Alan Karmazin, et al. Issued an expert report (2011), a supplemental expert report (2012) and provided deposition testimony (2012) in a case involving damages in a shareholder derivative matter (U.S.D.C. Southern District of New York).

Pathway Investments Pty Ltd and Doystoy Pty Ltd v. National Australia Bank Ltd. Submitted a report on survey techniques, the efficient market hypothesis and liquidity in a securities class action (Supreme Court of Victoria at Melbourne, Australia, Commercial and Equity Division, Commercial Court, 2012).

Bruce Simmonds, Robert Grant and Gordon Moore v. Armtec Infrastructure Inc. et al. Issued a report on market efficiency and damages in a securities class action (Superior Court of Justice Ontario, Canada, 2011).

In re: BP plc. Securities Litigation. Issued a declaration regarding damages and materiality in a securities class action (U.S.D.C. Southern District of Texas, Houston Division, 2010).

In re: Tripath Technology Inc., Debtor. Issued a report (2009) and provided deposition testimony (2010) regarding damages arising from Directors' and Officers' breach of fiduciary duty in bankruptcy court (U.S.D.C. Northern District of California, San Jose Division).

David Ainslie and Muriel Marentette v. CV Technologies et al. Issued a report estimating damages in a securities class action (Superior Court of Justice, Ontario, Canada, 2010).

Harry Stackhouse, on Behalf of Himself and All Others Similarly Situated v. Toyota Motor Corporation, et al. Issued a declaration regarding the relationship between Toyota's U.S. stock price and Japanese stock price in a securities class action (U.S.D.C. Central District of California, 2010).

Phillip Elliot and William Kormos v. NovaGold Resources Inc., et al. Issued a declaration in a securities class action regarding trading volume in the U.S. versus Canada. (Superior Court of Justice, Ontario, Canada, 2010).

International Arbitration between a private equity firm and Chinese biotech company. Issued a report (2008) and testified (2009) before an International Arbitration Committee regarding the value of a private equity investment.

Exhibit-1
Curriculum Vitae
Adam Werner, Ph.D.

Arbitration between Albert Richards and Old Republic Title Insurance. Deposed regarding estimated damages incurred by plaintiff as a result of a forced sale of Russian securities due to Old Republic's breach of contract (2008).

Californians United for a Responsible Budget, et al., v. California State Public Works Board, et al. Issued a report on the cost of issuing revenue bonds to fund California prison expansion (The Superior Court for the State of California, County of Sacramento, 2008).

Arbitration between Daniel Lyons and Morgan Lyons, and Chinese Hospital Association and Sam English. Deposed regarding plaintiffs' calculated damages arising from asbestos exposure for plaintiff (2003).

Exhibit-2
Documents Considered
In Addition to Those Cited in the Werner Declaration

CASE DOCUMENTS

- Declaration of Dr. Adam Werner, dated February 16, 2023.
- Report of Daniel R. Fischel, dated February 16, 2023.
- Expert Report of Professor Steven Grenadier, dated February 16, 2023.

NEWS ARTICLES AND PRESS RELEASES

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Exhibit-2
Documents Considered
In Addition to Those Cited in the Werner Declaration

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Exhibit-3a

AMC Market Efficiency Statistics

January 4, 2021 through January 27, 2021

Date	Closing Price [a]	Dividend [b]	Log Return [b]	Volume [c]	Closing Bid [d]	Closing Ask [e]	Closing Bid/Ask Spread	Average Bid/Ask Spread %	Outstanding Shares [f]	Market Capitalization [g]
1/4/2021	$2.01	$0.00	-5.33%	29,873,796	$2.01	$2.02	$0.01	0.50%	172,563,249	$346,852,130
1/5/2021	$1.98	$0.00	-1.50%	28,148,314	$1.98	$1.99	$0.01	0.50%	172,563,249	$341,675,233
1/6/2021	$2.01	$0.00	1.50%	67,363,337	$2.01	$2.02	$0.01	0.50%	172,563,249	$346,852,130
1/7/2021	$2.05	$0.00	1.97%	26,150,489	$2.05	$2.06	$0.01	0.49%	172,563,249	$353,754,660
1/8/2021	$2.14	$0.00	4.30%	39,553,343	$2.13	$2.14	$0.01	0.47%	172,563,249	$369,285,353
1/11/2021	$2.20	$0.00	2.77%	41,695,836	$2.19	$2.20	$0.01	0.46%	172,563,249	$379,639,148
1/12/2021	$2.29	$0.00	4.01%	41,784,333	$2.28	$2.29	$0.01	0.44%	172,563,249	$395,169,840
1/13/2021	$2.18	$0.00	-4.92%	45,847,659	$2.17	$2.18	$0.01	0.46%	172,563,249	$376,187,883
1/14/2021	$2.18	$0.00	0.00%	49,638,794	$2.17	$2.18	$0.01	0.46%	172,563,249	$376,187,883
1/15/2021	$2.33	$0.00	6.65%	162,356,375	$2.32	$2.33	$0.01	0.43%	172,563,249	$402,072,370
1/19/2021	$3.06	$0.00	27.25%	256,276,010	$3.05	$3.06	$0.01	0.33%	172,563,249	$528,043,542
1/20/2021	$2.97	$0.00	-2.99%	181,862,210	$2.96	$2.97	$0.01	0.34%	172,563,249	$512,512,850
1/21/2021	$2.98	$0.00	0.34%	64,823,844	$2.97	$2.98	$0.01	0.34%	172,563,249	$514,238,482
1/22/2021	$3.51	$0.00	16.37%	268,273,367	$3.51	$3.52	$0.01	0.28%	172,563,249	$605,697,004
1/25/2021	$4.42	$0.00	23.05%	443,238,115	$4.40	$4.41	$0.01	0.23%	172,563,249	$762,729,561
1/26/2021	$4.96	$0.00	11.53%	456,850,232	$4.94	$4.95	$0.01	0.20%	172,563,249	$855,913,715
1/27/2021	$19.90	$0.00	138.93%	1,253,254,000	$19.83	$19.89	$0.06	0.30%	172,563,249	$3,434,008,655
Average	$3.72	$0.00	13.17%	203,352,356	$3.70	$3.72	$0.01	0.39%	172,563,249	$641.2 million
Median	$2.29	$0.00	2.77%	64,823,844	$2.28	$2.29	$0.01	0.44%	172,563,249	$395.2 million
High	$19.90	$0.00	138.93%	1,253,254,000	$19.83	$19.89	$0.06	0.50%	172,563,249	$3,434.0 million
Low	$1.98	$0.00	-5.33%	26,150,489	$1.98	$1.99	$0.01	0.20%	172,563,249	$341.7 million

Sources: CRSP & SEC Filings.

Exhibit-3b

BB Market Efficiency Statistics

January 4, 2021 through January 27, 2021

Date	Closing Price [a]	Dividend [b]	Log Return [b]	Volume [c]	Closing Bid [d]	Closing Ask [e]	Closing Bid/Ask Spread	Average Bid/Ask Spread %	Outstanding Shares [f]	Market Capitalization [g]
1/4/2021	$6.58	$0.00	-0.76%	11,139,231	$6.58	$6.59	$0.01	0.15%	562,634,092	$3,702,132,325
1/5/2021	$6.77	$0.00	2.85%	9,108,900	$6.77	$6.78	$0.01	0.15%	562,634,092	$3,809,032,803
1/6/2021	$6.71	$0.00	-0.89%	11,022,286	$6.71	$6.72	$0.01	0.15%	562,634,092	$3,775,274,757
1/7/2021	$7.06	$0.00	5.08%	13,062,758	$7.06	$7.07	$0.01	0.14%	562,634,092	$3,972,196,690
1/8/2021	$7.56	$0.00	6.84%	23,039,275	$7.55	$7.56	$0.01	0.13%	562,634,092	$4,253,513,736
1/11/2021	$7.65	$0.00	1.18%	15,749,559	$7.64	$7.65	$0.01	0.13%	562,634,092	$4,304,150,804
1/12/2021	$7.63	$0.00	-0.26%	9,416,014	$7.62	$7.63	$0.01	0.13%	562,634,092	$4,292,898,122
1/13/2021	$7.44	$0.00	-2.52%	8,345,519	$7.43	$7.44	$0.01	0.13%	562,634,092	$4,185,997,644
1/14/2021	$9.11	$0.00	20.25%	65,231,338	$9.09	$9.10	$0.01	0.11%	562,634,092	$5,125,596,578
1/15/2021	$9.84	$0.00	7.71%	153,854,663	$9.83	$9.84	$0.01	0.10%	562,634,092	$5,536,319,465
1/19/2021	$12.35	$0.00	22.72%	112,483,169	$12.34	$12.35	$0.01	0.08%	562,634,092	$6,948,531,036
1/20/2021	$12.79	$0.00	3.50%	130,140,695	$12.77	$12.79	$0.02	0.16%	562,634,092	$7,196,090,037
1/21/2021	$12.85	$0.00	0.47%	63,464,952	$12.83	$12.84	$0.01	0.08%	562,634,092	$7,229,848,082
1/22/2021	$14.04	$0.00	8.86%	120,473,629	$14.03	$14.04	$0.01	0.07%	562,634,092	$7,899,382,652
1/25/2021	$18.03	$0.00	25.01%	363,829,082	$18.03	$18.04	$0.01	0.06%	562,634,092	$10,144,292,679
1/26/2021	$18.92	$0.00	4.82%	242,740,763	$18.80	$18.81	$0.01	0.05%	562,634,092	$10,645,037,021
1/27/2021	$25.10	$0.00	28.26%	372,222,608	$25.03	$25.04	$0.01	0.04%	562,634,092	$14,122,115,709
Average	$11.20	$0.00	7.83%	101,489,673	$11.18	$11.19	$0.01	0.11%	562,634,092	$6,302.5 million
Median	$9.11	$0.00	4.82%	63,464,952	$9.09	$9.10	$0.01	0.13%	562,634,092	$5,125.6 million
High	$25.10	$0.00	28.26%	372,222,608	$25.03	$25.04	$0.02	0.16%	562,634,092	$14,122.1 million
Low	$6.58	$0.00	-2.52%	8,345,519	$6.58	$6.59	$0.01	0.04%	562,634,092	$3,702.1 million

Sources: CRSP & SEC Filings.

