

**UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS**

Cassandra Trading Group, LLC, individually
and on behalf of all those similarly situated,

Plaintiffs,

v.

CBOE EXCHANGE, INC., CBOE GLOBAL
MARKETS, INC., CBOE FUTURES
EXCHANGE, LLC, and JOHN DOES,

Defendants.

Civil Action No.

CLASS ACTION COMPLAINT

JURY TRIAL DEMANDED

I. INTRODUCTION

Plaintiff Cassandra Trading Group, LLC (“Plaintiff”) files this civil action pursuant to Section 1 of the Sherman Act, Section 4 of the Clayton Act, the Commodity Exchange Act, and Rule 23 of the Federal Rules of Civil Procedure, for damages, costs of suit, injunctive relief and other relief as may be just and proper, on behalf of itself and classes of those similarly situated (“Classes” as defined below) against CBOE Exchange, Inc., CBOE Global Markets, Inc., CBOE Futures Exchange, LLC and John Does, for their illegal manipulation of the Chicago Board Options Exchange (“CBOE”) Volatility Index (“VIX”).

Based upon personal knowledge, information, belief, and investigation of counsel, Plaintiff specifically alleges as follows.

1. The Volatility Index, known under its ticker symbol “VIX,” is a benchmark index created by CBOE. VIX is a widely-used measure of the stock market’s expectations as to volatility, derived from the market prices of certain Standard & Poor’s 500 Index options (“SPX Options”). VIX is often called the stock market’s “fear index” or “fear gauge.” CBOE describes VIX as follows:

The Cboe Volatility Index[®] (VIX[®] Index[®]) is a key measure of market expectations of near-term volatility conveyed by S&P 500 stock index option prices. Since its introduction in 1993, the VIX Index has been considered by many to be the world's premier barometer of investor sentiment and market volatility. Several investors expressed interest in trading instruments related to the market's expectation of future volatility, and so VIX futures were introduced in 2004, and VIX options were introduced in 2006.

Options and futures on volatility indexes are available for investors who wish to explore the use of instruments that might have the potential to diversify portfolios in times of market stress.¹

¹ <http://www.cboe.com/products/vix-index-volatility/vix-options-and-futures/vix-index>.

2. Investors cannot invest directly in VIX. However, in accordance with the Commodity Exchange Act, 7 U.S.C. § 1 *et seq.*, CBOE eventually created tradeable instruments linked to the VIX. VIX-linked futures (“VIX Futures”) were launched in March 2004 to be traded exclusively on the CBOE Futures Exchange (“CFE”), and VIX-linked options (“VIX Options”) were launched in February 2006 to be traded exclusively on CBOE. During the relevant period, trading in VIX Futures and VIX Options grew exponentially. The daily trading volume for VIX futures rose from approximately 1,700 contracts per day in 2006 to over 300,000 in 2017, while the daily volume of VIX options rose from approximately 23,000 in 2006 to nearly 690,000 in 2017.

3. VIX-linked Exchange Traded Products (“VIX ETPs”) include products such as exchange-traded funds (“ETFs”) and exchange-traded notes (“ETNs”), which are instruments that track VIX futures but are traded on public exchanges. Since their creation in 2009, trading in VIX ETPs has also exploded. There are currently at least 18 active VIX ETPs, which have a combined market cap of approximately \$3.4 billion.

4. VIX purports to measure the expected volatility in the S&P 500 by averaging the weighted prices of SPX Options over a wide range of strike prices. This method relies on the theory that the prices people are willing to pay or accept for a 30-day option on the SPX are a good estimate of the market’s expectation of how much the SPX will move in the next 30 days—and thus what VIX Options and Futures should be worth today. Because SPX Options are correlated with volatility, as investors’ expectation of volatility in the near future changes, the price of SPX Options correspondingly changes to reflect the increased/decreased risk of those options due to the size of expected fluctuations in the S&P 500.

5. VIX calculations use an incredibly complex formula. VIX Futures and VIX Options are not calculated directly from the benchmark VIX, but are determined using a Special Opening Quotation (“SOQ”). CBOE describes the means by which it calculates VIX as follows:

The final settlement value [of VIX Derivatives] is calculated from actual opening prices of S&P 500 Index (SPX or SPX Weekly) options. . . . The final settlement value for VIX futures and options is a Special Opening Quotation (SOQ) of the VIX Index calculated using opening prices of constituent SPX or SPX Weekly options that expire 30 days after the relevant VIX expiration date. For example, the final settlement value for VIX derivatives expiring on January 21, 2016 will be calculated using SPX options that expire 30 days later on February 20, 2016. If there is no opening trade, the opening price is the average of an option’s bid and ask price determined at the open.

Opening Procedures for VIX Derivatives on Expiration Days

On expiration days for VIX derivatives, Cboe utilizes a modified Hybrid Opening System (HOSS) that facilitates a single-price open for SPX and SPX Weekly option series. . . . All orders (including customer and professional) are eligible to rest in the book in order to participate in the modified HOSS opening auction.²

6. Because VIX Options, VIX Futures, and VIX ETPs (collectively, “VIX Instruments”) are determined using the SOQ, manipulation of the SOQ value would correspond to manipulation in the values of VIX Instruments.

7. The CBOE-designed SOQ is highly susceptible to manipulation for several reasons, including, but not limited to, the fact that it is calculated during a fixed, short window during non-trading hours.

8. Recent evidence has become publicly available that strongly suggests that the VIX SOQ has been manipulated to influence the pricing of VIX Instruments. For instance, a “whistleblower” letter to U.S. regulators explains that the design of the SOQ settlement process

² <http://cfe.cboe.com/cfe-products/vx-cboe-volatility-index-vix-futures/settlement-information-for-vix-derivatives>.

leaves the process uniquely vulnerable to being manipulated.³ As another example, on February 14, 2018, former Commissioner of the Commodities Futures Trading Commission (“CFTC”) Bart Chilton states that the allegation that the VIX was manipulated “rings true to me,” and added that “there’s certainly enough smoke.”⁴ Recently, former SEC Chairman Harvey Pitt echoed these comments, saying “it’s quite clear that [VIX] options can be manipulated. And when there were complaints about possible manipulation, CBOE, as the marketplace, should have sprung into action.”⁵

9. A 2017 academic study confirms that the VIX could be subject to manipulation. In May 2017, Professor John Griffin of the McCombs School of Business at The University of Texas Austin published a research paper (the “Griffin Paper”) titled *Manipulation in the VIX?* According to the Griffin Paper, a trader could readily manipulate the VIX settlement by doing the following: (1) opening long positions in the VIX derivatives prior to settlement; (2) submitting aggressive buy or sell orders in the SPX options during the settlement auction, thereby causing the auction-clearing prices of SPX options, and by extension, the VIX settlement price to rise or fall; and (3) obtaining the higher or lower price desired for the VIX Futures or Options when they settle. Traders colluding with one another can manipulate the VIX either up or down without the risk that

³ Wall Street Journal, *Regulator Looks Into Alleged Manipulation of VIX, Wall Street’s ‘Fear Index’* (February 13, 2018), <https://www.wsj.com/articles/wall-street-regulator-probes-allegedmanipulation-of-vix-a-popular-volatility-gauge-1518547608>.

⁴ CNBC, *Former CFTC Commissioner: Whistleblower Allegation About Volatility Index Manipulation ‘Rings true’* (February 14, 2018), <https://www.cnbc.com/2018/02/14/ex-cftchead-bart-chilton-on-whistleblower-vix-manipulation-allegation.html>.

⁵ See Mark DeCambre, “Ex-SEC chairman says ‘it’s quite clear’ Wall Street’s ‘fear gauge’ can be manipulated,” MARKETWATCH (Feb. 16, 2018), <https://www.marketwatch.com/story/ex-sec-chairmansays-its-quite-clear-wall-streets-fear-gauge-can-be-manipulated-2018-02-16> (last accessed Mar. 16, 2018).

counteracting market movements will offset or negate their gains. In February 2018, an industry insider came forward to show that the academic conclusions were correct.⁶

10. As the designer of the process, CBOE was familiar with how the VIX Index was constructed, and *knew* the process was flawed. Upon information and belief, CBOE intentionally designed its products, operated its platforms, and formulated the method for calculating VIX and the SOQ in a manner that could be collusively manipulated in a single, narrow period of time with low-premium trades.

11. CBOE knew that the settlement process was being abused. For instance, CBOE should have seen that week after week over many years: (1) the volume of trading in out-of-the-money SPX Options spiked dramatically during the VIX settlement window; (2) VIX Options and Futures settlement values were significantly different from the day-trade VIX values immediately after the settlement window; and (3) the number of trades in out-of-the-money SPX Options increased as those options became more out of the money, and thus had more impact on the VIX Options and Futures settlement value. CBOE knew that none of these features are consistent with an unmanipulated market.

12. The VIX manipulation described herein was undertaken by certain financial institutions and trading firms (the “John Doe Defendants”) with sophisticated, expensive technology. The process was enabled and exacerbated by the fact that CBOE authorized special privileges to these anonymous traders to make markets on SPX Options. For instance, only designated participants had the right to participate in the SOQ settlement process by providing non-binding quotes rather than executable orders. And CBOE permitted only certain privileged participants to place so-called

⁶ Saqib Iqbal Ahmed, John McCrank, *Whistleblower alleges manipulation of Cboe Volatility index*, Reuters (February 13, 2018), <https://www.reuters.com/article/us-usa-stocks-volatilitymanipulation/whistleblower-alleges-manipulation-of-cboe-volatility-index-idUSKBN1FX0ES>.

“strategic orders” in the closing minutes of the process. CBOE also rewarded only a privileged few participants with a discount for certain types of SPX Options. These CBOE-granted advantages allowed the John Doe Defendants to post offers and bids or enter into contracts on SPX Options collusively during the limited time window in which those options influence the SOQ settlement price of VIX Futures and VIX Options, and thereby generate supra-competitive profits for their much larger positions in VIX Futures and VIX Options.

