UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS

JOHN PELS, individually and on behalf of others similarly situated, Plaintiff, v. CBOE GLOBAL MARKETS, INC., CBOE EXCHANGE, INC., CBOE FUTURES EXCHANGE, LLC, and JOHN DOES 1-10, Defendants.	**CLASS ACTION COMPLAINT** **JURY TRIAL DEMANDED**

John Pels ("Plaintiff") brings this civil action individually and on behalf of others similarly situated against Defendants CBOE Global Markets, Inc., CBOE Exchange, Inc., and CBOE Futures Exchange, LLC ("CBOE Defendants"), as well as Defendants John Does 1-10 (collectively, "John Doe Defendants"). The allegations set forth in this Complaint are based on knowledge, information, belief, and investigation of counsel.

NATURE OF THE ACTION

1. The CBOE Defendants created the Volatility Index ("VIX") to measure the volatility of the S&P 500 Index. Billions of dollars of derivatives are now tied to the value of VIX, allowing investors to trade "volatility."

2. There is abundant evidence that the John Doe Defendants have colluded to manipulate VIX and, in doing so, have reaped hundreds of millions (if not billions) of ill-gotten profits due to their holdings of derivatives linked to VIX. Among other things, the settlement value of VIX frequently substantially deviates (by as much as 10%) from the value of VIX that is calculated just seconds later. Manipulation is the only rational explanation for these

instantaneous jumps in the value of VIX right at the moment of settlement. As a result of this manipulation, investors have suffered losses in the billions.

3. The John Doe Defendants' collusion to manipulate VIX is a *per se* illegal price fixing conspiracy in violation of Section 1 of the Sherman Act, *see* 15 U.S.C. §§ 1, 15, and is a violation of the prohibitions on manipulation in the Commodity Exchange Act, *see* 7 U.S.C. §§ 6b, 6c, 9, 13(a)(2), 25(a).

4. The precise identity of the John Doe Defendants it not currently known but can be readily determined through trading records that the CBOE Defendants have a statutory duty to maintain. *See* 7 U.S.C. § 7(d)(10).

5. The CBOE Defendants are also culpable for the manipulation. They have long known – or should have known – that VIX was capable of manipulation and that it was being manipulated. However, the CBOE Defendants turned a blind-eye because VIX is the CBOE Defendants' premier product. The CBOE Defendants earn hundreds of millions of revenue every year by taking a small fee for every VIX transaction. Had the CBOE Defendants cracked down on manipulation – as they should have – they would have spooked investors and harmed their bottom line. Instead, the CBOE Defendants put the reputation of VIX – and the profits they earn from VIX – ahead of protecting investors.

6. By failing to prevent VIX manipulation, the CBOE Defendants have violated their obligations under the Commodity Exchange Act to, among other things, "prohibit[ ] abusive trade practices," "prevent manipulation," and not allow trading in instruments "readily susceptible to manipulation." 7 U.S.C. §§ 7(d), 25(b).

JURISDICTION AND VENUE

7. This action arises under Section 1 of the Sherman Act, 15 U.S.C. § 1, and various sections of the Commodity Exchange Act. The Court therefore has subject-matter jurisdiction under 28 U.S.C. § 1331.

8. Defendants have substantial contacts with Illinois and the United States. For example, each of the CBOE Defendants maintains its principal place of business at 400 South LaSalle Street, Chicago, Illinois. Plaintiff's claims also arise from Defendants' contacts with Illinois and the United States. The Court therefore has personal jurisdiction under Federal Rule of Civil Procedure 4(k) and Section 12 of the Clayton Act, 15 U.S.C. § 22.

9. Defendants are inhabitants of this District and transact business in this District. A substantial part of the events that give rise to Plaintiff's claims occurred in this District, and a substantial portion of the affected interstate trade and commerce discussed herein was carried out in this District. Venue therefore lies in this District under 28 U.S.C. § 1391, Section 12 of the Clayton Act, 15 U.S.C. § 22, and Section 22 of the Commodity Exchange Act, 7 U.S.C. § 25.

PARTIES

10. Plaintiff John Pels is an individual investor residing in Windsor, California. He has traded in VIX Futures and has suffered damages as a result of the manipulation of VIX.

11. Defendant CBOE Global Markets, Inc. is incorporated in Delaware and maintains its principal place of business at 400 South LaSalle Street, Chicago, Illinois.[1] CBOE Global

[1] *See* CBOE Global Markets, Inc., Form 8-K (SEC filed Feb. 9, 2018), https://www.sec.gov/Archives/edgar/data/1374310/000155837018000549/f8-k.htm.

Markets, Inc. was formerly known as CBOE Holdings, Inc.[2] CBOE Global Markets, Inc. describes itself as "one of the world's largest exchange holding companies" that offers "trading across a diverse range of products in multiple asset classes and geographies, including options, futures, U.S. and European equities, exchange-traded products (ETPs), global foreign exchange (FX), and multi-asset volatility products based on [VIX], the world's barometer for equity market volatility."[3]

12. Defendant CBOE Exchange, Inc. is incorporated in Delaware and maintains its principal place of business at 400 South LaSalle Street, Chicago, Illinois.[4] CBOE Exchange, Inc. is a wholly-owned subsidiary of CBOE Global Markets, Inc. CBOE Exchange, Inc. is the legal entity for the Chicago Board Options Exchange ("CBOE") and is "the largest U.S. options exchange and creator of listed options."[5]

13. Defendant CBOE Futures Exchange, LLC is organized under the laws of Delaware and maintains its principal place of business at 400 South LaSalle Street, Chicago, Illinois.[6] CBOE Futures Exchange, LLC is a wholly-owned subsidiary of CBOE Global

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[2] *See* CBOE Global Markets, Inc., Form 10-Q, at 6 (SEC filed Nov. 7, 2017), https://www.sec.gov/Archives/edgar/data/1374310/000137431017000033/cboe10-qq32017.htm.

[3] *See* CBOE Global Markets News Release, *CBOE Global Markets Reports 2017 Fourth Quarter and Full Year Results* (Feb. 9, 2018), *attached as* Exh. 99.1 to CBOE Global Markets, Inc., Form 8-K (SEC filed Feb. 9, 2018), https://www.sec.gov/Archives/edgar/data/1374310/000155837018000549/ex-99d1.htm.

[4] *See* CBOE C2 Exchange, Inc., Form 1/A at C-39 (SEC filed Nov. 15, 2017), https://www.sec.gov/Archives/edgar/vprr/1700/17002516.pdf.

[5] *See* CBOE Exchange, Inc., Form 40-App, at 3 (SEC filed Dec. 15, 2017), https://www.sec.gov/Archives/edgar/data/876663/000089457917000248/cboe40app121517.htm.

[6] *See* CBOE Exchange, Inc., Form 1/A, at C-40 (SEC filed Oct. 31, 2017), https://www.sec.gov/Archives/edgar/vprr/1700/17002662.pdf.