Exhibit-3c

BBBY Market Efficiency Statistics

January 4, 2021 through January 27, 2021

Date	Closing Price [a]	Dividend [b]	Log Return [b]	Volume [c]	Closing Bid [d]	Closing Ask [e]	Closing Bid/Ask Spread	Average Bid/Ask Spread %	Outstanding Shares [f]	Market Capitalization [g]
1/4/2021	$18.03	$0.00	1.51%	13,929,307	$18.03	$18.05	$0.02	0.11%	121,214,724	$2,185,501,474
1/5/2021	$19.76	$0.00	9.16%	13,642,795	$19.76	$19.77	$0.01	0.05%	121,214,724	$2,395,202,946
1/6/2021	$21.03	$0.00	6.23%	19,048,259	$21.02	$21.03	$0.01	0.05%	121,214,724	$2,549,145,646
1/7/2021	$18.73	$0.00	-11.58%	39,271,433	$18.72	$18.73	$0.01	0.05%	121,214,724	$2,270,351,781
1/8/2021	$18.94	$0.00	1.11%	11,184,462	$18.93	$18.94	$0.01	0.05%	121,214,724	$2,295,806,873
1/11/2021	$20.49	$0.00	7.87%	16,114,142	$20.48	$20.49	$0.01	0.05%	121,214,724	$2,483,689,695
1/12/2021	$21.53	$0.00	4.93%	8,796,418	$21.52	$21.53	$0.01	0.05%	121,214,724	$2,609,146,934
1/13/2021	$23.02	$0.00	6.71%	18,978,990	$23.03	$23.04	$0.01	0.04%	121,214,724	$2,790,362,946
1/14/2021	$27.34	$0.00	17.20%	29,152,145	$27.33	$27.34	$0.01	0.04%	121,214,724	$3,314,010,554
1/15/2021	$25.60	$0.00	-6.60%	13,639,220	$25.59	$25.60	$0.01	0.04%	121,214,724	$3,102,490,861
1/19/2021	$25.03	$0.00	-2.23%	9,006,910	$25.02	$25.03	$0.01	0.04%	121,214,724	$3,034,004,542
1/20/2021	$24.97	$0.00	-0.24%	7,010,945	$24.98	$24.99	$0.01	0.04%	121,214,724	$3,026,731,658
1/21/2021	$26.87	$0.00	7.33%	16,623,258	$26.85	$26.86	$0.01	0.04%	121,214,724	$3,257,039,634
1/22/2021	$30.21	$0.00	11.72%	38,905,657	$30.18	$30.21	$0.03	0.10%	121,214,724	$3,661,896,812
1/25/2021	$30.68	$0.00	1.54%	88,702,345	$30.67	$30.68	$0.01	0.03%	121,214,724	$3,718,867,732
1/26/2021	$36.87	$0.00	18.38%	63,881,930	$36.81	$36.86	$0.05	0.14%	121,214,724	$4,469,186,874
1/27/2021	$52.89	$0.00	36.08%	89,784,262	$52.94	$52.95	$0.01	0.02%	121,214,724	$6,411,046,752
Average	$26.00	$0.00	6.42%	29,274,852	$25.99	$26.01	$0.01	0.05%	121,214,724	$3,151.4 million
Median	$24.97	$0.00	6.23%	16,623,258	$24.98	$24.99	$0.01	0.05%	121,214,724	$3,026.7 million
High	$52.89	$0.00	36.08%	89,784,262	$52.94	$52.95	$0.05	0.14%	121,214,724	$6,411.0 million
Low	$18.03	$0.00	-11.58%	7,010,945	$18.03	$18.05	$0.01	0.02%	121,214,724	$2,185.5 million

Sources: CRSP & SEC Filings.

Exhibit-3d

EXPR Market Efficiency Statistics

January 4, 2021 through January 27, 2021

Date	Closing Price [a]	Dividend [b]	Log Return [b]	Volume [c]	Closing Bid [d]	Closing Ask [e]	Closing Bid/Ask Spread	Average Bid/Ask Spread %	Outstanding Shares [f]	Market Capitalization [g]
1/4/2021	$0.93	$0.00	2.67%	3,238,164	$0.94	$0.94	$0.00	0.01%	64,947,502	$60,699,935
1/5/2021	$0.96	$0.00	2.98%	2,300,439	$0.97	$0.97	$0.00	0.24%	64,947,502	$62,537,950
1/6/2021	$1.00	$0.00	3.78%	2,407,674	$1.00	$1.01	$0.01	1.00%	64,947,502	$64,947,502
1/7/2021	$1.02	$0.00	1.98%	2,548,946	$1.02	$1.03	$0.01	0.98%	64,947,502	$66,246,452
1/8/2021	$1.04	$0.00	1.94%	2,587,059	$1.03	$1.04	$0.01	0.97%	64,947,502	$67,545,402
1/11/2021	$1.00	$0.00	-4.20%	3,595,967	$1.00	$1.00	$0.00	0.01%	64,947,502	$64,765,649
1/12/2021	$1.05	$0.00	5.16%	3,438,177	$1.04	$1.05	$0.01	0.96%	64,947,502	$68,194,877
1/13/2021	$1.03	$0.00	-1.92%	2,056,567	$1.03	$1.04	$0.01	0.97%	64,947,502	$66,895,927
1/14/2021	$1.28	$0.00	21.73%	50,952,900	$1.27	$1.28	$0.01	0.78%	64,947,502	$83,132,803
1/15/2021	$1.26	$0.00	-1.57%	8,498,349	$1.25	$1.26	$0.01	0.80%	64,947,502	$81,833,853
1/19/2021	$1.21	$0.00	-4.05%	3,768,030	$1.20	$1.21	$0.01	0.83%	64,947,502	$78,586,477
1/20/2021	$1.16	$0.00	-4.22%	3,213,601	$1.16	$1.17	$0.01	0.86%	64,947,502	$75,339,102
1/21/2021	$1.17	$0.00	0.86%	5,279,111	$1.16	$1.17	$0.01	0.86%	64,947,502	$75,988,577
1/22/2021	$1.79	$0.00	42.52%	77,272,988	$1.78	$1.79	$0.01	0.56%	64,947,502	$116,256,029
1/25/2021	$4.15	$0.00	84.09%	358,630,191	$4.15	$4.16	$0.01	0.24%	64,947,502	$269,532,133
1/26/2021	$3.04	$0.00	-31.13%	73,344,309	$3.03	$3.04	$0.01	0.33%	64,947,502	$197,440,406
1/27/2021	$9.55	$0.00	114.47%	287,577,238	$9.55	$9.64	$0.09	0.94%	64,947,502	$620,248,644
Average	$1.92	$0.00	13.83%	52,394,689	$1.92	$1.93	$0.01	0.67%	64,947,502	$124.7 million
Median	$1.16	$0.00	1.98%	3,595,967	$1.16	$1.17	$0.01	0.83%	64,947,502	$75.3 million
High	$9.55	$0.00	114.47%	358,630,191	$9.55	$9.64	$0.09	1.00%	64,947,502	$620.2 million
Low	$0.93	$0.00	-31.13%	2,056,567	$0.94	$0.94	$0.00	0.01%	64,947,502	$60.7 million

Sources: CRSP & SEC Filings.

Exhibit-3e

GME Market Efficiency Statistics

January 4, 2021 through January 27, 2021

Date	Closing Price [a]	Dividend [b]	Log Return [b]	Volume [c]	Closing Bid [d]	Closing Ask [e]	Closing Bid/Ask Spread	Average Bid/Ask Spread %	Outstanding Shares [f]	Market Capitalization [g]
1/4/2021	$17.25	$0.00	-8.82%	10,022,474	$17.24	$17.25	$0.01	0.06%	69,746,960	$1,203,135,060
1/5/2021	$17.37	$0.00	0.69%	4,961,457	$17.37	$17.38	$0.01	0.06%	69,746,960	$1,211,504,695
1/6/2021	$18.36	$0.00	5.54%	6,056,248	$18.38	$18.39	$0.01	0.05%	69,746,960	$1,280,554,186
1/7/2021	$18.08	$0.00	-1.54%	6,129,276	$18.09	$18.12	$0.03	0.17%	69,746,960	$1,261,025,037
1/8/2021	$17.69	$0.00	-2.18%	6,481,960	$17.68	$17.69	$0.01	0.06%	69,746,960	$1,233,823,722
1/11/2021	$19.94	$0.00	11.97%	14,927,612	$19.92	$19.94	$0.02	0.10%	69,746,960	$1,390,754,382
1/12/2021	$19.95	$0.00	0.05%	7,060,665	$19.93	$19.94	$0.01	0.05%	69,746,960	$1,391,451,852
1/13/2021	$31.40	$0.00	45.36%	144,501,736	$31.38	$31.40	$0.02	0.06%	69,746,960	$2,190,054,544
1/14/2021	$39.91	$0.00	23.98%	93,717,410	$39.91	$39.92	$0.01	0.03%	69,746,960	$2,783,601,174
1/15/2021	$35.50	$0.00	-11.71%	46,866,358	$35.49	$35.50	$0.01	0.03%	69,746,960	$2,476,017,080
1/19/2021	$39.36	$0.00	10.32%	74,721,924	$39.51	$39.52	$0.01	0.03%	69,746,960	$2,745,240,346
1/20/2021	$39.12	$0.00	-0.61%	33,471,789	$39.12	$39.13	$0.01	0.03%	69,746,960	$2,728,501,075
1/21/2021	$43.03	$0.00	9.53%	57,079,754	$43.01	$43.03	$0.02	0.05%	69,746,960	$3,001,211,689
1/22/2021	$65.01	$0.00	41.26%	197,157,946	$64.75	$65.00	$0.25	0.39%	69,746,960	$4,534,249,870
1/25/2021	$76.79	$0.00	16.65%	177,874,000	$76.74	$76.78	$0.04	0.05%	69,746,960	$5,355,869,058
1/26/2021	$147.98	$0.00	65.60%	178,587,974	$145.43	$146.00	$0.57	0.39%	69,746,960	$10,321,155,141
1/27/2021	$347.51	$0.00	85.37%	93,396,666	$344.88	$345.01	$0.13	0.04%	69,746,960	$24,237,766,767
Average	$58.49	$0.00	17.15%	67,824,426	$58.17	$58.24	$0.07	0.10%	69,746,960	$4,079.2 million
Median	$35.50	$0.00	9.53%	46,866,358	$35.49	$35.50	$0.01	0.05%	69,746,960	$2,476.0 million
High	$347.51	$0.00	85.37%	197,157,946	$344.88	$345.01	$0.57	0.39%	69,746,960	$24,237.8 million
Low	$17.25	$0.00	-11.71%	4,961,457	$17.24	$17.25	$0.01	0.03%	69,746,960	$1,203.1 million

Sources: CRSP & SEC Filings.