13. On information and belief, John Doe Defendants also own a variety of VIX ETPs, the performance of which is directly tied to the VIX. The same conduct that results in manipulating the VIX thus directly generates supra-competitive profits for the John Doe Defendants in their respective VIX ETPs.

14. This manipulation of the VIX has caused billions of dollars in losses for other investors in VIX Instruments during the Class Period, January 1, 2009 to the present.

15. Because the trading of SPX Options is anonymous, Plaintiff cannot yet identify the precise number and identity of the manipulators acting in concert with one another and with the knowledge of the CBOE. However, CBOE possesses that information — because it is required to maintain it under the Commodity Exchange Act, 7 U.S.C. §7(d) — and Plaintiff will be able to use that information to identify the John Doe Defendants through discovery. Upon information and belief, many or all of the John Doe Defendants are SPX Options market makers — an exclusive group whose membership is controlled by CBOE.

16. The John Doe Defendants would not have been able to manipulate the VIX Index to the extent they did without the cooperation of CBOE, reflecting CBOE’s intent to join the conspiracy. Indeed, some of CBOE’s initiatives pertaining to the VIX and SOQ were implemented only after it sought and obtained close consultation and significant contributions on these initiatives

from certain financial institutions that trade heavily in VIX Instruments, such as Goldman Sachs. Furthermore, CBOE permitted VIX Instruments to be traded despite the fact that they are readily susceptible to such manipulation in violation of the Commodity Exchange Act, 7 U.S.C. §7(d). CBOE permitting VIX Instruments to be traded despite the fact that they are readily susceptible to such manipulation was and continues to be a violation of the Commodity Exchange Act, 7 U.S.C. §7(d).

17. The John Doe Defendants also benefited from CBOE's inaction in the face of its knowledge that the VIX Index was being manipulated. Under 7 U.S.C. §7(d), CBOE was required to monitor and enforce compliance with its rules prohibiting abusive trade practices, including having adequate resources and capacity to "detect, investigate, and apply appropriate sanctions to any person that violates any rule of the contract market" of CBOE in regards to manipulative and abusive trading practices, and to "establish and enforce rules . . . to protect markets and market participants from abusive practices committed by any party . . . [and] to promote fair and equitable trading on the contract market." Despite knowing or having considerable reason to suspect that manipulation of the VIX Index was occurring through the VIX Instruments traded on CBOE's markets, CBOE took no effective action to stop the manipulation and collusion. Instead, CBOE enabled the manipulation to continue, while protecting the growth of VIX Instruments trading on its markets.

18. By no coincidence, CBOE has profited handsomely from the manipulation of the VIX. With the proliferation of VIX Instruments, CBOE has seen net revenues increase, net transaction fees shoot up, and contract fees close to double. As a result of this VIX Instrument-fueled growth, the value of Class A common stock in CBOE's holding company, CBOE Global Markets, Inc.,

has increased by over 300% since its inception in June 2010.⁷ This has directly benefited CBOE officers and board members, who were compensated heavily with CBOE stock between 2010 and the present.

II. JURISDICTION AND VENUE

19. This action arises under sections 1 of the Sherman Act, 15 U.S.C. §§ 1, and section 4 of the Clayton Act, 15 U.S.C. § 15(a), and the Commodity Exchange Act, 7 U.S.C. § 1 *et seq.*, and seeks to recover treble damages, costs of suit, injunctive relief, and reasonable attorneys' fees for the injuries sustained by Plaintiff and members of the Classes resulting from Defendants' successful efforts to restrain trade in the United States. The Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331, 1337(a), 1407, and 15 U.S.C. § 15.

20. This Court has personal jurisdiction over each Defendant. All Defendants are reasonably believed to have: (1) transacted business in the United States, including in this District; (2) substantial contacts with the United States, including in this District; and (3) committed substantial acts in furtherance of the claims herein in the United States, including in this District, including the manipulation of the prices of VIX Instruments traded in this District. In addition, Defendants' conspiracy was directed at, and had the intended effect of, causing injury to persons residing in, located in, or doing business in the United States, including in this District, and Plaintiff's claims arise out of the Defendants' conduct.

21. Venue is proper in this District pursuant to 15 U.S.C. §§ 15(a), 22, and 28 U.S.C. §§ 1391(b), (c), and (d) because, during the Class Period, Defendants resided, transacted business, were found, or had agents in this District, and a substantial portion of their activity that affected the interstate trade and commerce discussed below has been carried out in this District.

⁷ See CBOE: Summary for CBOE Global Markets, Inc., <http://finance.yahoo.com/quote/CBOE/> (last accessed Mar. 16, 2018).

22. During the Class Period, Defendants traded VIX-linked products in a continuous and uninterrupted flow of interstate commerce, including in this District. Defendants' conduct had direct, substantial, and reasonably foreseeable effects on interstate commerce in the United States, including in this District.

23. Defendants' unlawful conduct described herein adversely affected persons and entities in the United States who traded VIX-linked products, including Plaintiffs and the members of the Classes.

III. PARTIES

24. Plaintiff Cassandra Trading Group, LLC, an Illinois corporation, transacted in VIX-linked products during the Class Period and has been injured in its business or property by reason of Defendants' violations of law as alleged herein.

25. Defendant CBOE Exchange, Inc. is a Delaware corporation with its principal place of business at 400 South LaSalle Street, Chicago, IL 60605. CBOE Exchange is a wholly owned subsidiary of CBOE Global Markets, Inc. which is also a Delaware corporation with its principal place of business at 400 South LaSalle Street, Chicago, IL 60605. CBOE Futures Exchange, LLC is a Delaware limited liability company with its principal place of business at 400 South LaSalle Street, Chicago, IL 60605.

26. John Doe Defendants are those financial institutions that manipulated VIX Instruments through the collusive trading in and posting of quotes for SPX Options during the times those SPX Options trades and quotes were used in the settlement calculation of VIX Futures and VIX Options, and, relatedly, influenced the price of VIX ETPs. Plaintiff will be able to identify the John Doe Defendants through discovery of trading records in the possession of CBOE that CBOE is required

to maintain under the Commodity Exchange Act, including but not limited to, Order Entry Operator identifications, Tag 50 IDs, User Assigned IDs, and Clearing Information.

IV. FACTUAL BACKGROUND

A. The VIX Benchmark

27. VIX is a popular benchmark index used to measure the 30-day expected volatility of the S&P 500 Index for large-cap U.S. stocks. VIX is higher when the market is expected to be more volatile 30 days in the future (*i.e.*, when investors have more “fear” of swings in stock prices), and is lower when the market is expected to be less volatile 30 days in the future. VIX is calculated and published by CBOE every fifteen seconds during CBOE’s regular (8:30 a.m. to 3:15 p.m. Central time) and extended trading hours (2:00 a.m. to 8:15 a.m. Central time), based on the prices of certain “put”⁸ and “call”⁹ SPX Options traded during those time periods.

28. VIX relies on SPX Option prices to predict near-term volatility. One component in the SPX Option price is an estimate of how volatile the S&P 500 will be between the current time period and the option’s expiration date. VIX uses the price of SPX Options to predict near-term volatility, through the idea that the market-expected volatility in the S&P 500 over the next 30 days can be estimated from the prices people are willing to pay or accept for a 30-day option on the SPX. An option to buy or sell the S&P index at a given level will be worth more when the market is volatile (and more likely to move significantly above or below that level), and will be worth less when the market is calm (and less likely to move significantly above or below that level).

⁸ A “put” or “put option” is a financial contract which gives the owner the right, but not the obligation, to sell an agreed quantity of a particular commodity or financial instrument (the underlying), at a specified price (the strike), by a predetermined date (the expiration date).

⁹ A “call” or “call option” is a financial contract which gives the owner the right, but not the obligation, to buy an agreed quantity of a particular commodity or financial instrument (the underlying) at a certain time (the expiration date) for a certain price (the strike price).

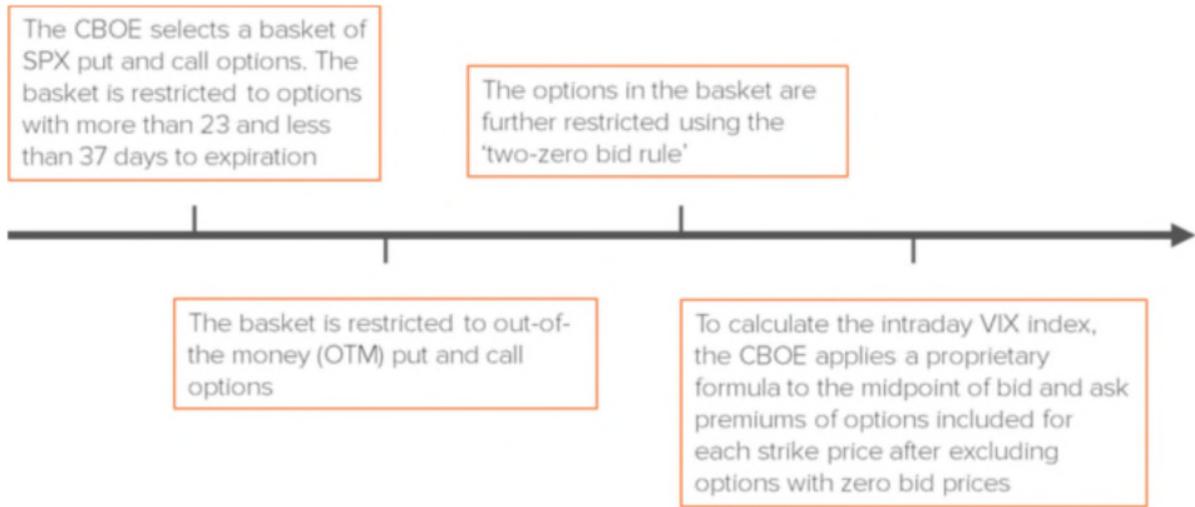
29. CBOE uses a complicated formula to calculate both the VIX and the SOQ. As part of this formula, VIX calculations use trades of near- and next-term put and call SPX Options with more than 23 days and less than 37 days to expiration to determine a 30-day measure of expected volatility in the S&P 500. If there is no traded price for a given SPX Option, the average of the bid and ask price of near- and next-term put and call options with more than 23 days and less than 37 days to expiration is used instead.