Markets, Inc. CBOE Futures Exchange, LLC is a "contract market approved by the Commodities Futures Trading Commission"[7] that "offer[s] for trading futures on the VIX Index."[8]

14. Defendants John Does 1-10 are financial institutions or trading firms that have manipulated VIX as described in this Complaint. Plaintiff will be able to identify them if permitted discovery of certain records that CBOE Defendants are required to maintain under the Commodity Exchange Act, 7 U.S.C. § 7(d).

FACTUAL ALLEGATIONS

I. The CBOE Defendants Create VIX And Tradable VIX Products

A. Options and Futures Background

15. Options contracts are agreements that confer the right, but not the obligation, to buy or sell an underlying commodity at a certain price (the strike price) either before or upon a specified date (the expiration date).

16. There are two types of options – call options confer the right to buy, and put options confer the right to sell. For example, a call option may confer the right to buy a commodity for $3.50 prior to September 1, 2018. The holder of that option may choose to exercise that option if the price of the commodity rises to $4.00 because the holder would be able to buy the commodity at $3.50 pursuant to the option contract and then sell the commodity at $4.00. On the other hand, the holder of the option would not want to exercise the option if the

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[7] *See* CBOE Exchange, Inc., Form 1/A, at C-39 (SEC filed Oct. 31, 2017), https://www.sec.gov/Archives/edgar/vprr/1700/17002662.pdf.

[8] *See* CBOE Global Markets, Inc., Form 10-Q, at 26 (SEC filed Nov. 7, 2017), https://www.sec.gov/Archives/edgar/data/1374310/000137431017000033/cboeE10-qq32017.htm.

price of the commodity was $3.00. If the price of the commodity stayed below $3.50 until September 1, 2018, the contract may expire without being exercised.

17. A call (or put) option is termed "out-of-the-money" when the strike price is above (or below) the current price of the commodity in the market. A call (or put) option is termed "in-the-money" when the strike price is below (or above) the current price of the commodity in the market. In the above example, as long as the price of the commodity is less than $3.50, the call option is out-of-the-money. The holder of the call option would not exercise his rights under the option because the holder could purchase the commodity in the market at a lower price.

18. Much like stocks, options may be traded on exchanges like the CBOE, which is operated by the CBOE Defendants. The CBOE creates standardized option contracts to facilitate trade. In the example above, the call option may have a trading price of $0.10.

19. In general, options are priced higher when the price of the underlying commodity is more volatile. This is because the person selling the option takes on the risk that the price of the commodity may increase (or decrease) significantly. Likewise, options are priced higher when the strike price is close to the spot price because, in that situation, the option is more likely to be exercised.

20. Futures contracts are agreements to buy and sell a commodity at a specified date in the future (known as the settlement date) for a predetermined price (known as the forward price). For example, an individual may hold a futures contract that obligates the individual to buy a commodity at $3.50 on September 1, 2018.

21. Like options, futures may be traded on an exchange like the Chicago Futures Exchange ("CFE"), which is operated by the CBOE Defendants. The exchange creates standardized futures contracts to facilitate trade.

22. Options and futures may be "cash settled," meaning that cash rather than the underlying commodity is exchanged. The amount of cash that is exchanged is the difference between the price of the commodity at execution and the strike price. For example, if a call option with a strike price of $3.50 for a commodity is exercised when the price of the commodity is $4.00, the holder of the option contract will be paid $0.50 – which represents the amount he would have earned if he had purchased the commodity at the $3.50 strike price and sold the commodity at $4.00.

B. VIX

23. CBOE Defendants introduced VIX in 1993 as a measure of 30-day implied volatility of the S&P 500 Index – that is, VIX is a measure of how much the S&P 500 Index is expected to change over the next 30 days. VIX is commonly referred to as the stock market's "fear gauge" because it measures volatility.[9] A higher VIX indicates greater expected volatility in the S&P 500 Index.

24. VIX is central to the CBOE Defendants' business. According to the CBOE Defendants, VIX is "the premier benchmark for U.S. stock market volatility"[10] and a "homerun" product.[11] As of April 9, 2018, the main website of the CBOE Defendants featured the ticker for

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[9] *See, e.g.*, Joe Cioli, *Stock Market's Fear Gauge Spikes the Most on Record*, Business Insider (Feb 5, 2018), http://www.businessinsider.com/vix-price-stock-market-fear-gauge-huge-single-day-increase-2018-2; Elliot Blair Smith, *How S&P 500 Options May Be Used To Manipulate VIX "Fear Gauge,"* Market Watch (June 19, 2017), https://www.marketwatch.com/story/how-sp-500-options-may-be-used-to-manipulate-vix-fear-gauge-2017-06-19.

[10] *See* White Paper, CBOE Volatility Index – VIX, Chicago Board Options Exchange, at 2, http://www.cboe.com/micro/vix/vixwhite.pdf (last accessed April 6, 2018) ("White Paper").

[11] *See* CBOE Holdings, Inc., Form S-4 (filed Feb. 8, 2017), https://www.sec.gov/Archives/edgar/data/1374310/000110465917007806/a16-23690_24425.htm.

VIX before any other product. The CBOE Defendants even named April 2018 as "VIX Month" to celebrate the 25th anniversary of VIX, claiming "[t]he growth of VIX and volatility trading has been an amazing story."[12]

25. The CBOE Defendants tout VIX as "the world's accepted measure of market volatility." They have also publicly stated that VIX is a "transparent, closely regulated, and highly reliable gauge of market sentiment with no history of failure." And on their website they advertise "VIX Options and Futures Strategies" to entice ordinary investors to begin trading in the VIX products described below.[13]

26. VIX is calculated every fifteen seconds using real-time prices of options on the S&P 500 Index ("SPX Options") that expire in 23 to 37 days. The VIX is published by the CBOE Defendants with the ticker symbol "VIX."

27. SPX Options confer the right to buy (or sell) the S&P 500 Index at a certain strike price. These options are cash settled and can only be exercised on the settlement date. The amount of profit that an investor realizes at settlement is the difference between the strike price and the S&P 500 Index at settlement, times a multiplier of $100. For example, the holder of a call option with a strike price of 2,000 would realize a profit of $100 (minus the original trade price for the SPX Option) if the settlement value of the S&P 500 Index was 2,001.

28. The CBOE Defendants state the VIX calculation includes only SPX Options that are "out-of-the-money" – labeled as such because they would be worthless if they expired at that

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[12] *See* CBOE Blog, *CBOE Declares April VIX Month* (Apr. 6, 2018), http://www.cboe.com/blogs/options-hub/2018/04/06/cboe-declares-april-vix-month.

[13] CBOE, VIX Options and Futures Strategies, http://www.cboe.com/products/vix-index-volatility/vix-options-and-futures/vix-strategies.

moment rather than in 23 to 37 days – and that have non-zero bids. VIX considers the price of SPX Options that are out-of-the-money because a higher price for those options implies a higher degree of volatility in the S&P 500 Index. The higher the price for those options, the higher the implied volatility in the S&P 500 Index, and the higher the VIX. Conversely, the lower the price for those options, the lower the implied volatility, and the lower the VIX.