Exhibit-3f

NOK Market Efficiency Statistics

January 4, 2021 through January 27, 2021

Date	Closing Price [a]	Dividend [b]	Log Return [b]	Volume [c]	Closing Bid [d]	Closing Ask [e]	Closing Bid/Ask Spread	Average Bid/Ask Spread %	Outstanding Shares [f]	Market Capitalization [g]
1/4/2021	$3.89	$0.00	-0.51%	30,281,398	$3.88	$3.89	$0.01	0.26%	770,246,104	$2,996,257,345
1/5/2021	$4.04	$0.00	3.78%	38,446,227	$4.03	$4.04	$0.01	0.25%	770,246,104	$3,111,794,260
1/6/2021	$4.04	$0.00	0.00%	37,467,360	$4.04	$4.05	$0.01	0.25%	770,246,104	$3,111,794,260
1/7/2021	$3.99	$0.00	-1.25%	25,317,959	$3.99	$4.00	$0.01	0.25%	770,246,104	$3,073,281,955
1/8/2021	$3.93	$0.00	-1.52%	23,978,662	$3.93	$3.94	$0.01	0.25%	770,246,104	$3,027,067,189
1/11/2021	$3.87	$0.00	-1.54%	37,059,417	$3.87	$3.88	$0.01	0.26%	770,246,104	$2,980,852,422
1/12/2021	$4.01	$0.00	3.55%	26,064,982	$4.01	$4.02	$0.01	0.25%	770,246,104	$3,088,686,877
1/13/2021	$3.98	$0.00	-0.75%	33,763,393	$3.97	$3.98	$0.01	0.25%	770,246,104	$3,065,579,494
1/14/2021	$4.09	$0.00	2.73%	93,198,577	$4.08	$4.09	$0.01	0.24%	770,246,104	$3,150,306,565
1/15/2021	$4.08	$0.00	-0.24%	36,639,348	$4.09	$4.10	$0.01	0.24%	770,246,104	$3,142,604,104
1/19/2021	$4.13	$0.00	1.22%	40,539,361	$4.12	$4.13	$0.01	0.24%	770,246,104	$3,181,116,410
1/20/2021	$4.20	$0.00	1.68%	43,924,067	$4.20	$4.21	$0.01	0.24%	770,246,104	$3,235,033,637
1/21/2021	$4.22	$0.00	0.48%	22,054,873	$4.22	$4.23	$0.01	0.24%	770,246,104	$3,250,438,559
1/22/2021	$4.20	$0.00	-0.48%	29,126,724	$4.19	$4.20	$0.01	0.24%	770,246,104	$3,235,033,637
1/25/2021	$4.85	$0.00	14.39%	296,379,275	$4.84	$4.85	$0.01	0.21%	770,246,104	$3,735,693,604
1/26/2021	$4.73	$0.00	-2.51%	379,387,253	$4.72	$4.73	$0.01	0.21%	770,246,104	$3,643,264,072
1/27/2021	$6.55	$0.00	32.55%	1,144,059,000	$6.61	$6.63	$0.02	0.30%	770,246,104	$5,045,111,981
Average	$4.28	$0.00	3.03%	137,511,052	$4.28	$4.29	$0.01	0.25%	770,246,104	$3,298.5 million
Median	$4.08	$0.00	0.00%	37,059,417	$4.08	$4.09	$0.01	0.25%	770,246,104	$3,142.6 million
High	$6.55	$0.00	32.55%	1,144,059,000	$6.61	$6.63	$0.02	0.30%	770,246,104	$5,045.1 million
Low	$3.87	$0.00	-2.51%	22,054,873	$3.87	$3.88	$0.01	0.21%	770,246,104	$2,980.9 million

Sources: CRSP & SEC Filings.

Exhibit-3g

TRVG Market Efficiency Statistics

January 4, 2021 through January 27, 2021

Date	Closing Price [a]	Dividend [b]	Log Return [b]	Volume [c]	Closing Bid [d]	Closing Ask [e]	Closing Bid/Ask Spread	Average Bid/Ask Spread %	Outstanding Shares [f]	Market Capitalization [g]
1/4/2021	$2.27	$0.00	-6.40%	1,575,836	$2.26	$2.27	$0.01	0.44%	55,967,976	$127,047,306
1/5/2021	$2.29	$0.00	0.88%	799,447	$2.28	$2.29	$0.01	0.44%	55,967,976	$128,166,665
1/6/2021	$2.20	$0.00	-4.01%	927,331	$2.21	$2.22	$0.01	0.45%	55,967,976	$123,129,547
1/7/2021	$2.24	$0.00	1.80%	628,257	$2.24	$2.26	$0.02	0.89%	55,967,976	$125,368,266
1/8/2021	$2.35	$0.00	4.79%	1,048,039	$2.34	$2.35	$0.01	0.43%	55,967,976	$131,524,744
1/11/2021	$2.32	$0.00	-1.28%	808,612	$2.30	$2.31	$0.01	0.43%	55,967,976	$129,845,704
1/12/2021	$2.30	$0.00	-0.87%	459,663	$2.30	$2.31	$0.01	0.43%	55,967,976	$128,726,345
1/13/2021	$2.26	$0.00	-1.75%	987,595	$2.24	$2.25	$0.01	0.45%	55,967,976	$126,487,626
1/14/2021	$2.23	$0.00	-1.34%	589,697	$2.23	$2.24	$0.01	0.45%	55,967,976	$124,808,586
1/15/2021	$2.16	$0.00	-3.19%	1,001,722	$2.16	$2.17	$0.01	0.46%	55,967,976	$120,890,828
1/19/2021	$2.15	$0.00	-0.46%	1,219,669	$2.14	$2.18	$0.04	1.85%	55,967,976	$120,331,148
1/20/2021	$2.11	$0.00	-1.88%	1,094,513	$2.11	$2.13	$0.02	0.94%	55,967,976	$118,092,429
1/21/2021	$2.18	$0.00	3.26%	689,571	$2.17	$2.18	$0.01	0.46%	55,967,976	$122,010,188
1/22/2021	$2.19	$0.00	0.46%	776,106	$2.18	$2.19	$0.01	0.46%	55,967,976	$122,569,867
1/25/2021	$2.18	$0.00	-0.46%	1,178,420	$2.18	$2.19	$0.01	0.46%	55,967,976	$122,010,188
1/26/2021	$2.10	$0.00	-3.74%	1,305,030	$2.10	$2.11	$0.01	0.48%	55,967,976	$117,532,750
1/27/2021	$3.19	$0.00	41.81%	43,930,881	$3.17	$3.19	$0.02	0.63%	55,967,976	$178,537,843
Average	$2.28	$0.00	1.63%	3,471,788	$2.27	$2.28	$0.01	0.60%	55,967,976	$127.5 million
Median	$2.23	$0.00	-0.87%	987,595	$2.23	$2.24	$0.01	0.46%	55,967,976	$124.8 million
High	$3.19	$0.00	41.81%	43,930,881	$3.17	$3.19	$0.04	1.85%	55,967,976	$178.5 million
Low	$2.10	$0.00	-6.40%	459,663	$2.10	$2.11	$0.01	0.43%	55,967,976	$117.5 million

Sources: CRSP & SEC Filings.

Exhibit-4a

AMC News Dates

January 21, 2021 through January 27, 2021

Date	News Identified in Fischel Report?	News Identified in Grenadier Report?	News Days?
1/21/2021	-	-	-
1/22/2021	Yes	Yes	Yes
1/25/2021	Yes	Yes	Yes
1/26/2021	Yes	Yes	Yes
1/27/2021	Yes	Yes	Yes

Sources: Fischel Report, Appendix D and Grenadier Report, Appendix E.

Exhibit-4b

BB News Dates

January 21, 2021 through January 27, 2021

Date	News Identified in Fischel Report?	News Identified in Grenadier Report?	News Days?
1/21/2021	-	-	-
1/22/2021	-	Yes	Yes
1/25/2021	Yes	-	Yes
1/26/2021	Yes	Yes	Yes
1/27/2021	-	-	-

Sources: Fischel Report, Appendix D and Grenadier Report, Appendix E.

Exhibit-4c

BBBY News Dates

January 21, 2021 through January 27, 2021

Date	News Identified in Fischel Report?	News Identified in Grenadier Report?	News Days?
1/21/2021	-	Yes	Yes
1/22/2021	-	-	-
1/25/2021	-	Yes	Yes
1/26/2021	Yes	-	Yes
1/27/2021	Yes	Yes	Yes

Sources: Fischel Report, Appendix D and Grenadier Report, Appendix E.

Exhibit-4d

EXPR News Dates

January 21, 2021 through January 27, 2021

Date	News Identified in Fischel Report?	News Identified in Grenadier Report?	News Days?
1/21/2021	-	-	-
1/22/2021	-	-	-
1/25/2021	-	-	-
1/26/2021	Yes	-	Yes
1/27/2021	-	-	-

Sources: Fischel Report, Appendix D and Grenadier Report, Appendix E.

Exhibit-4e

GME News Dates

January 21, 2021 through January 27, 2021

Date	News Identified in Fischel Report?	News Identified in Grenadier Report?	News Days?
1/21/2021	-	-	-
1/22/2021	Yes	-	Yes
1/25/2021	-	-	-
1/26/2021	Yes	-	Yes
1/27/2021	Yes	-	Yes

Sources: Fischel Report, Appendix D and Grenadier Report, Appendix E.

Exhibit-4f

NOK News Dates

January 21, 2021 through January 27, 2021

Date	News Identified in Fischel Report?	News Identified in Grenadier Report?	News Days?
1/21/2021	-	Yes	Yes
1/22/2021	-	-	-
1/25/2021	Yes	Yes	Yes
1/26/2021	Yes	Yes	Yes
1/27/2021	Yes	Yes	Yes

Sources: Fischel Report, Appendix D and Grenadier Report, Appendix E.

Exhibit-4g

TRVG News Dates

January 21, 2021 through January 27, 2021

Date	News Identified in Fischel Report?	News Identified in Grenadier Report?	News Days?
1/21/2021	-	-	-
1/22/2021	-	Yes	Yes
1/25/2021	-	-	-
1/26/2021	-	-	-
1/27/2021	-	-	-

Sources: Fischel Report, Appendix D and Grenadier Report, Appendix E.

Exhibit-5a

AMC Analyst Recommendations

December 2020 and January 2021

Date	Analyst Firm	Price Target	Price Target Horizon	Current Market Price
12/5/2020	CFRA	$2.50	12 Months	$3.51
12/12/2020	CFRA	$2.50	12 Months	$3.92
12/19/2020	CFRA	$2.50	12 Months	$2.80
12/26/2020	CFRA	$2.50	12 Months	$2.51
1/2/2021	CFRA	$2.50	12 Months	$2.12
1/9/2021	CFRA	$2.50	12 Months	$2.14
1/16/2021	CFRA	$2.50	12 Months	$2.33
1/23/2021	CFRA	$2.50	12 Months	$3.51
1/26/2021	Loop Capital Markets	$1.00	12 Months	$4.42
1/26/2021	Credit Suisse	$1.55	12 Months	$4.42
1/26/2021	Barrington Research	NA	NA	$4.42
1/30/2021	CFRA	$2.50	12 Months	$13.26