30. Once each week, the SPX options used to calculate VIX “roll” to new contract maturities in order to maintain the 30-day expectation of volatility measured by the index. For example, on the second Tuesday in October, the VIX index would be calculated using SPX options expiring 24 days later (*i.e.*, “near-term”) and 31 days later (*i.e.*, “next-term”). On the following day, the SPX options that expire in 30 calendar days would become the “near-term” options and SPX options that expire in 37 calendar days would become the “next-term” options, thereby maintaining the “more than 23 days and less than 37 days to expiration” window.

31. The CBOE standard formula includes an SPX forward-level calculation based on the strike price at which the absolute difference between the call and put prices is smallest. Only “out-of-the-money” options that have non-zero bids are included in the VIX calculation. A call option is out of the money when the strike price of the option is higher than the market price of the underlying asset. A put option is out of the money when the strike price of the option is lower than the market price of the underlying asset.

32. The selection of strikes goes from the at-the-money strike up (for calls) and down (for puts), until two consecutive strikes with zero-bid price are found in each direction. No other options beyond such two consecutive zero-bid strikes are included.

33. The VIX calculation process can be summarized in the following diagram:



B. VIX Futures and VIX Options

34. Initially, the VIX was just a benchmark figure, and investors could not “take a position” on the direction investors thought the VIX would go. Because investors cannot trade the VIX directly, CBOE needed to create VIX-related products if it wanted to generate profits by monetizing the VIX and utilizing it as a directly traded benchmark. CBOE is authorized to create and offer contracts such as futures and options as a board of trade designated as a contract market under the Commodity Exchange Act. However, CBOE can only list contracts “that are not readily susceptible to manipulation.” 7 U.S.C. § 7(d)(3). CBOE launched VIX Futures on March 26, 2004 for exclusive trading on the CFE, and CBOE launched VIX Options on February 24, 2006 for exclusive trading on the Chicago Board Options Exchange.

35. An option contract is an agreement that gives the buyer the right—but not the obligation—either to buy (in the case of a “call option”) or to sell (in the case of a “put option”) a particular commodity or financial instrument, at a predetermined price, at or during a specified time period in the future (the “expiration date”). The agreed price is generally known as the “strike price.”

36. Futures contracts are similar to options contracts, in that they are a promise—generally made through a futures exchange—to buy or sell a particular commodity or financial instrument, at a predetermined price, at a fixed date in the future (*i.e.*, on an “expiration date”).

37. Options or futures can be cash-settled. A cash-settled option results in a cash payment to the holder of the option based on prevailing market values for the underlying product or instrument at the time of settlement, rather than delivery of the product or instrument. SPX Options, VIX Options, and VIX Futures are all cash-settled, as there is no “SPX” or “VIX” to be physically delivered.

38. The main driver of whether a cash-settled option is exercised is whether it is “in-the-money” or “out-of-the-money.” An in-the-money option is one where the holder is entitled to a cash payment if she exercises the option. For example, if one has the right to buy a widget at a price of \$300 (a call), and the market price for the widget is currently \$500, the call option is in-the-money—because one could buy a widget for \$300 and immediately sell it for \$500. An out-of-the-money put or call is one where the holder is not entitled to a cash payment if she exercises the option. For example, if one has the right to sell a widget at a price of \$300 (a put), and the market price for the widget is currently \$500, the option is out-of-the-money—because the opportunity to sell at \$300 is worthless when one could sell at \$500.

39. VIX Futures are a type of futures known as financial futures. The buyer (known as the “long” position) of a financial futures contract that is based on the value of a specified index might promise to buy 100 times the value of that index on a defined future date (the “settlement date”), and the seller (known as the “short” position) will receive that price on that date.

40. The parties may close their position in the financial futures contract at any time prior to the settlement date by buying or selling an offsetting obligation. Alternatively, they can hold

the financial futures contract through the settlement date, at which point the long position can either receive cash from, or pay cash to, the short position—depending on whether the price it agreed to pay for the financial futures contract is above or below the price of the specified index at the time of settlement (the “spot price”).

41. The price of a VIX Future will increase if market expectations for volatility increase above current expectations (as reflected by the current VIX price) and will decrease if market expectations for volatility decrease below current levels (as reflected by the current VIX price).

As explained by CBOE:

Assume, for example that today is August 10 and the VIX index is 20. If market expectations are for 30-day implied volatility to be higher than 20 in October and lower than 20 in December, then October VIX futures will be trading at a level above 20 and December VIX futures will be trading below 20.

42. Investors can also take positions that have exposure to underlying VIX Futures by trading VIX Options. VIX Options can only be exercised at expiration, and are all cash-settled. Like any option, VIX Options can be either put or call options. An investor typically buys a VIX call option when he expects the price of the corresponding VIX Future to rise above the call’s strike price.

C. The Settlement of VIX Futures and Options

43. The final settlement value for VIX Futures and Options is not determined the same way as the standard VIX benchmark calculation. Rather, final settlements are derived based on a modified calculation known as the Special Opening Quotation or “SOQ.” The SOQ is calculated using the auction clearing prices of SPX options.

44. The settlement of standard 30-day VIX Futures and Options contracts generally occurs on the third or fourth Wednesday of each month that is 30 days prior to the third Friday of the calendar month immediately following the month in which the contract expires. For example, July

2010 VIX Futures contracts expired on Wednesday, July 21, 2010, which was 30 days prior to Friday August 20, 2010.

45. The SOQ settlement process is conducted by CBOE using a proprietary auction mechanism, known as the “Hybrid Opening System” (or “HOSS”). HOSS determines opening prices for the constituent SPX option series used in calculating the SOQ of VIX Futures and Options. To determine the opening price, HOSS matches buy and sell orders residing on the electronic order book immediately prior to market open. The algorithm matches trades on a *pro rata* basis. The opening price for any constituent option series in which there is no trade is the average of that option’s bid price and ask price as determined at the opening of trading.

46. Prior to the opening of normal trading hours (7:30 a.m. CST and until 8:20 a.m. CST¹⁰) SPX Options orders are included in the settlement calculation for VIX Options and Futures on the day of settlement of the underlying contract. Between 8:20 a.m. CST and 8:30 a.m. CST, “strategy orders”—defined as SPX option orders that are related to positions in VIX derivatives and span over a wide range of strikes with 30 days to maturity—can no longer be submitted or cancelled. Only orders unrelated to outstanding VIX positions can be submitted after 8:20 a.m. CST. At 8:30 a.m., the prices of SPX Options from this 7:30 a.m. until 8:20 a.m. window that meet the criteria for involvement in the VIX calculation are used to determine the SOQ value.

47. The settlement price determined by the SOQ uses a complicated formula that is similar but not identical to the spot VIX benchmark. The forward SPX price is decided by the strike that has the smallest absolute difference in price between the calls and puts. It then selects strikes using the forward SPX level to determine which puts and calls are included in the calculation the same

¹⁰ 8:15 a.m. prior to February 15, 2017.

as with the spot VIX benchmark until it reaches two consecutive zero bid strikes. The settlement price is determined through application of the same formula used to calculate the spot VIX index.

D. VIX Exchange-Traded Products

48. Exchange-traded products (ETPs) are a type of security that is derivatively priced and trades intra-day on a national securities exchange. ETPs are “hybrid instruments” under the Commodity Exchange Act (7 U.S.C. § 1(29)), priced so their value is derived from other investment instruments, such as a commodity, a currency, a share price or an interest rate. Generally, ETPs are benchmarked to stocks, commodities, or indices. They can also be actively managed funds. ETPs include exchange-traded funds (ETFs), exchange-traded vehicles (ETVs), exchange-traded notes (ETNs) and certificates. ETPs are traded on exchanges (like the New York Stock Exchange), and thus can be bought and sold by individual investors as easily as any share of common stock.