29. The formula for VIX is given below:

$$\sigma^2 = \frac{2}{T}\sum_i \frac{\Delta K_i}{K_i^2} e^{RT} Q(K_i) - \frac{1}{T}\left[\frac{F}{K_0} - 1\right]^2$$

30. In this formula, σ is VIX / 100; T is the time to expiration; F is the forward index level; K_0 is the first strike price below the forward index level F; K_i is the strike price for the i-th out-of-the-money option (a call option if $K_i > K_0$, a put option if $K_i < K_0$, and a put and a call if $K_i = K_0$); ΔK_i is the interval between the strike prices (half the difference between the strike on either side of K_i); R is the risk-free interest rate to expiration; and $Q(K_i)$ is the midpoint of the bid-ask spread for the K_i option.

31. The forward index level F is determined by identifying the strike price at which the absolute difference between the call and put prices is the smallest. Thus, F is roughly interpreted as the "expected" value of the S&P 500 Index in the future.

32. In addition to considering only SPX Options with non-zero bids, the VIX formula cuts off the "chain" of options considered after two consecutive options for which there are zero bids. For example, suppose there were two consecutive put options at strike prices 1365 and 1360 with zero bids. Put options with even lower strike prices (less than 1360) would not be

considered by the formula even if those put options had non-zero bids. The same applies to call options. This is shown in the graphic below.

Put Strike	Bid	Ask	Include?
1345	0	0.15	*Not considered following two zero bids*
1350	**0.05**	**0.15**	
1355	**0.05**	**0.35**	
1360	0	0.35	No
1365	0	0.35	No
1370	0.05	0.35	Yes
1375	0.1	0.15	Yes
1380	0.1	0.2	Yes
.	.	.	.

33. The formula for calculating VIX weighs certain SPX Options more than other SPX Options. *First*, deep out-of-the-money put options receive much greater weight in the formula than other SPX Options. This is because the "contribution" that each SPX Option makes to the VIX is weighted by the inverse of K_i^2 (the square of the strike price).

34. *Second*, SPX Options for which there is a wider gap between nearby strikes (*e.g.*, ten points) receive more weight than SPX Options for which there is a narrower gap (*e.g.*, five points). This is because SPX Options are weighted by ΔK_i (the interval between strike prices).

C. Tradable VIX Products

35. VIX itself is merely an index – a number – and is not a tradable product.

36. The CBOE Defendants realized there was considerable demand for tradable products that reflected expectations of market volatility. They sought to convert that demand

into revenue by creating several tradable financial products tied to VIX, including VIX Futures in 2004 and VIX Options in 2006.

37. The CBOE Defendants have an exclusive license for SPX Options, VIX Futures, and VIX Options. Consequently, these financial instruments are traded exclusively on the CBOE Defendants' platforms.

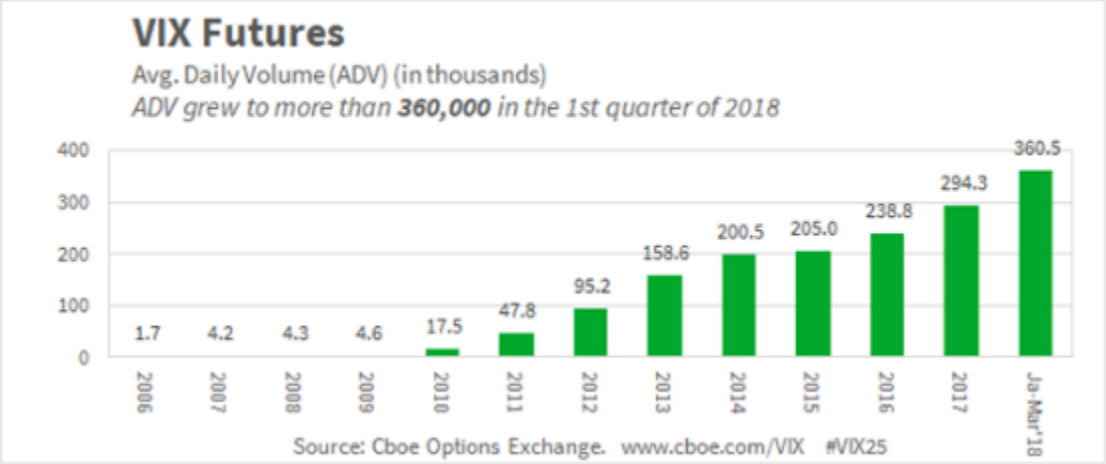
38. VIX Futures and VIX Options function just like ordinary futures and options contracts, except the underlying "commodity" is VIX. Because the underlying commodity is not tangible, VIX Futures and VIX Options are cash settled. That is, on the expiration – or settlement – holders of VIX Futures and VIX Options are paid in cash. VIX Options are also "European settled," which means the right to "buy" or "sell" VIX can only be exercised at settlement.

39. The amount of profit (or loss) that an investor realizes on a VIX Future or VIX Option held to settlement is affected by a "multiplier," which is $1,000 for VIX Futures and $100 for VIX Options. For example, if the settlement value for VIX is 20, an investor who bought a VIX Future with a forward price of 19 and held it to settlement would realize a profit of $1,000 (minus the original trade price for the VIX Future).

40. At any given time, market prices of VIX Futures and VIX Options depend on expectations of where VIX will be at the settlement date. As CBOE Defendants explain with respect to VIX Futures: "Assume . . . 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."[14] The same is true for VIX Options. "VIX options are priced using the same assumptions as the corresponding VIX futures contracts."[15]

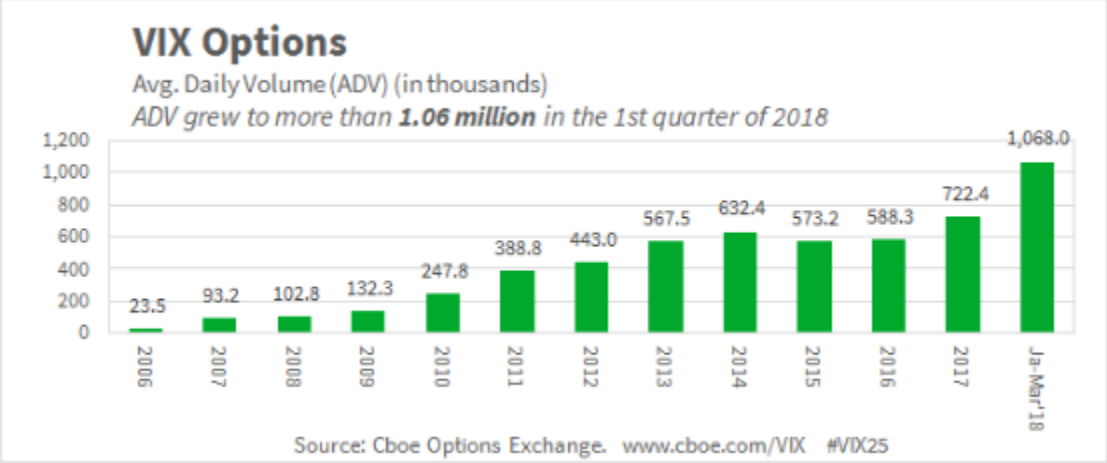
41. Trading in VIX Futures and VIX Options has grown enormously since the CBOE Defendants introduced them. As shown in the chart below, the average daily trading volume of VIX Futures has risen to 360,000 contracts in the first quarter of 2018.