Sources: Analyst Reports produced by Mr. Fischel and Dr. Grenadier

Exhibit-5b

BB Analyst Recommendations

December 2020 and January 2021

Date	Analyst Firm	Price Target	Price Target Horizon	Current Market Price
12/1/2020	CIBC	$8.00	12-18 Months	$7.00
12/1/2020	Raymond James	NA	NA	$7.00
12/1/2020	RBC Capital Markets	$5.00	12 Months	$8.46
12/1/2020	TD Securities	$5.50	12 Months	$5.87
12/2/2020	Scotiabank	$5.00	12 Months	$7.00
12/2/2020	Scotiabank	$5.00	12 Months	$7.00
12/5/2020	CFRA	$5.00	12 Months	$8.52
12/12/2020	CFRA	$5.00	12 Months	$8.16
12/14/2020	Raymond James	$7.50	NA	$8.17
12/14/2020	TD Securities	$5.50	12 Months	$8.16
12/15/2020	RBC Capital Markets	$7.50	12 Months	$8.25
12/17/2020	Canaccord Genuity	$8.00	NA	$8.26
12/18/2020	CFRA	$8.00	12 Months	$8.26
12/18/2020	CFRA	$8.00	12 Months	$7.05
12/18/2020	CIBC	$9.00	12-18 Months	$8.26
12/18/2020	Raymond James	$8.00	NA	$8.26
12/18/2020	RBC Capital Markets	$7.50	12 Months	$8.26
12/18/2020	Scotiabank	$8.50	12 Months	$8.26
12/18/2020	TD Securities	$8.50	12 Months	$8.26
12/24/2020	CFRA	$8.00	12 Months	$7.09
12/26/2020	CFRA	$8.00	12 Months	$7.06
1/2/2021	CFRA	$8.00	12 Months	$6.63
1/9/2021	CFRA	$8.00	12 Months	$7.56
1/15/2021	TD Securities	$8.50	12 Months	$9.11
1/16/2021	CFRA	$8.00	12 Months	$9.84
1/23/2021	CFRA	$8.00	12 Months	$14.04
1/25/2021	RBC Capital Markets	$7.50	12 Months	$18.03
1/27/2021	Scotiabank	$8.50	12 Months	$18.92
1/30/2021	CFRA	$8.00	12 Months	$14.10

Sources: Analyst Reports produced by Mr. Fischel and Dr. Grenadier

Exhibit-5c

BBBY Analyst Recommendations

December 2020 and January 2021

Date	Analyst Firm	Price Target	Price Target Horizon	Current Market Price
12/5/2020	CFRA	$8.00	12 Months	$19.70
12/12/2020	CFRA	$8.00	12 Months	$19.17
12/14/2020	Bank of America	$31.00	12 Months	$19.17
12/14/2020	Raymond James	NA	NA	$18.74
12/14/2020	Telsey Advisory Group	$28.00	12 Months	$19.17
12/14/2020	UBS	$22.00	12 Months	$19.17
12/14/2020	Wedbush	$27.00	12 Months	$19.17
12/15/2020	Guggenheim	NA	NA	$19.53
12/15/2020	Telsey Advisory Group	$28.00	12 Months	$19.17
12/19/2020	CFRA	$8.00	12 Months	$18.72
12/21/2020	UBS	$22.00	12 Months	$19.26
12/26/2020	CFRA	$8.00	12 Months	$18.60
1/2/2021	CFRA	$8.00	12 Months	$17.76
1/4/2021	Wedbush	$27.00	12 Months	$17.76
1/5/2021	JPMorgan	$21.00	12 Months	$18.03
1/6/2021	Wells Fargo	$18.00	12 Months	$19.76
1/7/2021	CFRA	$13.00	12 Months	$21.03
1/7/2021	CFRA	$13.00	12 Months	$18.07
1/7/2021	Guggenheim	NA	NA	$18.73
1/7/2021	Jefferies	$20.00	12 Months	$21.03
1/7/2021	JPMorgan	$23.00	12 Months	$18.73
1/7/2021	Loop Capital Markets	$18.00	12 Months	$18.73
1/7/2021	Raymond James	$26.00	NA	$18.73
1/7/2021	Raymond James	NA	NA	$18.75
1/7/2021	Telsey Advisory Group	$27.00	12 Months	$18.73
1/7/2021	UBS	$22.00	12 Months	$21.03
1/7/2021	UBS	$20.00	12 Months	$18.73
1/7/2021	Wells Fargo	$18.00	12 Months	$18.72
1/8/2021	Bank of America	$31.00	12 Months	$19.12
1/8/2021	Wedbush	$27.00	12 Months	$18.73
1/11/2021	Argus	NA	NA	$18.94
1/11/2021	CFRA	$13.00	12 Months	$18.94
1/11/2021	Wells Fargo	$18.00	12 Months	$20.49
1/16/2021	CFRA	$13.00	12 Months	$25.60
1/21/2021	Jefferies	$24.00	12 Months	$24.97
1/23/2021	CFRA	$13.00	12 Months	$30.21

Exhibit-5c

BBBY Analyst Recommendations

December 2020 and January 2021

Date	Analyst Firm	Price Target	Price Target Horizon	Current Market Price
1/25/2021	Loop Capital Markets	$30.00	12 Months	$30.21
1/25/2021	UBS	$20.00	12 Months	$20.68
1/26/2021	Raymond James	NA	NA	$30.68
1/27/2021	Wedbush	$33.00	12 Months	$36.87
1/28/2021	Bank of America	$55.00	12 Months	$52.89
1/28/2021	Telsey Advisory Group	$40.00	12 Months	$52.89
1/30/2021	CFRA	$13.00	12 Months	$35.33

Sources: Analyst Reports produced by Mr. Fischel and Dr. Grenadier

Exhibit-5d

EXPR Analyst Recommendations

December 2020 and January 2021

Date	Analyst Firm	Price Target	Price Target Horizon	Current Market Price
12/3/2020	CL King	NA	NA	$1.24
12/3/2020	CL King	NA	NA	$1.68
12/3/2020	MKM Partners	$1.50	12 Months	$1.58
12/4/2020	MKM Partners	$1.25	12 Months	$1.17
12/4/2020	Wedbush	$1.50	12 Months	$1.17
1/14/2021	CL King	NA	NA	$1.03
1/25/2021	Wedbush	$1.50	12 Months	$3.67

Sources: Analyst Reports produced by Mr. Fischel and Dr. Grenadier

Exhibit-5e

GME Analyst Recommendations

December 2020 and January 2021

Date	Analyst Firm	Price Target	Price Target Horizon	Current Market Price
12/2/2020	Telsey Advisory Group	$19.00	12 Months	$15.80
12/2/2020	Telsey Advisory Group	$19.00	12 Months	$15.80
12/4/2020	Wedbush	$16.00	12 Months	$16.12
12/5/2020	CFRA	$3.00	12 Months	$16.90
12/8/2020	Jefferies	$15.00	12 Months	$16.94
12/9/2020	Benchmark	$5.00	6-12 Months	$16.94
12/9/2020	Bank of America	$1.60	12 Months	$16.94
12/9/2020	CFRA	$5.00	12 Months	$14.02
12/9/2020	CFRA	$5.00	12 Months	$16.35
12/9/2020	Credit Suisse	$3.50	12 Months	$16.94
12/9/2020	Loop Capital Markets	$10.00	12 Months	$13.66
12/9/2020	Telsey Advisory Group	$18.00	12 Months	$16.94
12/9/2020	Wedbush	$16.00	12 Months	$16.94
12/10/2020	Bank of America	$1.60	12 Months	$14.12
12/10/2020	CFRA	$5.00	12 Months	$13.66
12/12/2020	CFRA	$5.00	12 Months	$13.31
12/14/2020	Ascendiant	$12.00	12 Months	$13.31
12/14/2020	Benchmark	$5.00	6-12 Months	$13.31
12/19/2020	CFRA	$5.00	12 Months	$15.63
12/26/2020	CFRA	$5.00	12 Months	$20.15
1/2/2021	CFRA	$5.00	12 Months	$18.84
1/9/2021	CFRA	$5.00	12 Months	$17.69
1/11/2021	Benchmark	$5.00	6-12 Months	$17.69
1/11/2021	Credit Suisse	$3.50	12 Months	$17.69
1/11/2021	Jefferies	$15.00	12 Months	$17.69
1/11/2021	Loop Capital Markets	Dropping Coverage	12 Months	$19.94
1/11/2021	Wedbush	$16.00	12 Months	$19.60
1/12/2021	Telsey Advisory Group	$22.00	12 Months	$19.94
1/13/2021	Bank of America	$1.60	12 Months	$19.95
1/14/2021	Bank of America	$1.60	12 Months	$39.91
1/15/2021	CFRA	$9.00	12 Months	$39.91
1/15/2021	CFRA	$9.00	12 Months	$36.51
1/16/2021	CFRA	$9.00	12 Months	$35.50
1/23/2021	CFRA	$9.00	12 Months	$65.01
1/25/2021	Telsey Advisory Group	$33.00	12 Months	$65.01
1/25/2021	Telsey Advisory Group	$33.00	12 Months	$65.01

Exhibit-5e

GME Analyst Recommendations

December 2020 and January 2021

1/27/2021	Bank of America	$10.00	12 Months	$147.98
1/30/2021	CFRA	$9.00	12 Months	$325.00

Sources: Analyst Reports produced by Mr. Fischel and Dr. Grenadier

Exhibit-5f

NOK Analyst Recommendations

December 2020 and January 2021

Date	Analyst Firm	Price Target	Price Target Horizon	Current Market Price
12/5/2020	CFRA	$4.00	12 Months	$4.03
12/9/2020	Raymond James	NA	NA	$4.21
12/12/2020	CFRA	$4.00	12 Months	$4.06
12/14/2020	Credit Suisse	€2.95	12 Months	€3.30
12/16/2020	ABG Sundal Collier	€4.00	6 Months	€3.30
12/16/2020	ABG Sundal Collier	€4.00	6 Months	€3.30
12/16/2020	Barclays	€2.90	12 Months	€3.33
12/16/2020	Credit Suisse	€2.95	12 Months	€3.33
12/16/2020	JPMorgan	€3.80	12 Months	€3.33
12/16/2020	Kepler Cheuvreux	€3.80	12 Months	€3.33
12/16/2020	Morgan Stanley	€3.65	12-18 Months	€3.33
12/16/2020	Raymond James	NA	NA	$4.01
12/16/2020	SEB	€3.50	6-12 Months	€3.27
12/16/2020	UBS	€4.10	12 Months	€3.33
12/17/2020	Cowen	$4.00	12 Months	$3.99
12/17/2020	Credit Suisse	€2.95	12 Months	€3.27
12/17/2020	Kepler Cheuvreux	€3.80	12 Months	€3.27
12/17/2020	Northland	$5.00	12 Months	$3.99
12/17/2020	Societe Generale	€3.90	12 Months	€3.33
12/19/2020	CFRA	$4.00	12 Months	$4.00
12/26/2020	CFRA	$4.00	12 Months	$3.89
1/2/2021	CFRA	$4.00	12 Months	$3.91
1/5/2021	Bank of America	$4.29	12 Months	$3.89
1/6/2021	Credit Suisse	€2.95	12 Months	€3.16
1/9/2021	CFRA	$4.00	12 Months	$3.93
1/15/2021	Kepler Cheuvreux	€3.80	12 Months	€3.38
1/16/2021	CFRA	$4.00	12 Months	$4.08
1/18/2021	DNB Markets	€4.00	12 Months	€3.35
1/23/2021	CFRA	$4.00	12 Months	$4.20
1/25/2021	SEB	€3.80	6-12 Months	€3.39
1/28/2021	DNB Markets	€4.00	12 Months	€5.50
1/28/2021	ABG Sundal Collier	€4.00	6 Months	€4.40
1/30/2021	CFRA	$4.00	12 Months	$4.56