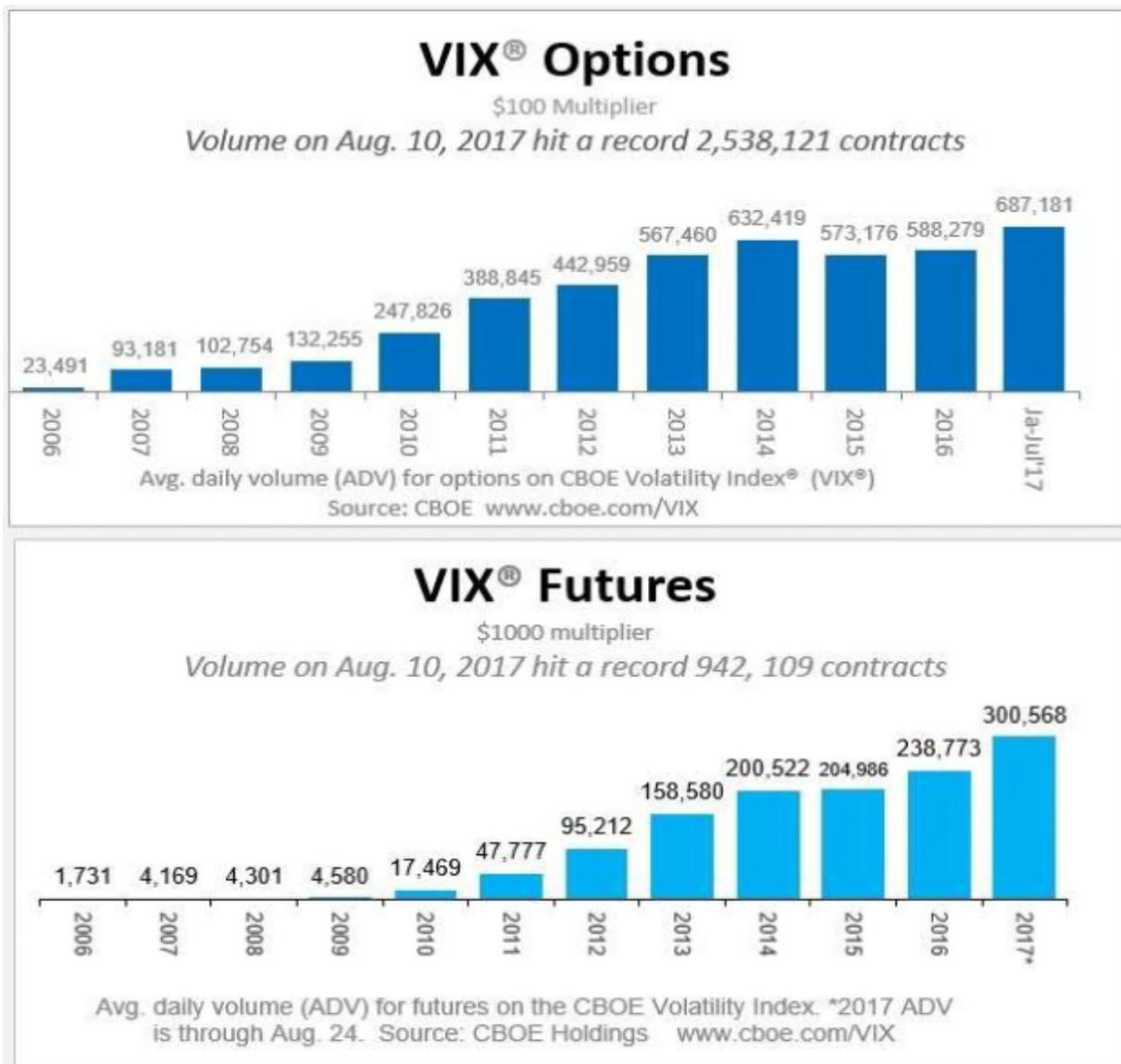
49. Shortly after VIX Options were created, the market saw an increasing number of ETFs, ETNs and options or futures on the shares of such funds or notes whose value is linked to VIX and VIX Options and VIX Futures (collectively “VIX ETPs”). These products allow the market to trade the VIX. Between 2008 and 2018, the combined value of the VIX ETPs was approximately \$25 billion.

V. CBOE’S ROLE IN THE VIX

50. CBOE was central to the creation of the VIX and the explosion in trading in VIX Instruments. CBOE was solely responsible for determining and selecting the formula used to calculate VIX, as well as the modified SOQ calculation process used to determine the settlement price of VIX Futures and Options. The SPX Options that influence VIX, VIX Futures, and VIX Options are all traded exclusively on CBOE Options Exchange and/or CFE and were all created

by CBOE pursuant to the authority granted to it under the Commodity Exchange Act. VIX ETPs were likewise dependent on CBOE’s selection process for determining and calculating the VIX and the modified SOQ formula for settlement prices of VIX Futures and Options.

51. As discussed above, during the timeframe of the VIX manipulation (January 1, 2009 to the present), trading in VIX Instruments skyrocketed. The following charts demonstrate the rapid growth in average daily trading volume in both VIX Options and VIX Futures from 2006 through the first half of 2017:



52. CBOE charges a fee for every transaction involving VIX Futures and Options contracts.¹¹ CBOE's revenue from overall transaction fees nearly quadrupled during the Class Period (dating from January 1, 2009 to the present), climbing to approximately \$1.56 billion in 2017.¹² CBOE's estimated revenue from SPX Options and VIX-related products has grown from less than a third of its total revenue in 2006, to almost two thirds by 2017.

53. CBOE has profited handsomely from the creation of the VIX and its pivotal role in the VIX market, and it has a vested interest in ensuring the VIX flourishes. A review of CBOE's 2017 earnings release yielded the following observations about VIX products:

- Excluding legacy Bats' net revenue contribution, CBOE's organic net revenue was \$154.1 million, up \$11.1 million or 8%, compared to the fourth quarter 2016. The increase is primarily attributable to stronger trading volume and higher revenue contributed from VIX futures and proprietary index options.
- Net transaction fees generated by CBOE's proprietary index options accounted for 83% of options net transaction fees and were up \$10.3 million or 13% versus the fourth quarter of 2016 combined. The increase resulted from an 18% increase in index options ADV, driven by increases of 24% and 18% in VIX and SPX options, respectively, offset somewhat by a 4% decrease in the RPC for index options to \$0.682 from \$0.712 in last year's fourth quarter.
- Futures net revenue of \$35.6 million increased \$8.5 million or 31%, primarily due to higher transaction fees resulting from a 21% increase in VIX futures ADV and a 7% increase in RPC. The RPC rose to \$1.799 in the fourth quarter of 2017 compared with \$1.683 in the fourth quarter of 2016, primarily due to pricing changes implemented in January 2017.
- In 2017, trading volume in VIX futures set a new record for the 13th consecutive year with ADV of 294,000 contracts, up 23 percent compared with 2016. According to CBOE's 2016 Annual Report, CBOE's "transaction fees generated by our futures and index options increased from approximately 57.5% of total transaction fees in 2011 to approximately 88.2% in 2016. This increase is primarily due to increased trading volume and fees generated by our proprietary VIX options and futures SPX options" with "[t]he bulk of this revenue . . . attributable to [CBOE's] S&P 500 Index options and VIX Index options and futures."¹³

¹¹ See CBOE Exchange, Inc. Fees Schedule – March 1, 2018, <http://www.cboe.com/publish/feeschedule/cboefeeschedule.pdf> (last accessed Mar. 16, 2018).

¹² See CBOE Global Markets, Inc. 2017 Annual Report, <http://ir.cboe.com/~media/Files/C/CBOE-IR-V2/financial-information/cboe-10-k-2017.pdf> at 55 (last accessed Mar. 16, 2018).

¹³ See CBOE Holdings, Inc. 2016 Annual Report, https://www.cboe.com/framed/pdf/framed?content=/aboutcboe/annualreportarchive/annual-report2016.pdf§ion=SEC_ABOUT_CBOE&title=

54. This growth in CBOE earnings as a result of transaction fees related to trading in VIX Futures and VIX Options has also contributed to considerable growth in the value of shares in CBOE Global Markets, Inc., the holding company of CBOE. Since June 14, 2010 (when CBOE's former non-stock corporation owned by its CBOE seat-holding members was converted via a restructuring transaction into CBOE Global Markets Class A common stock owned by its stockholders), the value of a share of CBOE Global Markets common stock has risen from an IPO price of \$29 to a March 13, 2018 closing price of \$119.93 — a 300%+ increase in value. An April 6, 2017 CBOE Notice of Proxy Meeting Statement reveals that all serving directors, nominees, and executive officers of CBOE collectively held 2,099,085 shares of CBOE common stock — all of which had been awarded to those directors, nominees, and executive officers since 2010.¹⁴

55. As a “board of trade,” CBOE is required to “establish, monitor and enforce” rules under Section 7 of the Commodity Exchange Act. CBOE publishes this set of rules (the “CBOE Rules”) that impose obligations on “Market Makers,” “Registered Market Makers,” and “Designated Primary Market Makers.” The CBOE Rules include requirements to trade competitively, to “contribute to the maintenance of a fair and orderly market, and [not to] enter into transactions or make bids or offers that are inconsistent with such a course of dealings.” CBOE Rule 8.7.

56. Under the Commodity Exchange Act, CBOE is also required to monitor and enforce compliance with the rules of the contract market, including rules prohibiting abusive trade practices and market manipulation. For instance, CBOE shall: “have the capacity to detect,

CBOE+Annual+Report+2016 at 26 (last accessed Mar. 16, 2018). This final point is telling, as SPX Options are the very means by which Plaintiff and the Class members allege the John Doe Defendants manipulated the VIX SOQ settlement, while VIX Futures and Options are the very products that stood to benefit from such manipulation.

¹⁴ See CBOE Holdings, Inc. Notice of Annual Meeting of Stockholders, <http://ir.cboe.com/~media/Files/C/CBOE-IR-V2/documents/annual-proxy/2017-cboe-holdings-proxy-statement.pdf> (last accessed Mar. 15, 2018).

investigate, and apply appropriate sanctions to any person that violates any rule of the contract market,” 7 U.S.C.A. § 7(d)(2)(A); “list on the contract market only contracts that are not readily susceptible to manipulation,” 7 U.S.C.A. § 7(d)(3); and “have the capacity and responsibility to prevent manipulation, price distortion, and disruptions of the delivery or cash-settlement process through market surveillance, compliance, and enforcement practices and procedures,” 7 U.S.C.A. § 7(d)(4).

57. The CBOE Office of Enforcement is responsible for resolving disciplinary matters on behalf of the exchanges operated by CBOE.¹⁵ The Department of Market Regulation (“DMR”) is ultimately responsible for monitoring CBOE compliance with trading rules and procedures, including the surveillance and investigative work required therein.¹⁶

58. However, most surveillance for the CFE is conducted by FINRA and the National Futures Association (“NFA”) pursuant to a Regulatory Services Agreement (“RSA”). As the largest independent regulator for securities firms conducting business in the United States, FINRA has at its disposal, a vast array of surveillance systems that are deployed throughout a broad swath of financial markets. By virtue of these systems, FINRA is uniquely situated to effectively detect manipulation that occurs across multiple markets.