42. As shown in the chart below, the average daily trading volume of VIX Options has risen to 1.06 million contracts in the first quarter of 2018.

[14] The Relationship of Prices of VIX Futures to the VIX Index, Chicago Board Options Exchange, http://www.cboe.com/products/vix-index-volatility/vix-options-and-futures/vix-futures/price-relationship (last accessed April 6, 2018).

[15] VIX Strategy Workshop – Long Call, CBOE, http://www.cboe.com/strategies/product-specific-strategies/vix/long-call (last accessed April 6, 2018).



43. In addition to high trading volumes, there are a very large number of open VIX Futures and VIX Options contracts at any time. For example, on February 1, 2018, there were 636,649 outstanding VIX Futures contracts (notional value of more than $636 million) and 13,223,224 outstanding VIX Options contracts (notional value of more than $1.32 billion).[16]

44. The CBOE Defendants profit from VIX Futures, VIX Options, and SPX Options by taking a fee from every transaction in these products. The fees are as high as $1.40 per trade for a VIX Future, $0.45 per trade for a VIX Option, and $0.44 per trade for an SPX Option.[17]

45. Given their popularity, VIX Futures and VIX Options are a large source of the CBOE Defendants' revenue. In 2016, CBOE Defendants reported that "approximately 88.2% of our transaction fees were generated by our futures and index options, the overwhelming majority of which were generated by our exclusively-licensed products and products based on the VIX

[16] CBOE Daily Market Statistics, http://www.cboe.com/data/current-market-statistics/daily-market-statistics-2-cboe#VIX; CBOE Futures Daily Statistics, https://markets.cboe.com/us/futures/market_statistics/daily/?dt=2018-02-01 (last accessed April 16, 2018).

[17] CBOE – CFE Fee Schedule, https://www.cboe.com/publish/cfefeeschedule/cfefeeschedule.pdf (last accessed April 16, 2018); CBOE Exchange, Inc. – Fee Schedule, http://www.cboe.com/publish/feeschedule/cboefeeschedule.pdf (last accessed April 16, 2018).

methodology. The bulk of this revenue is attributable to [the CBOE Defendants'] S&P 500 Index options and VIX Index options and futures."[18] Thus, much of the CBOE Defendants' revenue is derived from trading in VIX Futures, VIX Options, or SPX Options (which are the products that are traded to manipulate VIX).

46. It is therefore not surprising that the CBOE Defendants describe VIX as the "centerpiece" of their "volatility franchise," which includes "volatility indexes on broad-based stock indexes, exchange traded funds, individual stocks, commodities and several strategy and performance based indexes, as well as tradable volatility contracts, such as VIX options and futures."[19]

47. Beginning in or around 2008, other market participants began offering VIX exchange-traded products ("VIX ETPs") – including exchange-traded funds ("ETFs") and exchange-traded notes ("ETNs") – whose performance is directly correlated to VIX.[20] There are upwards of 20 such VIX ETPs, and their assets under management is in the billions. For example, Barclays issues the iPath S&P 500 VIX Short-Term Futures ETN ("VXX"), which is "designed to provide exposure to the S&P 500 VIX Short-Term Futures Index Total Return." The CBOE Defendants earns licensing fees on VIX ETPs.[21]

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[18] CBOE Holdings, Inc., Form 10-K at 20 (SEC filed Feb. 21, 2017), https://www.sec.gov/Archives/edgar/data/1374310/000137431017000006/cboe-1231201610k.htm.

[19] *See* CBOE Global Markets, *VIX Index and Volatility*, http://www.CBOE.com/products/vix-index-volatility (last accessed April 16, 2018).

[20] VIX ETPs as defined does not include VIX exchange-traded products that are inversely correlated to VIX such as VelocityShares Daily Inverse VIX Short Term ETN (XIV).

[21] *See* Joe Rennison, *Cboe Says VIX Products Not To Blame for Market Rout*, Financial Times (Feb. 7, 2018), https://www.ft.com/content/4eeac462-0bb9-11e8-8eb7-42f857ea9f09.

48. Retail investors and professional investors alike can trade in VIX Futures, VIX Options, and VIX ETPs. Indeed, in recent years, these VIX-related products have "become some of the most hyped investments available" to all investors – though, many retail investors have lost significant amounts as a result of investing in these products.[22] In light of recent retail investor losses, one of the individuals responsible for creating the current version of the VIX formula in 2003 stated: "In my wildest imagination I don't know why these products exist. Who do they benefit? No one, except if someone wants to gamble – then, OK, just go gamble . . . . It's kind of sad these products exist in the first place, but it's hard to stop it."[23]

D. Settlement of VIX Futures and VIX Options

49. Until 2015, the CBOE Defendants offered only VIX Futures and VIX Options that expired on a monthly basis. The settlement date for these contracts was the Wednesday that is 30 days prior to the third Friday of the calendar month immediately following the month in which the contract expires. This meant that investors could buy VIX Futures and VIX Options that settled once per month – *e.g.*, on April 18, 2018 and May 16, 2018 – but could not buy VIX Futures or Options that settled on dates in between.

50. In 2015, the CBOE Defendants began offering VIX Futures and VIX Options that expired weekly – *e.g.*, on April 25, 2018, May 2, 2018, and May 9, 2018. The volumes for the "monthly" VIX Futures and VIX Options remain significantly higher than the "weekly" VIX Futures and VIX Options.

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[22] *Wall Street's Hottest VIX Trades Burn Amateur Investors*, Bloomberg (Feb. 7, 2018), http://fortune.com/2018/02/07/vix-volatility-index-trades/.

[23] Max Abelson and Joe Weisenthal, *An Inventor of the VIX: "I Don't Know Why These Products Exist,"* Bloomberg (Feb. 6, 2018), https://www.bloomberg.com/news/articles/2018-02-06/an-inventor-of-the-vix-i-don-t-know-why-these-products-exist.

51. The settlement price for VIX Futures and VIX Options on an expiration date is determined during an hour-long pre-opening auction called the Hybrid Opening System ("HOSS"). This auction generates the Special Opening Quotation ("SOQ"), which is used as the settlement value for VIX.

52. The formula to generate the settlement value for VIX is the same as the formula for determining VIX at all other times with two differences. *First*, only SPX Options that are expiring in 30 days are considered (rather than those with expiration dates between 23 and 37 days). *Second*, rather than using the midpoint of the bid-ask spread for each option, the formula uses the prices determined in the auction for each SPX Option. If the auction does not generate a price for an SPX Option – meaning no trade occurs – the midpoint of the bid-ask spread is used.