Sources: Analyst Reports produced by Mr. Fischel and Dr. Grenadier

Exhibit-5g

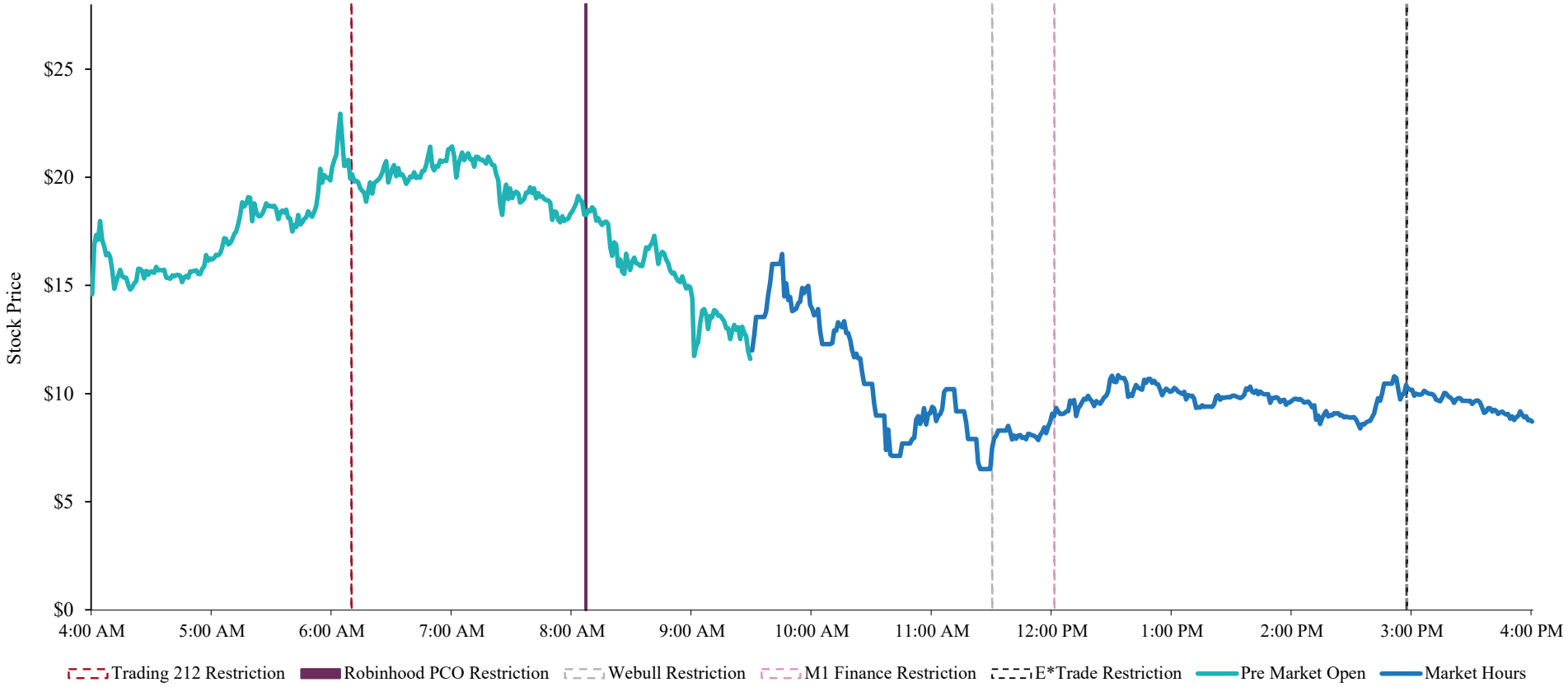
TRVG Analyst Recommendations

December 2020 and January 2021

Date	Analyst Firm	Price Target	Price Target Horizon	Current Market Price
1/21/2021	Truist	$2.00	12-18 Months	$2.18

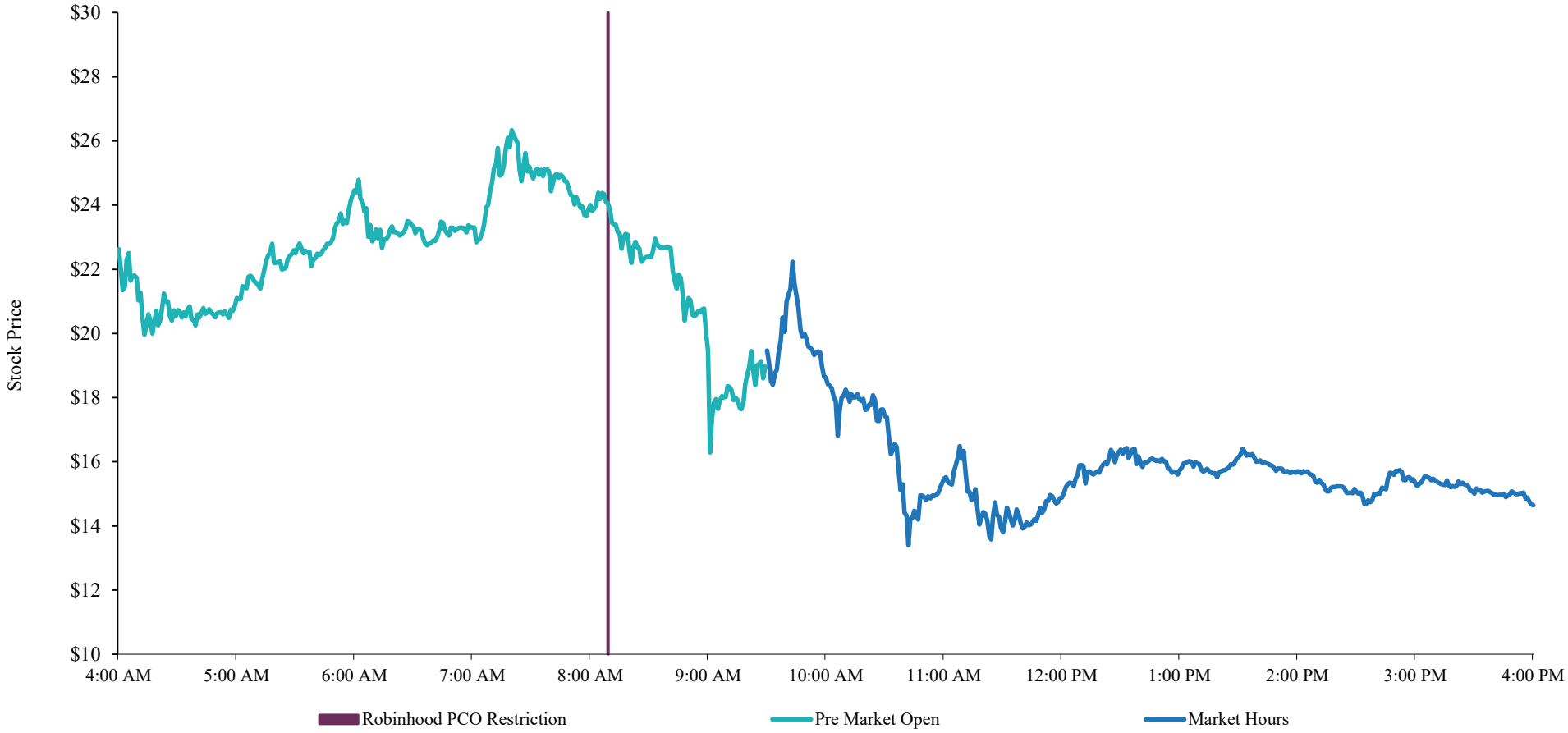
Sources: Analyst Reports produced by Mr. Fischel and Dr. Grenadier

Exhibit-6a
AMC Stock Price
Annotated with PCO Equity Restrictions
January 28, 2021 4:00 AM - January 28, 2021 4:00 PM



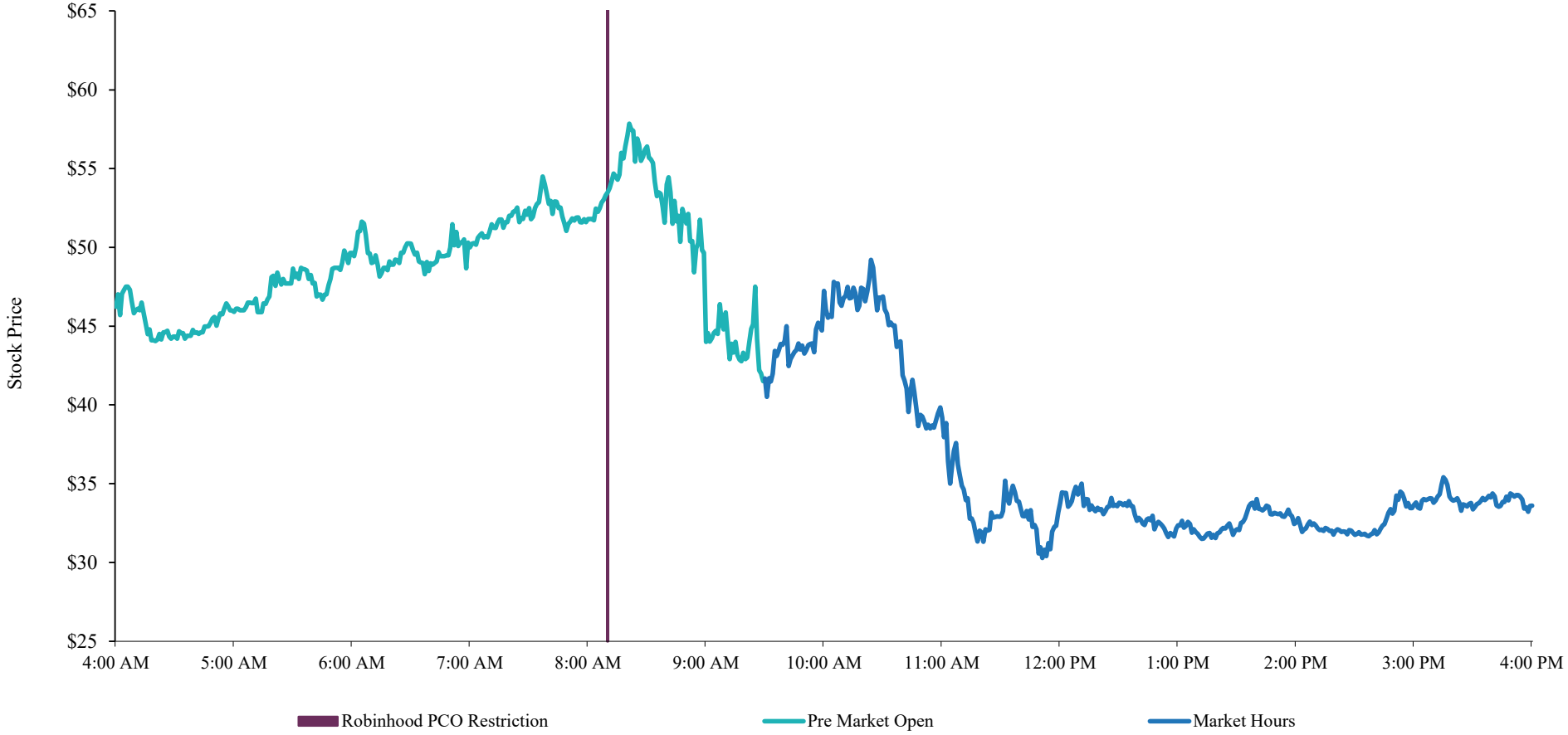
Sources: Tick Data; RHMDL00047970; "GameStop & AMC Entertainment In Reduce-Only Mode," Trading 212, January 28, 2021, at https://community.trading212.com/t/gamestop-amc-entertainment-in-reduce-only-mode/41464; HFSC Report, p.79; M1 Finance Official Twitter, January 28, 2021, at https://twitter.com/M1Finance/status/1354837064072753152; HFSC Report, p.94; "E*Trade Restricts Purchases of Gamestop, AMC Shares," Bloomberg News, January 28, 2021, at https://www.bloomberg.com/news/articles/2021-01-28/e-trade-restricts-purchases-of-gamestop-amc-shares.
Notes: PCO equity restrictions announced related to Trading212 and E* Trade were only for AMC and GME. PCO equity restrictions announced related to Webull and M1 Finance were only for AMC, GME, and KOSS. The restrictions announced by Webull and M1 finance were implemented at the instruction of Apex Finance. I understand that Ally Financial and SoFi also received instruction from APEX to restrict AMC, GME, and KOSS, but have seen no public announcement or news coverage of these restrictions until after trading hours on January 28, 2021. Additionally, I note there is evidence that Interactive Brokers implemented PCO equity restrictions for BB, NOK, EXPR, KOSS, AMC, BBBY, and GME on January 28, 2021, but I have seen no public announcement or news coverage of these restrictions, and therefore they could not be reflected in the stock prices of the At-Issue Securities. *See* HFSC Report, at footnote 478 and 479.