59. Indeed, FINRA and CBOE acknowledged as much, in connection with the above-referenced RSA entered into between these entities, effective January 2015.¹⁷ FINRA has further stated in its Annual Reports: “Our cross-market surveillance patterns allow us to track orders from their inception, as they move through markets and are either cancelled, replaced or executed. This

¹⁵ See Office of Enforcement, <http://www.cboe.com/aboutcboe/legal-regulatory/departmental-overviews/office-of-enforcement> (available at Mar. 16, 2018).

¹⁶ See “Department of Market Regulation,” CBOE <http://www.cboe.com/aboutcboe/legal-regulatory/departmental-overviews/department-of-market-regulation> (last accessed Mar. 16, 2018).

¹⁷ See FINRA Signs Regulatory Services Agreement with CBOE and C2, at <http://www.finra.org/newsroom/2014/finra-signs-regulatory-services-agreement-cboe-and-c2> (last accessed March 19, 2018).

is particularly important since some market participants are increasingly dispersing their activity across trading venues in an effort to mask improper trading schemes. More than 50 percent of our trading alerts involve conduct occurring on more than one market, and more than 45 percent of our cross-market alerts involve two or more market participants.”¹⁸

60. Upon information and belief, as VIX Futures trading grew substantially during the Class Period, CBOE prevented adequate surveillance of the market by FINRA and the NFA, thereby allowing the manipulation to continue unabated and undetected. CBOE deliberately sought to maintain the surveillance of Futures—and, specifically, VIX Futures—separate and apart from the larger surveillance objectives handled by FINRA and the NFA. Under the RSA with FINRA and the NFA, the enforcement tasks not covered by the NFA in the Futures market, including audit trail examinations, quoting reviews, intra-day monitoring, and importantly, VIX expiration review, are handled by CBOE’s Department of CFE Regulation (“CFER”).¹⁹ By maintaining total control of the VIX expiration within its own CFER, CBOE was able to ensure that manipulation surrounding the VIX expiration would not be detected by a third-party regulatory organization such as FINRA or the NFA.

61. Similarly, FINRA has the capabilities to conduct cross-market surveillance which, in theory, would have detected the VIX manipulation. By its very nature VIX manipulation involves two distinct markets: (a) the affected market for VIX Instruments, and (b) the market for S&P 500 options market which is used to manipulate the SOQ settlement value for the VIX Instruments. However, CBOE did not enter into the FINRA RSA until January 2015, and even then, any effort by FINRA to use its cross-market surveillance to detect cross-market manipulation of the VIX was

¹⁸ See also 2014 YIR AFR.

¹⁹ See “CFE Regulation,” CBOE, <http://www.cboe.com/aboutcboe/legalregulatory/departamental-overviews/cfe-regulation> (last accessed Mar. 16, 2018).

effectively neutered by weaknesses in CBOE's CFER. For instance, according to a June 24, 2016 oversight report from the Commodity Futures Trading Commission ("CFTC"), CBOE's CFER had significant weaknesses in its ability to monitor market manipulation, including "[a] considerable amount of staff turnover during the target period [of March 1, 2014 to February 28, 2015 that] prevented the Exchange from maintaining, on a consistent basis, sufficient compliance staff to conduct and complete investigations in a timely manner."²⁰

62. Regardless of CBOE's failures with respect to enabling detection of the ongoing manipulation, CBOE itself has acknowledged that "[n]otwithstanding that the CBOE has entered into an RSA with a regulatory services provider, such as FINRA or NFA, to provide regulatory services, the CBOE retains ultimate legal responsibility for, and control of, its self-regulating responsibilities."²¹ CBOE, therefore, bears ultimate responsibility for its own failures to employ adequate surveillance systems to detect, investigate, and appropriately sanction the VIX manipulation that was occurring.

63. Essentially, CBOE had access to all of the relevant data necessary to reveal the fact that manipulators rigged the settlement prices. Having viewed these data on the relevant settlement dates in real-time as part of its SOQ process, CBOE knew or was reckless as to whether the John Doe Defendants manipulated the VIX settlement values. Rather than disclosing the fact of the manipulation, however, CBOE affirmatively and knowingly (or recklessly) published the wrong, manipulated prices to the market.

²⁰ See Trade Practice Rule Enforcement Review of the CBOE Futures Exchange, <http://www.cftc.gov/idc/groups/public/@iodcms/documents/file/rercboefutures062416.pdf> at 8 (last accessed Mar. 16, 2018).

²¹ See sr-cfe-2017-016.

VI. DEFENDANTS CONSPIRED TO FIX THE PRICES OF VIX INSTRUMENTS

64. CBOE not only ignored the flaws in the settlement process, but it allowed and encouraged the John Doe Defendants to exploit them.

65. Although CBOE's proprietary settlement process for VIX Options and Futures was complex, it was subject to corruption by those who knew how to manipulate the process. For instance, Timothy Klassen, a member of the Goldman Sachs team that assisted CBOE in the development of the VIX, said that "trying to manipulate the VIX is not conceptually different from trying to manipulate any other index" that is dependent on underlying financial contracts. Matt Levine (a former banker at Goldman Sachs and a former mergers and acquisitions lawyer at Wachtell, Lipton, Rosen & Katz) described the process as flawed because:

[I]f you are a trader who owns a lot of the market in VIX futures, you could push around a large dollar value of futures by trading a small dollar value in options. This is particularly true because the S&P option volume is divided among many strikes, and the illiquid deep out-of-the-money S&P 500 options have a big influence on the VIX: You can move the price of those options a lot with relatively small trades, and those price changes have a disproportionate effect on the VIX. . . . [Thus,] if you are going to manipulate a tradable market . . . then VIX looks pretty tempting.²²

66. The method by which VIX is calculated is particularly vulnerable to manipulation. For instance, the VIX calculation uses out-of-the-money SPX options—as opposed to many of the SPX options that are illiquid. Because of this, trades with a large position in VIX Futures could profit disproportionately by collusively trading out-of-the-money SPX put options (which have mechanically higher weighting than calls in the VIX formula), or could set the market for those options at predetermined levels in order to drive the VIX settlement price higher by including these options in the calculation with little or no risk. Because settlement also occurs based on a special opening value generated in a single narrow window that is outside of normal trading hours, this

²² Matt Levine, *VIX Trading, Hoaxes, and Blockchain* (May 24, 2017), <https://www.bloomberg.com/view/articles/2017-05-24/vix-trading-hoaxes-and-blockchain>.

combination means that a single manipulative trade can have a significant influence on the settlement calculation.

67. CBOE alone had access to the SPX Options data used to calculate VIX settlement prices, was solely responsible for calculating those prices, and was solely responsible for publishing the final settlement prices to the market. CBOE purposefully crafted its SOQ calculation methodology for the VIX settlement in a way that it was readily susceptible to manipulation, even as similar indices selected settlement calculations which included additional safeguards designed to prevent manipulation. For example, the VSTOXX index—a European volatility index that is equivalent to the VIX and is traded through options and futures—does not use a single opening price. Instead, settlement of VSTOXX options and futures is based on the average of VSTOXX values calculated every five seconds over the course of a 30-minute trade window. The VSTOXX final settlement price is established by the Eurex Exchange. Moreover, the final settlement price is the average of the VSTOXX index values calculated every five seconds over the course of 30 minutes from 11:30-12:00 CET. This calculation occurs during normal market trading hours.

68. CBOE created the environment in which this collusive conduct can occur. CBOE's decisions to: (a) incorporate out-of-the-money SPX Options in the VIX settlement calculation; (b) give greater weight to certain SPX Options; (c) not require a premium threshold for SPX Options to be included in the settlement calculation; (d) base the SOQ on a single opening price; (e) sometimes use a special opening price based not on actual trades but solely on bid-ask spreads; and (f) grant SPX Options market-making privileges to some or all of the same institutions engaging in collusive and manipulative conduct are all indicative of CBOE's intent to facilitate manipulation and collusion of VIX Instruments.

69. Although market participants can enter into trades of SPX options for legitimate purposes, information recently made publicly available indicates that such trades have often been executed manipulatively by the John Doe Defendants acting in concert. As discussed, the VIX calculation method can be easily manipulated: *i.e.*, if a VIX trader is long VIX futures, he can push the VIX up by buying out-of-the-money SPX options. Likewise, if he is short VIX futures, he can push the settlement down by colluding with other VIX traders to sell or write out-of-the-money SPX Options.

70. John Doe Defendants use the access granted to them by CBOE as “market makers” in the S&P 500 options market to collude amongst themselves to affect the VIX Index calculation, resulting in the VIX settlement occurring at an artificial price.

71. In recent years, market participants, journalists, and academics have suggested that the VIX is indeed being manipulated by certain players to the detriment of others. Analyzing trade data from January 2008 through April 2015, the Griffin Paper’s findings suggest that traders deliberately engaged in trading activity designed to push the settlement price both up and down. For example, in months where the trading pushes the VIX settlement price up, the prevailing price of the VIX-influencing options will jump during the SOQ auction, peak at around 8:15 a.m. (*i.e.*, the deadline for VIX-related bids to be accepted for the SOQ prior to January 2017), and then drop seconds after the auction ends, when SPX Options revert to normal trading patterns.

72. The Griffin Paper also found that that “at the exact time of monthly VIX settlement [for VIX Futures and VIX Options], highly statistically and economically significant trading volume spikes occur in the underlying SPX options” and that the “spike occur only in the OTM [or out-of-the-money] SPX options that are included in the VIX [S]ettlement [Price] calculation and not in the excluded in-the-money (ITM) SPX options.”