53. The auction begins at 7:30 a.m. CST. At that time, all investors may submit orders for SPX Options to the CBOE Defendants' electronic book, though none of these orders are executed. At 8:20 a.m. CST (8:15 a.m. prior to February 8, 2017), investors are prohibited from submitting "strategy orders," which are orders "related to positions in, or a trading strategy involving, volatility index options or (security) futures."[24] At 8:30 A.M., the CBOE Defendants execute the orders residing on its electronic book at a "'market-clearing' price, which is the single price at which the largest number of contracts in the Book can execute."[25]

[24] CBOE Rule 6.2.01(a).

[25] CBOE Rule 6.2(c)(i)(A).

II. VIX Manipulation

A. VIX Is Highly Susceptible To Manipulation

54. The value for VIX has an enormous financial impact on those who trade in VIX Futures, VIX Options, and VIX ETPs. Even a deviation by a small percentage can shift billions of dollars between the parties to those derivative contracts.

55. VIX is also highly susceptible to manipulation. Indeed, a member of the Goldman Sachs team that developed the current VIX formula in 2003 acknowledged he was aware of "the vulnerability of the VIX settlement to potential manipulation."[26] That individual further explained that "trying to manipulate the VIX is not conceptually different from trying to manipulate any other index" – one would manipulate the price of the SPX Options that are used as inputs to the VIX formula.[27]

56. VIX is also subject to manipulation at settlement. The settlement value is determined during a one-hour auction before active daily trading and considers the prices for only a subset of SPX Options that expire in 30 days. Market participants can move the settlement value by artificially inflating or deflating the price of those SPX Options through the settlement auction.

57. A May 2017 published study by Professor John Griffin of the University of Texas-Austin and Ph.D. candidate Amin Shams ("Griffin-Shams Study") confirms that VIX is susceptible to manipulation.[28]

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[26] Smith, *supra* note 9.

[27] *Id.*

[28] *See* John M. Griffin and Amin Shams, *Manipulation in the VIX?*, 31 Rev. Fin. Studies 1377 (May 23, 2017), *available at* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2972979.

58. *First*, the markets for VIX Futures, VIX Options, and VIX ETPs are large and liquid, while the market for the underlying SPX Options used to calculate the settlement price is less liquid (and therefore easier to manipulate). Indeed, the volume of open VIX Options and VIX Futures at settlement is 5.7 and 7.3 times the volume of SPX Options traded at settlement.[29] This makes it feasible to manipulate the price of SPX Options for the purpose of benefitting a larger position in VIX Futures, VIX Options, and VIX ETPs.

59. *Second*, VIX Futures, VIX Options, and VIX ETPs are readily tradable and cash settled.[30] Cash settlement is important because it means that if the settlement price is manipulated away from the true price reflecting legitimate forces of supply and demand, the VIX Futures and VIX Options positions will settle, or cash out, at the manipulated price, to the advantage of the manipulators. Cash settlement is meaningfully different from settlement by physical delivery. In the case of physical settlement, manipulation is not a winning strategy because manipulators simply take possession of the physical commodity at the artificial price.

60. *Third*, VIX is susceptible to manipulation during settlement because the settlement value is determined during a short auction that occurs outside of normal trading hours.[31] Accordingly, manipulators can exert an exceptional force on the settlement price and do not have to guard their positions against legitimate forces of supply and demand present during the regular trading period.

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[29] *See id.* at 32.

[30] *See id.* at 9.

[31] *See id.*

61. Another possible way in which VIX may be manipulated is through "spoofing." During regular trading hours, the VIX is determined according to the midpoint of the bid-ask spread. As a result, manipulators can move VIX by submitting "spoof" orders that will never be executed and then cash in by immediately executing trades in VIX Futures, VIX Options, or VIX ETPs. The formula for the settlement value for VIX also uses the average of the bid and ask when there is no trade for a particular SPX Option during the settlement auction.

62. In contrast to VIX, the European analog for VIX ("VSTOXX") calculates its settlement value by averaging the VSTOXX value every five seconds over a thirty-minute period during normal trading hours. This forces would-be manipulators to defend their trading position over a period of time. In addition, VSTOXX considers only underlying options with a trade price of at least 0.5 euros (VIX has no such lower bound), thus eliminating the reliance on rarely traded, deep out-of-the-money options.

63. Commodity Futures Trading Commission ("CFTC") regulations also confirm that VIX is susceptible to manipulation. Those regulations warn: "[c]ash settled contracts may be susceptible to manipulation or price distortion"; "situations susceptible to manipulation include those in which the volume of [underlying commodity (*e.g.*, SPX Options)] transactions and/or the number of participants contacted in determining the . . . settlement price are very low." 17 C.F.R. § pt. 38, App'x C.

B. VIX Has Been Manipulated

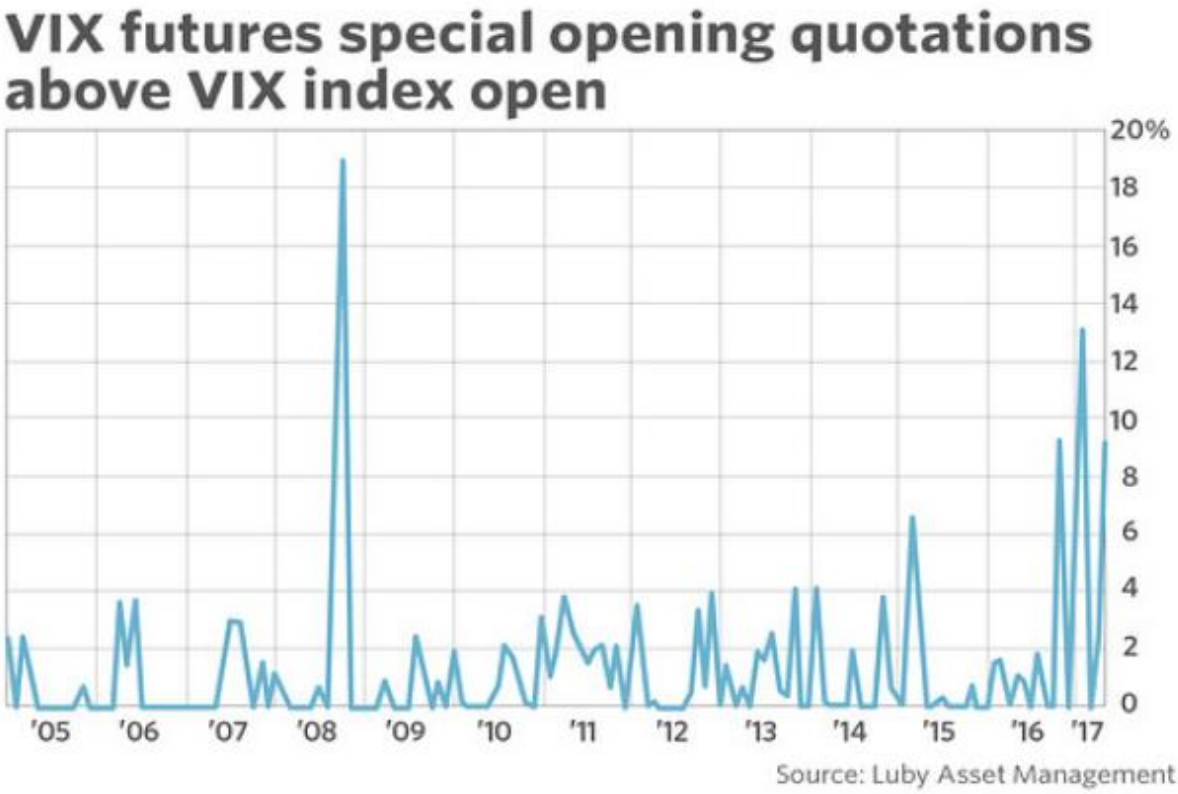
64. There is abundant evidence that the John Doe Defendants have manipulated VIX at settlement by submitting manipulative orders for SPX Options. On information and belief, that same procedure has been used to manipulate VIX at times other than settlement.