Exhibit-6b
BB Stock Price
Annotated with PCO Equity Restriction
January 28, 2021 4:00 AM - January 28, 2021 4:00 PM



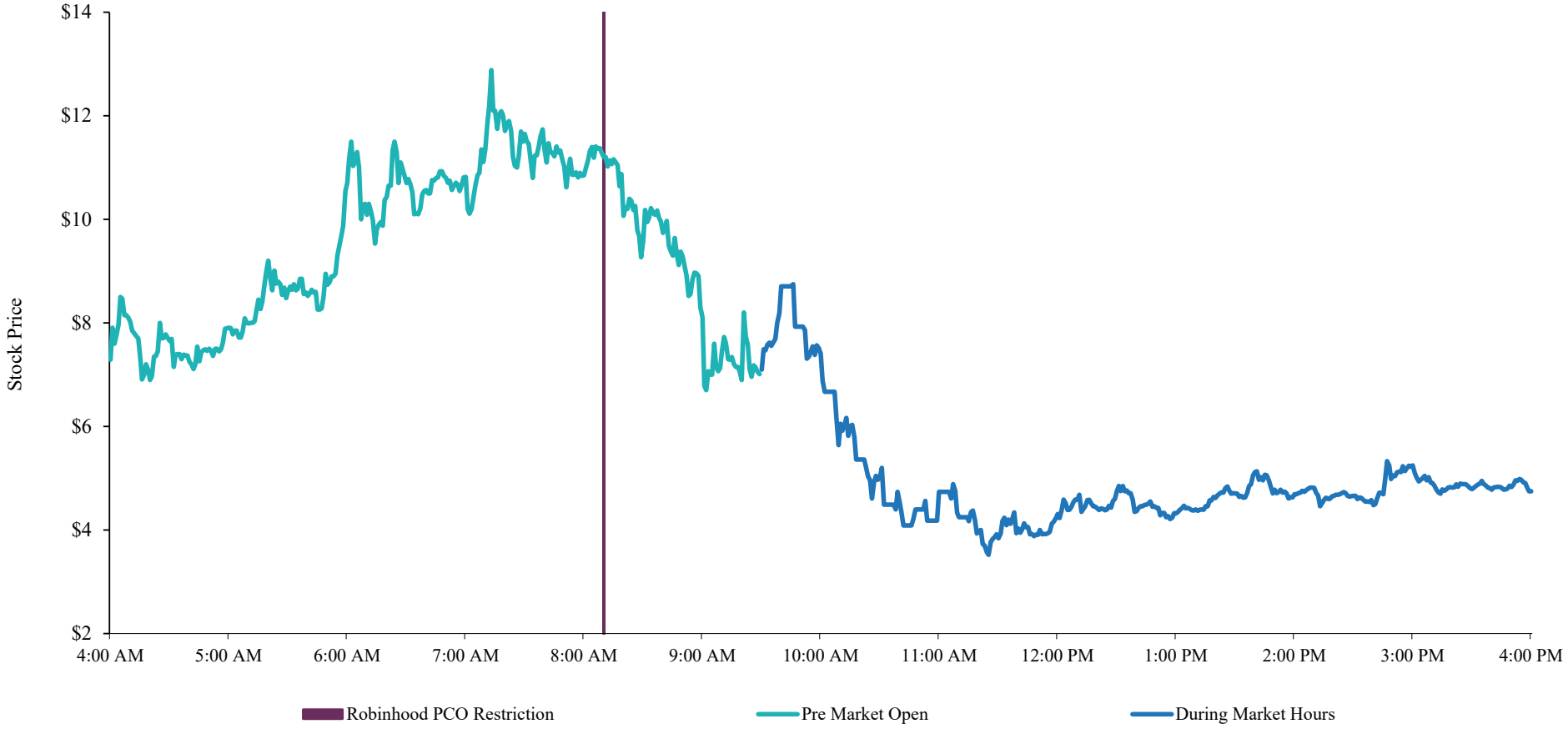
Sources: Tick Data and RHMDL00047970.
Notes: PCO equity restrictions announced related to Trading212 and E* Trade were only for AMC and GME. PCO equity restrictions announced related to Webull and M1 Finance were only for AMC, GME, and KOSS. The restrictions announced by Webull and M1 finance were implemented at the instruction of Apex Finance. I understand that Ally Financial and SoFi also received instruction from APEX to restrict AMC, GME, and KOSS, but have seen no public announcement or news coverage of these restrictions until after trading hours on January 28, 2021. Additionally, I note there is evidence that Interactive Brokers implemented PCO equity restrictions for BB, NOK, EXPR, KOSS, AMC, BBBY, and GME on January 28, 2021, but I have seen no public announcement or news coverage of these restrictions, and therefore they could not be reflected in the stock prices of the At-Issue Securities. *See* HFSC Report, at footnote 478 and 479.

Exhibit-6c
BBBY Stock Price
Annotated with PCO Equity Restriction
January 28, 2021 4:00 AM - January 28, 2021 4:00 PM



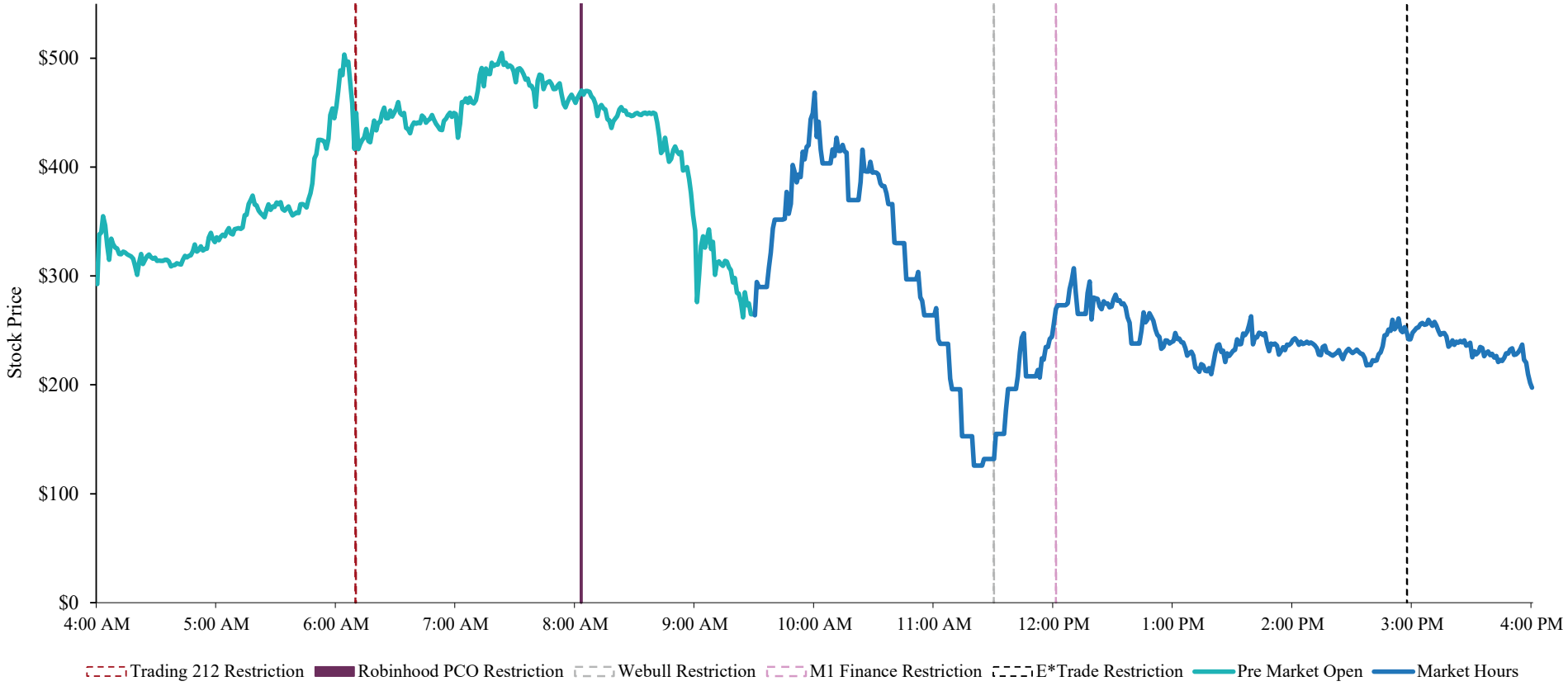
Sources: Tick Data and RHMDL00047970.
Notes: PCO equity restrictions announced related to Trading212 and E* Trade were only for AMC and GME. PCO equity restrictions announced related to Webull and M1 Finance were only for AMC, GME, and KOSS. The restrictions announced by Webull and M1 finance were implemented at the instruction of Apex Finance. I understand that Ally Financial and SoFi also received instruction from APEX to restrict AMC, GME, and KOSS, but have seen no public announcement or news coverage of these restrictions until after trading hours on January 28, 2021. Additionally, I note there is evidence that Interactive Brokers implemented PCO equity restrictions for BB, NOK, EXPR, KOSS, AMC, BBBY, and GME on January 28, 2021, but I have seen no public announcement or news coverage of these restrictions, and therefore they could not be reflected in the stock prices of the At-Issue Securities. *See* HFSC Report, at footnote 478 and 479.