73. Tellingly, the spike in out-of-the-money SPX Options during the settlement window occurs principally in otherwise rarely traded SPX Options that are priced the furthest out-of-the-money and have a significant artificial impact on the VIX Settlement Price. These types of out-of-the-money SPX options are rarely traded otherwise.

74. Moreover, the SOQ process did not always incorporate or assign increased weight to out-of-the-money SPX Options. For ten years, the VIX was calculated using only strikes for at-the-money or near-the-money S&P 100 options. It was only around the time that CBOE was laying the groundwork for launching VIX Options and Futures—in 2003—that it inexplicably switched to this far-more-vulnerable system. This flaw just so happened to make CBOE's subsequently launched VIX Options and VIX Futures attractive to well-resourced traders who could exploit that flaw.

75. Strong evidence of collusion is available by looking at fluctuations between (a) the VIX benchmark at the day's prior close, (b) the SOQ settlement value, and (c) the VIX benchmark at the open of the day immediately following the SOQ calculation window—and, most importantly, through the direction in which the VIX was manipulated.

76. It is substantially more difficult to manipulate the VIX downward independently because it requires selling out-of-the-money puts during the SOQ calculation window. Manipulators must use significant amounts of money and have sufficient margin limits to write and sell SPX Options cheaply themselves. Thus, doing so requires multiple large institutional players, and could only be achieved by SPX Options market makers and others acting in concert, where if any one of them was not cooperating, the entire enterprise would fail, and the SPX Options market makers would incur significant losses.

77. During the Class Period, there are multiple instances of the SOQ having a lower value than both the previous day's close of the VIX and the opening of the VIX immediately after the SOQ. Remarkably, in some instances, the SOQ was pushed lower right before the opening of the VIX even when the VIX opened higher than it closed at the day before. In addition, the value of the SOQ, through the activity of SPX Options market makers and others, repeatedly settled at a value that was outside the entire range of the VIX both on the day before the SOQ and the same day of the SOQ. These repeated anomalous settlement values could have only occurred through multiple parties acting in concert to trade at artificial prices.

78. For example, on March 19, 2013, the VIX closed at 14.39. By the next day, on March 20, 2013, based on activity in just the relatively illiquid SPX Options market, the SOQ was 12.64, a decrease of 12.16%. Upon the VIX opening immediately after the SOQ that same day, however, the VIX had returned to 13.18, representing a 4.27% increase from the SOQ value.

79. On April 20, 2016, there was similar behavior indicative of collusion to drive down the SOQ. On April 19, 2016, the VIX closed at 13.24. By settlement on the morning of April 20, 2016, the SOQ was 12.38, a decrease of 6.5%. Upon the opening of the VIX immediately after the SOQ, however, the VIX had jumped back up to 13.39, representing an 8.16% increase from the SOQ value, and in fact, higher than the previous day's close.

80. On September 20, 2016, the VIX closed at 15.92. By settlement the following morning, September 21, 2016, the SOQ was 14.92, a decrease of 6.28%. At the opening of the VIX immediately after, however, the VIX was 15.07, representing a 1.01% increase from the SOQ value.

81. On October 18, 2016, the VIX closed at 15.28. By settlement the following morning, October 19, 2016, the SOQ was 14.56, a decrease of 4.7%. At the opening of the VIX immediately

after, however, the VIX had not only returned to its prior closing level, it was higher at 15.45, representing a 6.1% increase from the SOQ value.

82. Again, on December 19, 2017, the VIX closed at 10.03. By settlement the following morning, December 20, 2017, the SOQ was 8.75, a decrease of 12.76%. Upon the VIX opening immediately after the SOQ that same day, however, the VIX had returned to 9.69, representing a 10.74% increase from the SOQ value.

83. Finally, on February 13, 2018, the VIX closed at 24.97. By settlement the following morning, February 14, 2018, the SOQ was 21.87, a decrease of 12.41%. Upon the VIX opening immediately after the SOQ, however, the VIX had moved upwards 23.48, representing a 7.36% increase from the SOQ value.

84. This type of manipulation contrary to both the pre-SOQ period closing and post-SOQ opening VIX levels requires multiple traders working in collusion, including at least some SPX Option market makers to drive down SPX options prices. Furthermore, it can be effectuated only as a result of CBOE's determination as to which firms get to participate as market makers in SPX Options and thus have the most influence over trades that impact the SOQ calculation.

VII. INVESTIGATIONS AND COMPLAINTS

85. On February 5, 2018, the Dow Jones Industrial Average had its biggest ever one-day point decline. As a consequence, the VIX increased 116% that day alone.

86. This dramatic increase in the VIX led to massive losses in VIX ETPs, especially inverse ETPs that are negatively correlated to the VIX. This VIX movement triggered rules that halted trading in nearly a dozen ETPs. For example, Credit Suisse's VelocityShares Daily Inverse VIX Short-Term ETN (trading under the symbol XIV) had an opening price on February 5, 2018 of \$108.37, representing a total value of at least \$1.63 billion (and perhaps as much as \$1.8 billion)

according to contemporaneous reports. According to a February 9, 2018 Bloomberg article, “[o]ver the next two days [XIV’s] value declined by 95 percent, to an indicative value of \$80 million at the close of trading on Tuesday [February 6].” This resulted from the above-mentioned 116% increase in the VIX on February 5, which caused a corresponding inverse decline in XIV, and led Credit Suisse to announce that it would liquidate XIV in a termination cash payout on February 21, 2018 at a price of \$6.04 per share, or about \$90 million in total value. Taken together, this equates to a total decrease of at least \$1.54 billion in XIV’s value, and an equivalent loss to investors.

87. On February 12, 2018, an anonymous whistleblower who “has held senior positions at some of the largest investment firms in the world,” reported to the Securities and Exchange Commission and the Commodity Futures Trading Commission widespread manipulation of VIX. The whistleblower asserted that a “pervasive flaw” permits “trading firms with sophisticated algorithms to move the VIX up or down by simply posting quotes on [SPX Options] and without needing to physically engage in any trading or deploying any capital.” The whistleblower speculated that the collapse in certain VIX derivatives like XIV was partially the result of market manipulation of the VIX.

88. The whistleblower identifies SPX Options market makers as the entities best positioned to avail themselves of these manipulative trading practices. This is the case not only because they have the resources necessary to engage in the sophisticated manipulation easily, but also because they are uniquely positioned to set prices on SPX Options used in the VIX settlement calculation. This effect is magnified when the opening price to determine the SOQ is not based on an actual trade, but rather a bid-ask spread.

89. The whistleblower letter, along with the Griffin Paper and the above-referenced February 2018 market disruption, has spawned multiple investigations. Some of these investigations encompass not only specific ETPs or ETPs generally, but also broader inquiries into widespread manipulation of the VIX itself as alleged herein.

90. On February 13, 2018, both the Wall Street Journal and the Financial Times reported that the Financial Industry Regulatory Authority is examining whether prices linked to the VIX have been manipulated.

91. On February 23, 2018, Bloomberg reported that both the Securities and Exchange Commission and the Commodities Futures Trading Commission “have been conducting a broad review of trading since February 5, 2018 when volatility spiked and investors lost billions of dollars.” The Bloomberg article also notes that because of the substantial investor losses arising from recent market events, “allegations of market manipulation are getting more attention and government watchdogs face questions about why small-time investors were permitted to buy such products in the first place.”

92. Former regulators of both the SEC and the CFTC have also weighed in, making public statements indicating their belief that the settlement of VIX Instruments has been, or is being, manipulated. Former CFTC Commissioner, Bart Chilton, was quoted by CNBC on February 14, 2018, saying that VIX manipulation “rings true to me” and that “there’s certainly enough smoke” to warrant scrutiny of possible VIX manipulation. On February 16, 2018, former SEC Chairman, Harvey Pitt, was quoted as saying that while “a product like VIX [Instruments] could be valuable

to institutional investors who want to hedge against a precipitous drop in the market . . . it's quite clear that these indexes' options can be manipulated.”²³

93. Despite the Griffin Paper, the whistleblower letter, the announcement of FINRA/SEC/CFTC investigations, and comments from former Commissioner Chilton and former Chairman Pitt indicating their susceptibility to manipulation and likelihood that they have been manipulated, CBOE continues to allow trading in VIX Futures and VIX Options (as well as VIX ETPs based on those VIX Futures).

VIII. CLASS ALLEGATIONS

94. Plaintiff brings this action on behalf of itself and, pursuant to Federal Rules of Civil Procedure 23(a) and 23(b)(3), as representative of two classes (the “Classes”) defined as follows:

VIX FUTURES AND OPTIONS CLASS

All persons who traded VIX Futures or VIX Options in the United States on or after January 1, 2009.

VIX EXCHANGE-TRADED PRODUCTS CLASS

All persons who traded VIX ETPs on an exchange in the United States on or after January 1, 2009.

95. Excluded from the Classes are Defendants; the officers, directors, or employees of any Defendant; any entity in which any Defendant has a controlling interest; any affiliate, legal representative, heir, or assign of any Defendant and any person acting on their behalf. Also excluded from the Classes are any judicial officers presiding over this action and the members of his/her immediate family and judicial staff, and any juror assigned to this action.

²³ See Mark DeCambre, “Ex-SEC chairman says ‘it’s quite clear’ Wall Street’s ‘fear gauge’ can be manipulated,” MARKETWATCH (Feb. 16, 2018), <https://www.marketwatch.com/story/ex-sec-chairman-says-its-quite-clear-wall-streets-fear-gauge-can-be-manipulated-2018-02-16>.

96. The Class Members are so numerous and geographically dispersed that joinder of all members is impracticable.

97. The Classes are readily ascertainable and are ones for which records should exist, including, specifically, Defendants' records and transaction data.