65. The settlement value used for VIX Futures and VIX Options often deviates substantially from the value of VIX at the close of the previous day and the value of VIX that is calculated just seconds after trading opens. For example, on December 19, 2017 – the day before settlement – VIX closed at 10.03. The settlement value for VIX the next morning was 8.75 (a 12.8% decrease). Just seconds later, VIX opened at 9.69 (a 10.7% increase). There is no rational explanation for this sudden deviation other than manipulation.

66. The chart below shows numerous other instances in which this has occurred.

Settlement Date	VIX Close (Day Before Settlement)	VIX Settlement Value	VIX Open (Day Of Settlement)	Change From Close To Settlement	Change From Settlement To Open
02/15/2017	10.74	12.26	10.84	14.15%	11.58%
08/16/2017	12.04	12.95	11.59	7.56%	10.50%
01/17/2018	11.66	12.61	11.35	8.15%	9.99%
11/15/2017	11.59	13.79	12.52	18.98%	9.21%
11/16/2016	13.37	14.76	13.51	10.40%	8.47%
05/17/2017	10.65	12.98	11.89	21.88%	8.40%
01/18/2017	11.87	12.52	11.79	5.48%	5.83%
03/20/2013	14.39	12.64	13.18	12.16%	4.27%
12/21/2011	23.22	21.36	22.52	8.01%	5.43%
10/19/2016	15.28	14.56	15.45	4.71%	6.11%
02/14/2018	24.97	21.87	23.48	12.41%	7.36%
04/20/2016	13.24	12.38	13.39	6.50%	8.16%
12/20/2017	10.03	8.75	9.69	12.76%	10.74%

67. The manipulation has increased sharply in 2017, as the chart below indicates.



68. In 15 of the 111 (13.5%) monthly settlements that have occurred since January 2009, the settlement value for VIX has been higher (or lower) than the highest (or lowest) VIX value at any point during the day preceding settlement and the day of settlement. For example, on December 19, 2017, the lowest VIX value was 9.18, and on December 20, 2017 (the settlement date), the lowest VIX value was 8.9. And yet the settlement value for VIX was 8.75 – lower than the lowest value on either of those days. Manipulation is the most plausible explanation for such an anomaly.

69. The chart below shows the 15 instances in which this has occurred.

Settlement Date	VIX Range (Day Before Settlement)	VIX Range (Day Of Settlement)	VIX Settlement Value
12/20/2017	9.18 – 10.15	8.9 – 9.85	8.75
10/18/2017	9.78 – 10.46	9.87 – 10.41	10.53
08/16/2017	11.45 – 12.37	11.25 – 12.54	12.95
02/15/2017	10.73 – 11.34	10.80 – 12.01	12.26
11/16/2016	13.30 – 14.65	13.51 – 14.49	14.76
04/20/2016	12.98 – 13.88	12.50 – 13.50	12.38
01/22/2014	12.61 – 13.42	12.55 – 13.12	12.36
11/20/2013	12.88 – 13.68	12.97 – 13.94	14.12
09/18/2013	14.28 – 14.61	13.23 – 14.68	14.77
06/19/2013	16.46 – 16.95	15.36 – 17.18	17.22
10/17/2012	14.50 – 15.23	14.90 – 15.63	15.96
01/18/2012	20.69 – 22.25	20.78 – 23.44	23.64
10/20/2010	19.33 – 21.35	19.67 – 21.20	21.41
09/15/2010	20.85 – 21.97	22.10 – 22.80	22.97
08/19/2009	26.08 – 27.89	26.14 – 28.14	28.76

70. Astonishingly, there were three instances for which the settlement value of VIX was outside the entire range of VIX for at least the entire week before settlement and at least the entire week after settlement. That is, VIX reached its highest or lowest point for more than a two-week span precisely at settlement.

a. **August 19, 2009:** The settlement value of VIX was 28.76. From August 10 to August 27, VIX ranged from 23.68 to 28.39.

b. **January 18, 2012:** The settlement value of VIX was 23.64. From January 6 to January 26, VIX ranged from 16.8 to 23.44.

c. **November 20, 2013:** The settlement value of VIX was 14.12. From November 11 to November 29, VIX ranged from 11.99 to 13.94.

d. **April 20, 2016:** The settlement value of VIX was 12.38. From April 11 to April 28, VIX ranged from 12.5 to 16.57.

e. **December 20, 2017:** The settlement value of VIX was 8.75. From December 11 to December 29, VIX ranged from 8.90 to 11.06.

71. As further evidence that VIX has been manipulated, VIX settlement values were compared to overnight movements in the S&P 500 Index. Because VIX measures "fear," there is a well-established statistical correlation between the overnight movements in the S&P 500 Index and the opening value of VIX the next day. If the S&P 500 Index goes down, VIX goes up; if the S&P 500 Index stays the same or increases, VIX stays the same or goes down. That relationship, however, often fails to hold true on settlement days, providing another indication that VIX has been manipulated.

72. On at least the following days, the S&P 500 Index opened higher on the settlement day than close on the prior day, but VIX still increased:

a. **December 19, 2012:** VIX closed at 15.55 the day before. The S&P 500 Index opened higher on December 20, 2012. The settlement value was 16.69 (a 7.33% increase).

b. **December 17, 2014:** VIX closed at 23.10 the day before. The S&P 500 Index opened higher on December 18, 2014. The settlement value was 24.09 (a 4.28% increase).

c. **February 15, 2017:** VIX closed at 11.18 the day before. The S&P 500 Index opened higher on February 16, 2017. The settlement value was 12.26 (a 9.66% increase).