Exhibit-6d
EXPR Stock Price
Annotated with PCO Equity Restriction
January 28, 2021 4:00 AM - January 28, 2021 4:00 PM



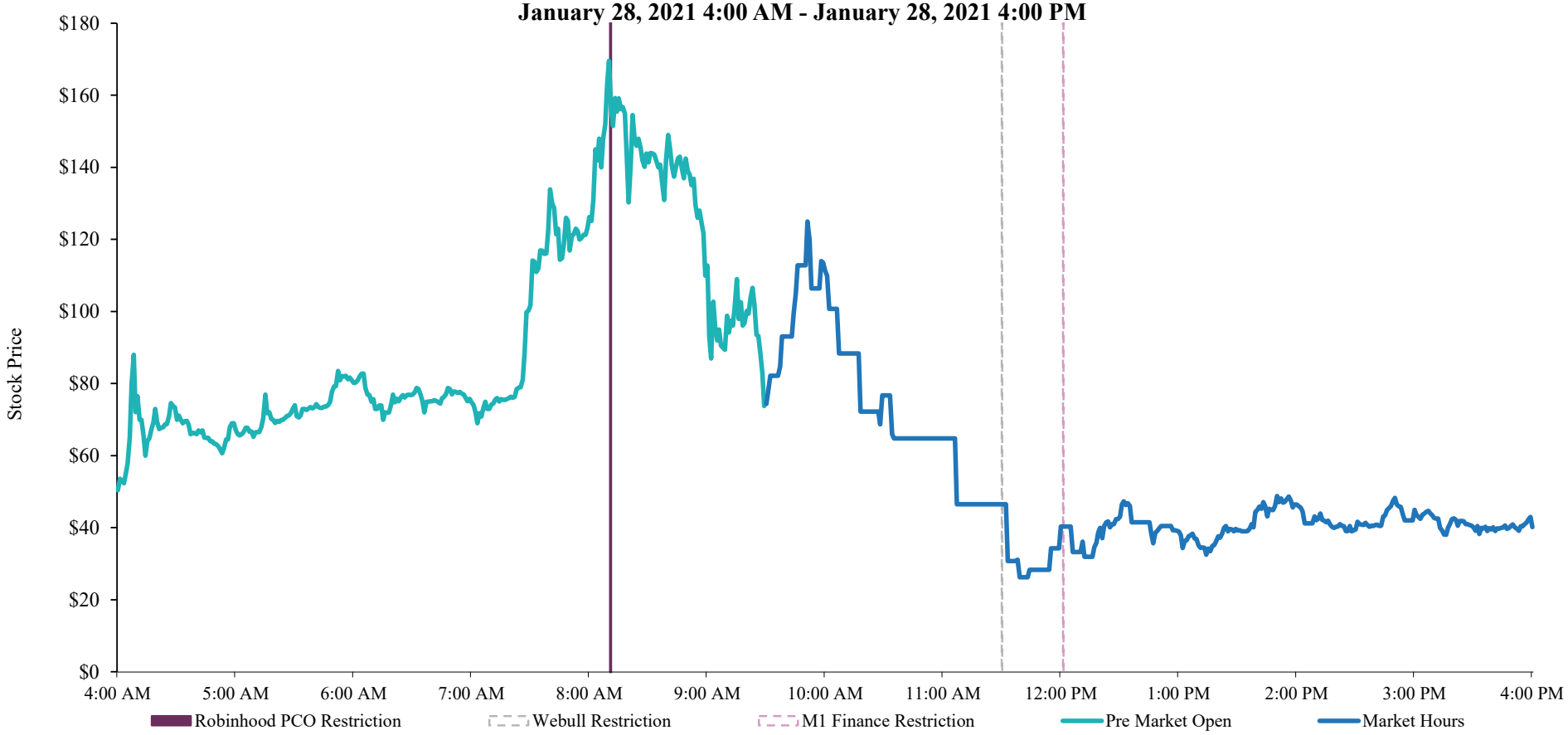
Sources: Tick Data and RHMDL00047970.
Notes: PCO equity restrictions announced related to Trading212 and E* Trade were only for AMC and GME. PCO equity restrictions announced related to Webull and M1 Finance were only for AMC, GME, and KOSS. The restrictions announced by Webull and M1 finance were implemented at the instruction of Apex Finance. I understand that Ally Financial and SoFi also received instruction from APEX to restrict AMC, GME, and KOSS, but have seen no public announcement or news coverage of these restrictions until after trading hours on January 28, 2021. Additionally, I note there is evidence that Interactive Brokers implemented PCO equity restrictions for BB, NOK, EXPR, KOSS, AMC, BBBY, and GME on January 28, 2021, but I have seen no public announcement or news coverage of these restrictions, and therefore they could not be reflected in the stock prices of the At-Issue Securities. *See* HFSC Report, at footnote 478 and 479.

Exhibit-6e
GME Stock Price
Annotated with PCO Equity Restrictions
January 28, 2021 4:00 AM - January 28, 2021 4:00 PM



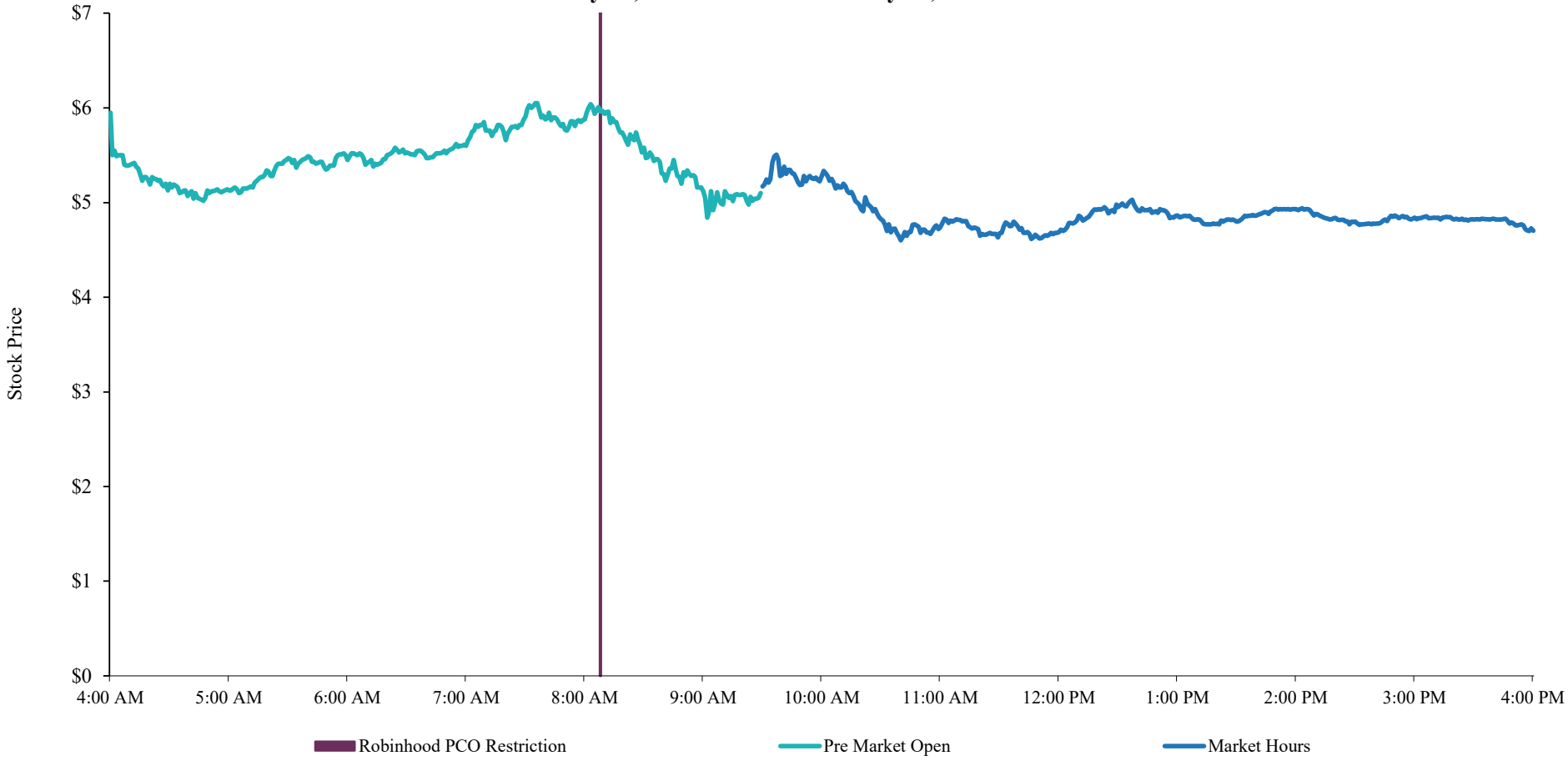
Sources: : Tick Data; RHMDL00047970; "GameStop & AMC Entertainment In Reduce-Only Mode," Trading 212, January 28, 2021, at https://community.trading212.com/t/gamestop-amc-entertainment-in-reduce-only-mode/41464; HFSC Report, p.79; M1 Finance Official Twitter, January 28, 2021, at https://twitter.com/M1Finance/status/1354837064072753152; HFSC Report, p.94; "E*Trade Restricts Purchases of Gamestop, AMC Shares," Bloomberg News, January 28, 2021, at https://www.bloomberg.com/news/articles/2021-01-28/e-trade-restricts-purchases-of-gamestop-amc-shares.
Notes: PCO equity restrictions announced related to Trading212 and E* Trade were only for AMC and GME. PCO equity restrictions announced related to Webull and M1 Finance were only for AMC, GME, and KOSS. The restrictions announced by Webull and M1 finance were implemented at the instruction of Apex Finance. I understand that Ally Financial and SoFi also received instruction from APEX to restrict AMC, GME, and KOSS, but have seen no public announcement or news coverage of these restrictions until after trading hours on January 28, 2021. Additionally, I note there is evidence that Interactive Brokers implemented PCO equity restrictions for BB, NOK, EXPR, KOSS, AMC, BBBY, and GME on January 28, 2021, but I have seen no public announcement or news coverage of these restrictions, and therefore they could not be reflected in the stock prices of the At-Issue Securities. *See* HFSC Report, at footnote 478 and 479.