98. Plaintiff's claims are typical of the claims of the other Class Members. Plaintiff and other Class Members have all sustained damage in that, during the Class Period, they transacted in VIX-linked products at artificially maintained, non-competitive prices, established by Defendants' actions in connection with the violations alleged herein.

99. Plaintiff will fairly and adequately protect the interests of all Class Members. Plaintiff has transacted in VIX-linked products. Plaintiff has retained counsel competent and experienced in class action and antitrust litigation. Plaintiff's interests are coincident with, and not antagonistic to, the interests of the other Class Members.

100. Common questions of law and fact exist with respect to all Class Members and predominate over any questions solely affecting individual members. The common legal and factual questions, which do not vary among Class Members include, but are not limited to, the following:

- whether John Doe Defendants engaged in a conspiracy with each other to manipulate the prices of VIX Instruments;
- whether CBOE engaged in a conspiracy with the John Doe Defendants to manipulate the prices of VIX instruments;
- whether Defendants' conduct is a per se violation of Section 1 of the Sherman Act;
- whether Defendants' conduct constitutes manipulation under the Commodity Exchange Act ("CEA");
- the identities of the Defendants involved in the conspiracy; and
- the appropriate class-wide measure of damages.

101. A class action is superior to any other method for the fair and efficient adjudication of these issues, as joinder of all members is impracticable. The damages suffered by many Class Members are small in relation to the expense and burden of individual litigation, and therefore, it is highly impractical for such Class Members to individually attempt to redress the wrongful anticompetitive conduct alleged herein.

IX. ANTITRUST INJURY

102. During the Class Period, Plaintiff and Class Members transacted in VIX-linked products. As a result of Defendants' anticompetitive conduct, Plaintiff and Class Members paid more and/or received less for VIX-linked products than they would have absent that conduct, and thus suffered substantial damages. This is a cognizable antitrust injury and constitutes harm to competition under the federal antitrust laws.

103. Defendants injured Plaintiff and Class members by manipulating the prices of VIX Instruments. The pricing of VIX Instruments is based on fundamental market forces of supply and demand. Specifically, the prices of VIX Instruments are inherently based on the VIX and the VIX SOQ. Defendants understood that they could directly or indirectly manipulate the prices of VIX Instruments through the manipulation of the VIX.

104. Defendants' combination, conspiracy, and/or agreement to manipulate the prices of VIX Instruments harms competition in the market for VIX Instruments in the United States. Absent the John Doe Defendants' collusion with each other and CBOE – which allowed the manipulation to continue and failed to take steps to prevent it or stop it once it was apparent that it was occurring—those transacting in VIX Instruments would have transacted at competitive prices and reaped the benefits of competitive VIX settlement calculations. No one Defendant could accomplish systematic and continuing manipulation of VIX and the VIX settlement process

without coordinating with its rivals. Absent an agreement not to compete, the conduct alleged herein would be a risky strategy because market makers and swaps dealers would almost certainly be similarly positioned to profit from manipulation going into the settlement. Defendants benefited from coordinating their market activities.

105. Because Defendants' unlawful conduct has successfully restrained competition in the market, Plaintiff and Class Members have sustained, and continue to sustain, significant losses in the form of artificial, non-competitive prices for VIX-linked products. The full amount of such damages will be calculated after discovery and upon proof at trial.

106. No procompetitive justification or effects outweigh the anticompetitive effects of Defendants' conduct.

107. Plaintiff and Class Members are suitable plaintiffs for pursuing antitrust violations by Defendants, insofar as they transacted in VIX Instruments during the Class Period, and thus were harmed by Defendants' anticompetitive conduct.

108. As a direct, intended, foreseeable, and proximate result of Defendants' unlawful conspiracy and acts in furtherance of their conspiracy, Plaintiff and Class Members have been injured in their business and property, in violation of federal antitrust laws. The injury to Plaintiff and Class Members is the type the antitrust laws were designed to prevent and directly flows from Defendants' unlawful anticompetitive conduct.

X. DEFENDANTS FRAUDULENTLY CONCEALED THEIR MANIPULATION

109. Any applicable statute of limitations has been tolled by Defendants' knowing and active concealment of their manipulation of the prices of VIX Instruments. Through no fault or lack of diligence, Plaintiff and Class Members were deceived regarding Defendants' manipulation of the prices of VIX Instruments and could not reasonably discover the manipulation.

110. As alleged herein, Defendants' manipulation of the prices of VIX Instruments was material to Plaintiff and Class members at all relevant times. Within the time period of any applicable statutes of limitations, Plaintiff and Class members could not have discovered through the exercise of reasonable diligence that Defendants were manipulating the prices of VIX Instruments, in part because the trading records and roster of SPX market makers are concealed.

111. Plaintiff and Class members did not discover and did not know of any facts that would have caused a reasonable person to suspect that Defendants were manipulating the prices of VIX Instruments.

112. Defendants knowingly, actively, and affirmatively concealed the facts alleged herein, including their manipulation of the prices of VIX Instruments. Plaintiff and Class Members reasonably relied on Defendants' knowing, active, and affirmative concealment. Thus, all applicable statutes of limitation have been tolled based on the discovery rule and Defendants' fraudulent concealment, and Defendants are estopped from relying on any statutes of limitations.

XI. CLAIMS FOR RELIEF

FIRST COUNT

Violation of 15 U.S.C. § 1

(Against All Defendants by both the VIX Futures and Options Class and the VIX ETP Class)

113. Plaintiff re-alleges and incorporates by reference each of the allegations set forth above.

114. Defendants have conspired to fix prices in the relevant market in violation of Section 1 of the Sherman Act.

115. As alleged above, Defendants entered into agreements with each other with the purpose and effect of unreasonably restraining trade and commerce in the relevant market.

116. Defendants' conduct described above constitutes unlawful agreements, contracts, and concerted activity that unreasonably restrain trade in the relevant markets in violation of Section 1 of the Sherman Act.

117. Defendants' conduct has no procompetitive benefit or justification. The anticompetitive effects of their conduct outweigh any purported procompetitive justifications.

118. As a result of Defendants' conduct, and the harm to competition caused by that conduct, Plaintiff and Class Members have suffered substantial injuries to their business and property in an amount to be proven at trial and automatically trebled, as provided by 15 U.S.C. § 15.

119. Plaintiff and Class Members are also entitled to recover from Defendants the costs of suit, including reasonable attorneys' fees, as provided by 15 U.S.C. § 15.

SECOND COUNT

Manipulation in Violation of the Commodity Exchange Act (Against John Doe Defendants by the VIX Futures and Options Class)

120. Plaintiff re-alleges and incorporates by reference each of the allegations set forth above.

121. Each Defendant, individually, in concert, and/or as one another's control persons or agents, through their acts alleged herein, specifically intended to and did cause unlawful and artificial prices of VIX Futures and Options contracts in violation of the CEA, 7 U.S.C. §1, *et seq.*

122. The Defendants' manipulative conduct and trading activity alleged herein constituted a manipulation of the prices of VIX Instruments in violation of Section 4b(a), 4c(a), 9(a) and 22(a) of the CEA, 7 U.S.C. §§6b(a), 6c(a), 13(a)(2), and 25(a). As a direct result of Defendants' unlawful conduct, Plaintiff and members of the proposed Classes have suffered actual damages and injury in fact due to artificial prices for VIX Instruments to which they would not have been subject but for the unlawful conduct alleged herein.

123. Plaintiff and members of the proposed Classes were further legally injured and suffered injury in fact when they transacted VIX Instruments in an artificial and manipulated market operating under the artificial prices caused by the Defendants. Plaintiff and members of the proposed Classes are each entitled to their actual damages for the violations of the CEA alleged herein.

THIRD COUNT

**Aiding and Abetting Manipulation in Violation of the Commodity Exchange Act
(Against John Doe Defendants by the VIX Futures and Options Class)**

124. Plaintiff re-alleges and incorporates by reference each of the allegations set forth above.

125. John Doe Defendants by, *inter alia*, using VIX features introduced by CBOE and through the collusive posting of quotes and trading of SPX Options, knowingly aided, abetted, counseled, induced, and/or procured the violations of the CEA by other John Doe Defendants as alleged herein. The John Doe Defendants further coordinated their trading and market activity for the purposes of manipulating VIX Instruments.

126. Each John Doe Defendant did so knowing of the other John Doe Defendants' manipulation of the prices of SPX Options underlying the prices of VIX Instruments. The conduct alleged herein demonstrates that Defendants substantially and willfully intended to assist these manipulations so as to cause prices of VIX Instruments to be artificial, in violation of Section 22(a)(1) of the CEA.

127. Under Section 13c(a) of the CEA, 7 U.S.C. §13, Defendants are liable for willfully intending to assist the manipulation.

128. Other persons willfully intended to assist these manipulations to cause VIX Instruments to trade at artificial levels – the agents and unnamed co-conspirators as alleged herein – in violation of §22(a)(1) of the CEA, 7 U.S.C. §25(a)(1).

129. Plaintiff and members of the proposed Classes are each entitled to actual damages sustained for the violations of the CEA alleged herein.

FOURTH COUNT
**Manipulation by False Reporting and Fraud and Deceit in Violation
of the Commodity Exchange Act**
(Against John Doe Defendants by the VIX Futures and Options Class)

130. Plaintiff re-alleges and incorporates by reference each of the allegations set forth above.

131. Under Section 6(c)(1) of the CEA, as amended, codified at 7 U.S.C. §9, and Section 22 of the CEA, as amended, 7 U.S.C. §25, it is unlawful for any person, directly or indirectly, to use or employ, or attempt to use or employ, in connection with any swap, or a contract of sale of any commodity in interstate commerce, or for future delivery on or subject to the rules of any registered entity, any manipulative or deceptive device or contrivance, in contravention of such rules and regulations as the CFTC shall promulgate.