73. On at least the following days, the S&P 500 Index opened almost unchanged on the settlement day compared to the day before, but VIX still decreased:

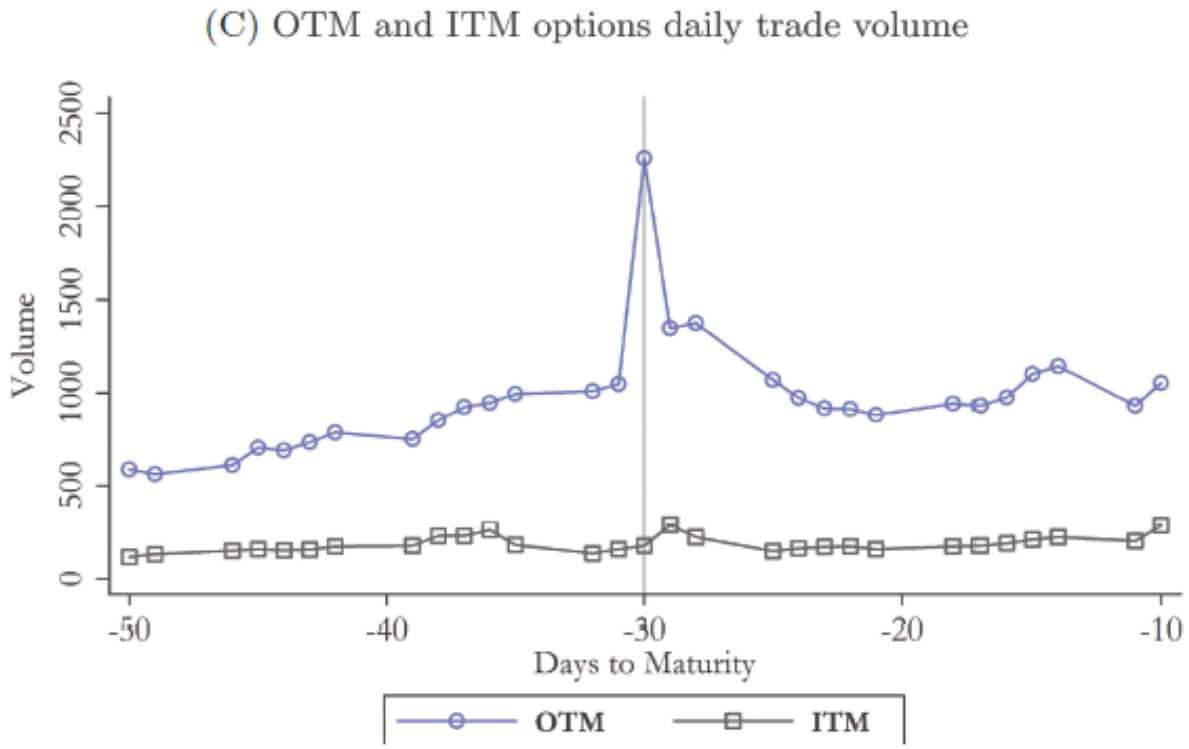
a. **December 21, 2011:** VIX closed at 23.85 the day before. The S&P 500 Index opened almost unchanged on December 22, 2011. The settlement value was 21.36 (a 10.44% decrease).

b. **June 18, 2014:** VIX closed at 12.35 the day before. The S&P 500 Index opened almost unchanged on December 22, 2011. The settlement value was 11.74 (a 4.93% decrease).

c. **April 20, 2016:** VIX closed at 13.25 the day before. The S&P 500 Index opened almost unchanged on April 21, 2016. The settlement value was 12.38 (a 6.55% decrease).

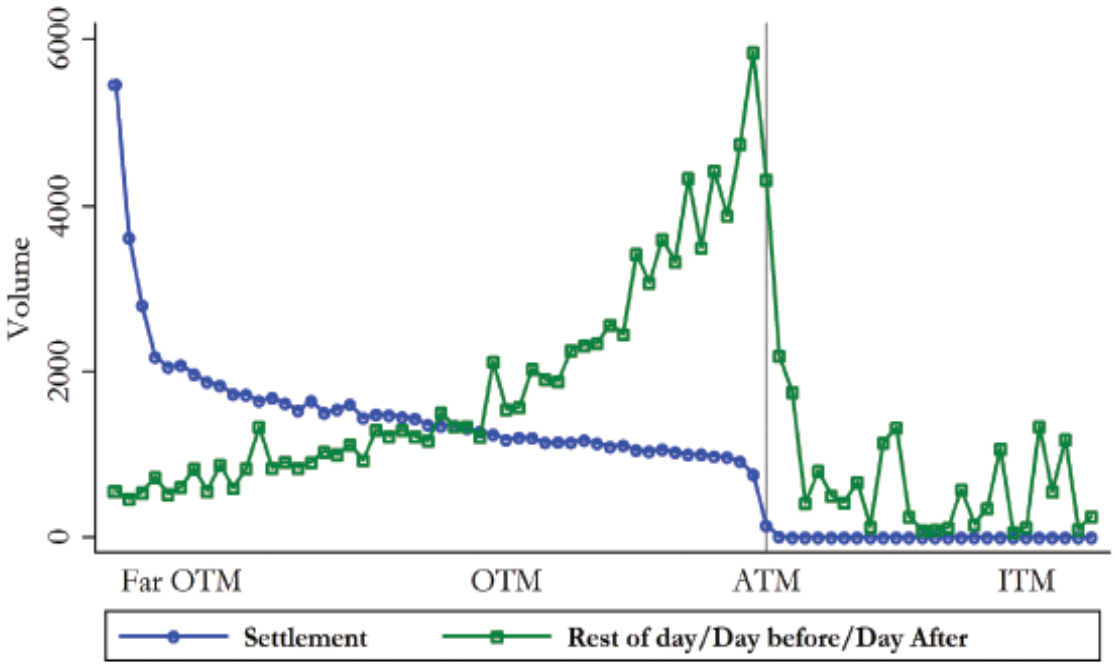
74. These instances of manipulation have been corroborated by the Griffin-Shams Study, which found trading patterns during the settlement auction that strongly suggested manipulation of VIX.

75. *First*, on settlement days, the SPX Options used in the auction – out-of-the-money SPX Options with 30 days until expiration – trade at a much higher volume than in-the-money SPX Options or SPX Options with different expirations. That higher volume indicates an effort to move the price of the SPX Options that will determine the settlement value.