Exhibit-6f
KOSS Stock Price
Annotated with PCO Equity Restrictions
January 28, 2021 4:00 AM - January 28, 2021 4:00 PM



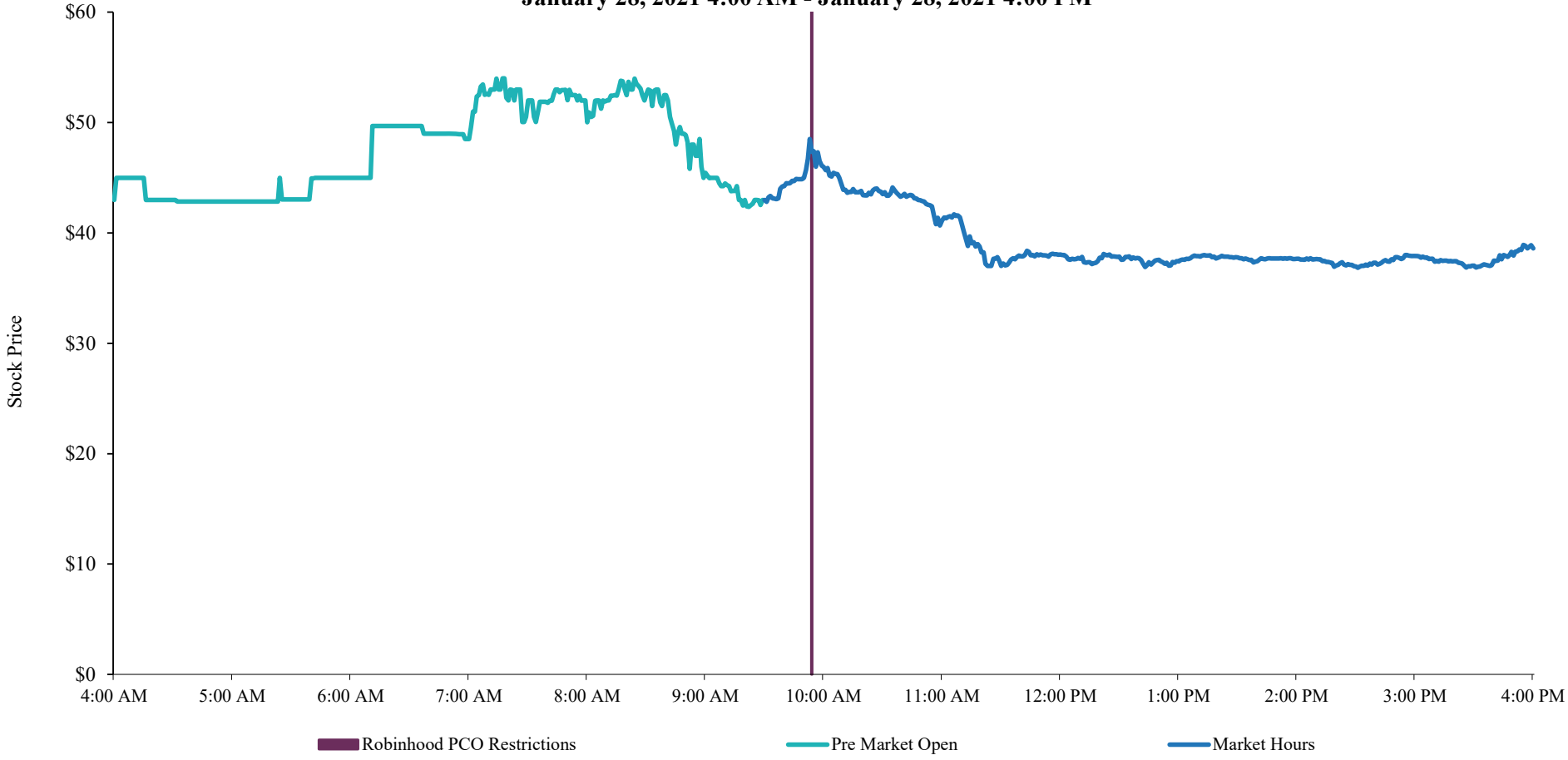
Sources: : Tick Data; RHMDL00047970; "GameStop & AMC Entertainment In Reduce-Only Mode," Trading 212, January 28, 2021, at https://community.trading212.com/t/gamestop-amc-entertainment-in-reduce-only-mode/41464; HFSC Report, p.79; M1 Finance Official Twitter, January 28, 2021, at https://twitter.com/M1Finance/status/1354837064072753152; HFSC Report, p.94; "E*Trade Restricts Purchases of Gamestop, AMC Shares," Bloomberg News, January 28, 2021, at https://www.bloomberg.com/news/articles/2021-01-28/e-trade-restricts-purchases-of-gamestop-amc-shares.
Notes: PCO equity restrictions announced related to Trading212 and E* Trade were only for AMC and GME. PCO equity restrictions announced related to Webull and M1 Finance were only for AMC, GME, and KOSS. The restrictions announced by Webull and M1 finance were implemented at the instruction of Apex Finance. I understand that Ally Financial and SoFi also received instruction from APEX to restrict AMC, GME, and KOSS, but have seen no public announcement or news coverage of these restrictions until after trading hours on January 28, 2021. Additionally, I note there is evidence that Interactive Brokers implemented PCO equity restrictions for BB, NOK, EXPR, KOSS, AMC, BBBY, and GME on January 28, 2021, but I have seen no public announcement or news coverage of these restrictions, and therefore they could not be reflected in the stock prices of the At-Issue Securities. *See* HFSC Report, at footnote 478 and 479.

Exhibit-6g
NOK Stock Price
Annotated with PCO Equity Restriction
January 28, 2021 4:00 AM - January 28, 2021 4:00 PM



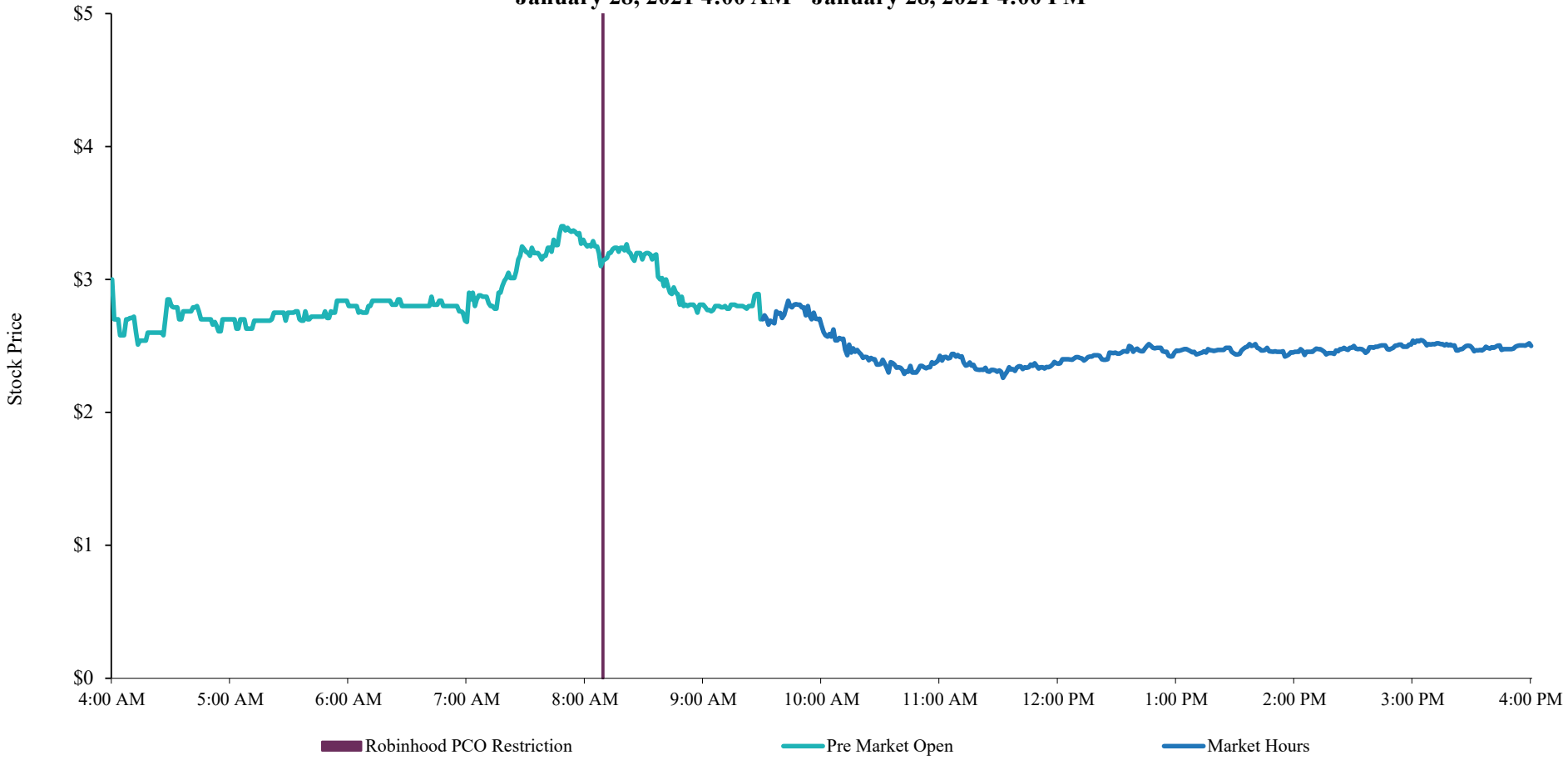
Sources: Tick Data and RHMDL00047970.
Notes: PCO equity restrictions announced related to Trading212 and E* Trade were only for AMC and GME. PCO equity restrictions announced related to Webull and M1 Finance were only for AMC, GME, and KOSS. The restrictions announced by Webull and M1 finance were implemented at the instruction of Apex Finance. I understand that Ally Financial and SoFi also received instruction from APEX to restrict AMC, GME, and KOSS, but have seen no public announcement or news coverage of these restrictions until after trading hours on January 28, 2021. Additionally, I note there is evidence that Interactive Brokers implemented PCO equity restrictions for BB, NOK, EXPR, KOSS, AMC, BBBY, and GME on January 28, 2021, but I have seen no public announcement or news coverage of these restrictions, and therefore they could not be reflected in the stock prices of the At-Issue Securities. *See* HFSC Report, at footnote 478 and 479.

Exhibit-6h
TR Stock Price
Annotated with PCO Equity Restriction
January 28, 2021 4:00 AM - January 28, 2021 4:00 PM



Sources: Tick Data and RHMDL00047970.
Notes: PCO equity restrictions announced related to Trading212 and E* Trade were only for AMC and GME. PCO equity restrictions announced related to Webull and M1 Finance were only for AMC, GME, and KOSS. The restrictions announced by Webull and M1 finance were implemented at the instruction of Apex Finance. I understand that Ally Financial and SoFi also received instruction from APEX to restrict AMC, GME, and KOSS, but have seen no public announcement or news coverage of these restrictions until after trading hours on January 28, 2021. Additionally, I note there is evidence that Interactive Brokers implemented PCO equity restrictions for BB, NOK, EXPR, KOSS, AMC, BBBY, and GME on January 28, 2021, but I have seen no public announcement or news coverage of these restrictions, and therefore they could not be reflected in the stock prices of the At-Issue Securities. *See* HFSC Report, at footnote 478 and 479.

Exhibit-6i
TRVG Stock Price
Annotated with PCO Equity Restriction
January 28, 2021 4:00 AM - January 28, 2021 4:00 PM



Sources: Tick Data and RHMDL00047970.
Notes: PCO equity restrictions announced related to Trading212 and E* Trade were only for AMC and GME. PCO equity restrictions announced related to Webull and M1 Finance were only for AMC, GME, and KOSS. The restrictions announced by Webull and M1 finance were implemented at the instruction of Apex Finance. I understand that Ally Financial and SoFi also received instruction from APEX to restrict AMC, GME, and KOSS, but have seen no public announcement or news coverage of these restrictions until after trading hours on January 28, 2021. Additionally, I note there is evidence that Interactive Brokers implemented PCO equity restrictions for BB, NOK, EXPR, KOSS, AMC, BBBY, and GME on January 28, 2021, but I have seen no public announcement or news coverage of these restrictions, and therefore they could not be reflected in the stock prices of the At-Issue Securities. *See* HFSC Report, at footnote 478 and 479.