132. In July 2011, the CFTC promulgated Rule 180.1(a), 17 C.F.R. §180.1(a) (2011), pursuant to Section (6)(c)(1), which provides, in relevant part:

It shall be unlawful for any person, directly or indirectly, in connection with any swap, or contract of sale of any commodity in interstate commerce, or contract for future delivery on or subject to the rules of any registered entity, to intentionally or recklessly:

- (1) Use or employ, or attempt to use or employ, any manipulative device, scheme, or artifice to defraud;
- (2) Make, or attempt to make, any untrue or misleading statement of a material fact or to omit to state a material fact necessary in order to make the statements made not untrue or misleading;
- (3) Engage, or attempt to engage, in any act, practice, or course of business which operates or would operate as a fraud or deceit upon any person; or
- (4) Deliver or cause to be delivered, or attempt to deliver or cause to be delivered for transmission through mails or interstate commerce, by any means of communication whatsoever, a false or misleading or inaccurate report concerning crop or market information or conditions that affect or tend to affect the price of

any commodity in interstate commerce, knowing or acting in reckless disregard of the fact that such report is false, misleading or inaccurate.

133. Unlawful manipulation under the CEA, as amended, and Rule 180.1 includes delivering, or causing to be delivered for transmission through the mails or interstate commerce, by any means of communication whatsoever, a false or misleading or inaccurate report concerning market information or conditions that affect or tend to affect the price of any commodity in interstate commerce, knowing, or acting in reckless disregard of the fact that such report is false, misleading, or inaccurate.

134. During the Class Period, Defendants used or employed manipulative or deceptive devices or contrivances, in connection with a contract of sale or purchase of SPX Options and VIX Instruments in interstate commerce. This conduct included the making of untrue, inaccurate, or misleading statements of material facts, or omitting material facts necessary to make the statements made not misleading, such as the posting or bidding on of artificial prices for SPX Options in order to influence the prices of VIX Instruments, and failing to disclose that Defendants entered pre-arranged transactions to move the prices of VIX Instruments in a direction to benefit their own trading books.

135. Defendants' conduct caused injury to Plaintiff and other members of the Classes who transacted in an artificial and manipulated market, at manipulated prices, and with artificial price trends, during the Class Period.

136. Plaintiff and other members of the Classes are each entitled to damages for the violations of the CEA alleged herein.

FIFTH COUNT

Failure to Enforce Bylaws, Rules, Regulations, or Resolutions that It Is Required to Enforce in Violation of the Commodity Exchange Act (Against CBOE by the VIX Futures and Options Class)

137. Plaintiff re-alleges and incorporates by reference each of the allegations set forth above

138. Pursuant to 7 U.S.C. §25(b)(1), “[a] registered entity that fails to enforce any bylaw, rule, regulation, or resolution that it is required to enforce by section 7, 7a-1, 7a-2, 7b-3, or 24a of this title . . . [or] a licensed board of trade that fails to enforce any bylaw, rule, regulation, or resolution that it is required to enforce by the Commission . . . shall be liable for actual damages sustained by a person who engaged in any transaction on or subject to the rules of such registered entity to the extent of such person’s actual losses that resulted from such transaction and were caused by such failure to enforce . . . such bylaws, rules, regulations, or resolutions.”

139. CBOE is a registered entity under the terms of 7 U.S.C. §1a(40).

140. Plaintiff and other members of the Class engaged in transactions of VIX Futures and VIX Options subject to the rules of CBOE.

141. As detailed in the Complaint above, as a registered entity, CBOE knowingly failed to enforce (and/or with reckless disregard of its rules/regulations avoided acquiring such knowledge necessary to enforce) the following mandatory rules that CBOE was required to follow under the Commodity Exchange Act:

- a. 7 U.S.C. §7(d)(2)(A): “The board of trade shall establish, monitor, and enforce compliance with the rules of the contract market, including . . .(iii) rules prohibiting abusive trade practices on the contract market.”
- b. 7 U.S.C. §7(d)(2)(B): “The board of trade shall have the capacity to detect, investigate, and apply appropriate sanctions to any person that violates any rule of the contract market.”
- c. 7 U.S.C. §7(d)(3): “The board of trade shall list on the contract market only contracts that are not readily susceptible to manipulation.”

- d. 7 U.S.C. §7(d)(4): “The board of trade shall have the capacity and responsibility to prevent manipulation, price distortion, and disruptions of the delivery or cash-settlement process through market surveillance, compliance, and enforcement practices and procedures, including – (A) methods for conducting real-time monitoring of trading; and (B) comprehensive and accurate trade reconstructions.”
- e. 7 U.S.C. §7(d)(5)(A): “To reduce the potential threat of market manipulation or congestion (especially during trading in the delivery month), the board of trade shall adopt for each contract of the board of trade, as is necessary and appropriate, position limitations or position accountability for speculators.”
- f. 7 U.S.C. §7(d)(9)(A): “The board of trade shall provide a competitive, open, and efficient market and mechanism for executing transactions that protects the price discovery process of trading in the centralized market of the board of trade.”
- g. 7 U.S.C. §7(d)(10): “The board of trade shall maintain rules and procedures to provide for the recording and safe storage of all identifying trade information in a manner that enables the contract market to use the information – (A) to assist in the prevention of customer and market abuses; and (B) to provide evidence of any violations of the rules of the contract market.”
- h. 7 U.S.C. §7(d)(12): “The board of trade shall establish and enforce rules – (A) to protect markets and market participants from abusive practices committed by any party, including abusive practices committed by a party acting as an agent for a participant; and (B) to promote fair and equitable trading on the contract market.”
- i. 7 U.S.C. §7(d)(19): “Unless necessary or appropriate to achieve the purposes of this chapter, the board of trade shall not – (A) adopt any rule or taking [sic] any

action that results in any unreasonable restraint of trade; or (B) impose any material anticompetitive burden on trading on the contract market.”

142. As detailed in the Complaint above, CBOE had knowledge and/or with reckless disregard of its rules/regulations avoided acquiring such knowledge that: the SOQ used for settlement of VIX Futures and VIX Options was susceptible to being manipulated and was, in fact, being manipulated; the manipulation of the SOQ was manipulating the value of VIX Futures and VIX Options that CBOE allowed to be traded; this manipulation of the SOQ and VIX Futures and VIX Options constituted abusive trade practices; and nonetheless CBOE did not stop offering those products for trading, nor did it investigate, enforce, or apply appropriate sanctions against individuals or entities engaged in this manipulation and abusive trade practices.

143. As detailed in the Complaint above, CBOE failed to enforce these rules in bad faith. Specifically, CBOE knew that suspending trading in VIX Futures and VIX Options that were susceptible to manipulation would negatively impact the transaction fees and revenues CBOE realized and enjoyed during the Class Period and would also negatively impact the value of CBOE’s stock (including shares held by and paid to CBOE officers and directors as part of their compensation). CBOE (including its officers and directors) therefore had a financial incentive to allow the manipulation described above to continue.

144. CBOE’s conduct caused injury to Plaintiff and other members of the Class who transacted via CBOE’s markets in VIX Futures and VIX Options that CBOE knew (or was recklessly indifferent to knowing) were being traded in an artificial and manipulated market, at manipulated prices, and with artificial price trends, during the Class Period.

145. The damages to Plaintiff and other members of the Class were caused by CBOE's failure to enforce bylaws, rules, regulations, or resolutions that it was required to enforce under the Commodity Exchange Act.

146. Plaintiff and other members of the Class are each entitled to damages for the violations of the CEA alleged herein.

XII. PRAYER FOR RELIEF

WHEREFORE, Plaintiff and Class Members demand judgment as follows:

A. Certification of the action as a Class Action pursuant to Federal Rule of Civil Procedure 23, and appointment of Plaintiff as Class Representative and her counsel of record as Class Counsel;

B. That acts alleged herein be adjudged and decreed to be unlawful restraints of trade in violation of the Sherman Act, 15 U.S.C. § 1 *et seq.*, and violate the Commodity Exchange Act, 7 U.S.C. § 1, *et seq.*;

C. A judgment against Defendants for the damages sustained by Plaintiff and the Classes defined herein, and for any additional damages, penalties, and other monetary relief provided by applicable law, including treble damages;

D. By awarding Plaintiff and Class Members pre-judgment and post-judgment interest as provided by law, and that such interest be awarded at the highest legal rate from and after the date of service of the Complaint in this action;

E. The costs of this suit, including reasonable attorney fees; and

F. Such other and further relief as the Court deems just and proper.

JURY TRIAL DEMANDED

Plaintiff, on behalf of itself and others similarly situated, hereby requests a jury trial, pursuant to Federal Rule of Civil Procedure 38, on any and all claims so triable.

Dated: July 25, 2018

FREED KANNER LONDON & MILLEN LLC

/s/ Douglas A. Millen

Douglas A. Millen

Michael J. Freed

Michael E. Moskovitz

Brian M. Hogan

2201 Waukegan Road, Suite 130

Bannockburn, IL 60015

Telephone: (224) 632-4500

Facsimile: (224) 632-4521

dmillen@fklmlaw.com

mfreed@fklmlaw.com

mmoskovitz@fklmlaw.com

bhogan@fklmlaw.com

Guido Saveri

R. Alexander Saveri

SAVERI & SAVERI, INC.

706 Sansome Street

San Francisco, CA 94111

Telephone: (415) 217-6810

Facsimile: (415) 217-6813

guido@saveri.com

rick@saveri.com

Vincent J. Esades

HEINS MILLS & OLSON, P.L.C.

310 Clifton Avenue

Minneapolis, MN 55403

Telephone: (612) 338-4605

Facsimile: (612) 338-4692

vesades@heinsmills.com

Attorneys for Plaintiff

Cassandra Trading Group, LLC