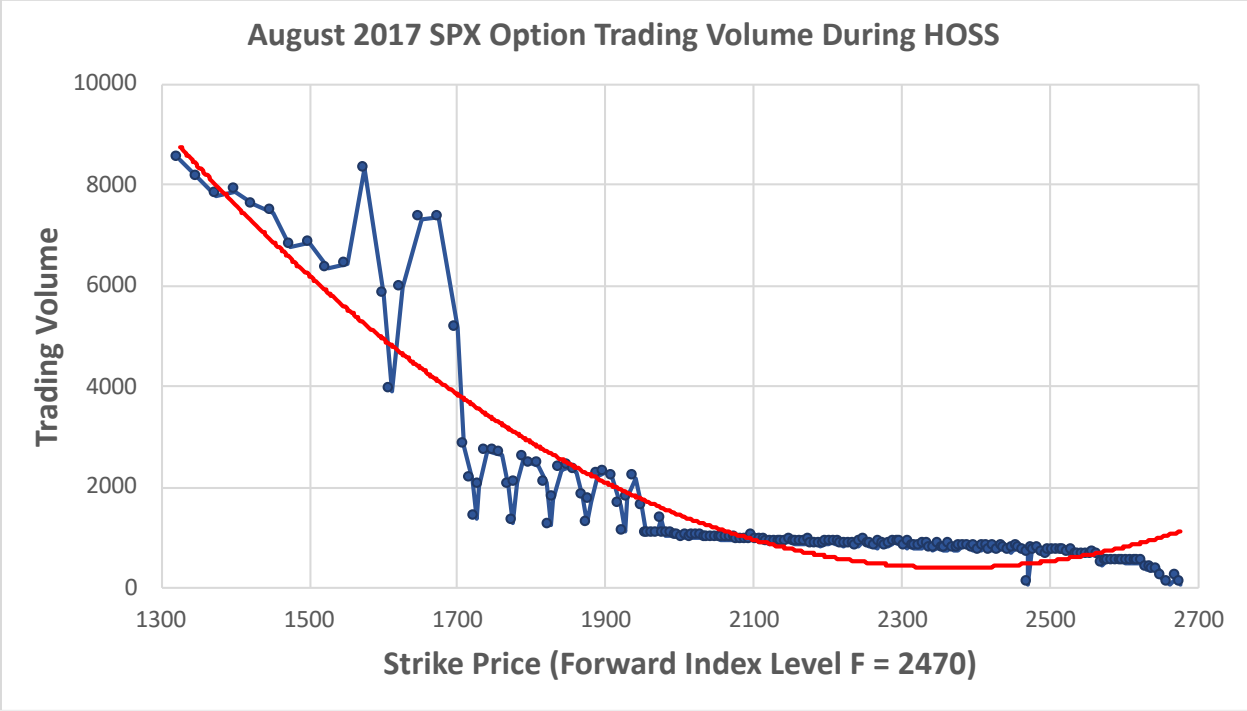


76. *Second*, the VIX formula gives greater weight to certain SPX Options – deep out-of-the-money put options. Those higher-weighted SPX Options trade in significantly higher volumes on settlement days. Given the special weight accorded to deep out-of-the-money put options, trading in such options is precisely the strategy that VIX manipulators would use to have the greatest effect on VIX.

(C) Put options volume at settlement versus daily volume on other days

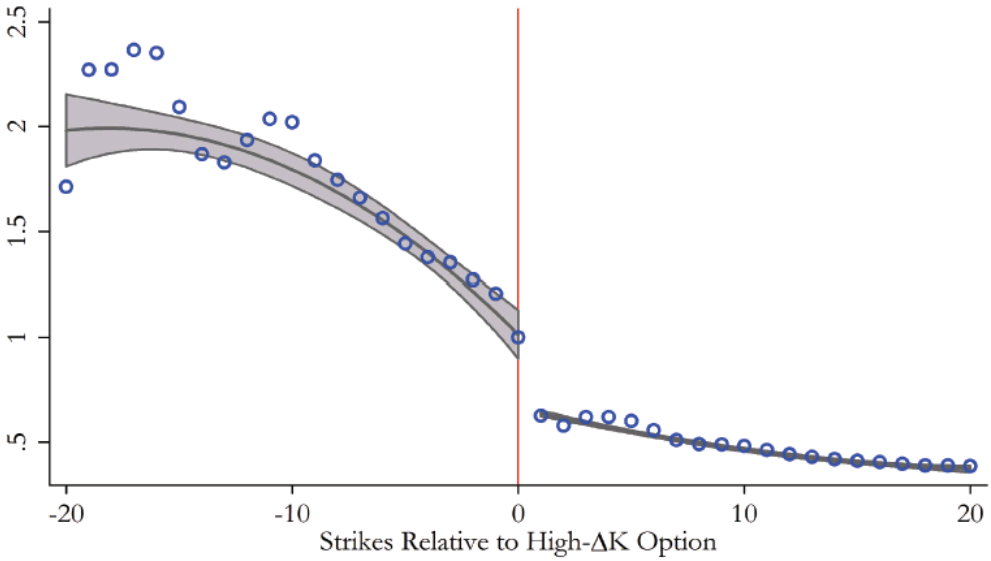


77. This same suspicious trading pattern continued after the Griffin-Shams Study. For example, as shown in the chart below, far out-of-the-money put options traded at far higher volumes than near-the-money options during the August 2017 settlement auction. That month also had one of the highest degrees of manipulation for VIX, with the settlement value being 10.5% higher than VIX at opening just seconds later. *See supra* ¶ 66. Similar patterns of VIX manipulation are typical in other months after the Griffin-Shams Study.

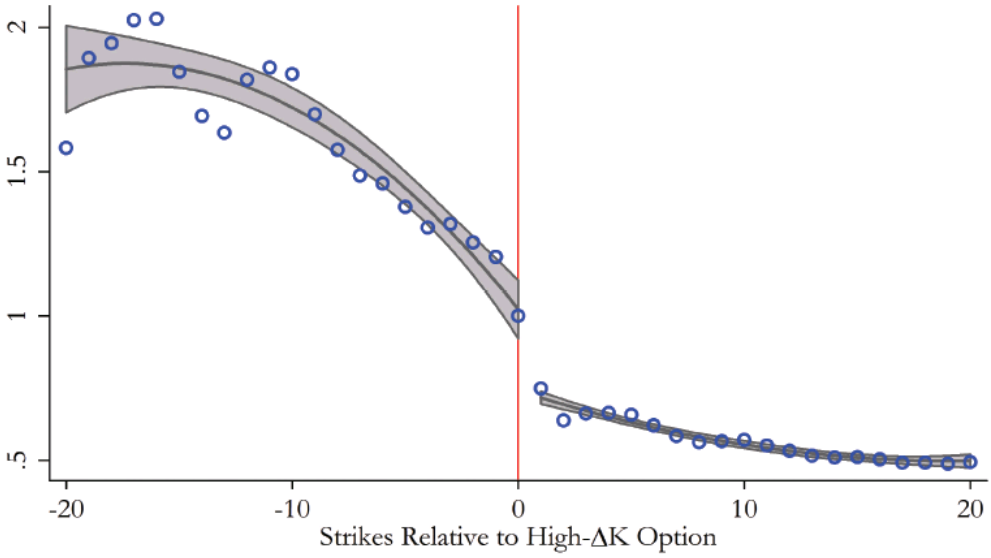


78. *Third*, the weight given to particular SPX Options depends on the distance between the strike price for that SPX Option and the nearby SPX Options. One would thus expect would-be manipulators to focus their trading efforts in the SPX Options further away from nearby SPX Options. Once again, the trading pattern during the settlement auction reveals a high trading volume in SPX Options with the greatest weights in determining the SOQ.

(A) VIX sensitivity

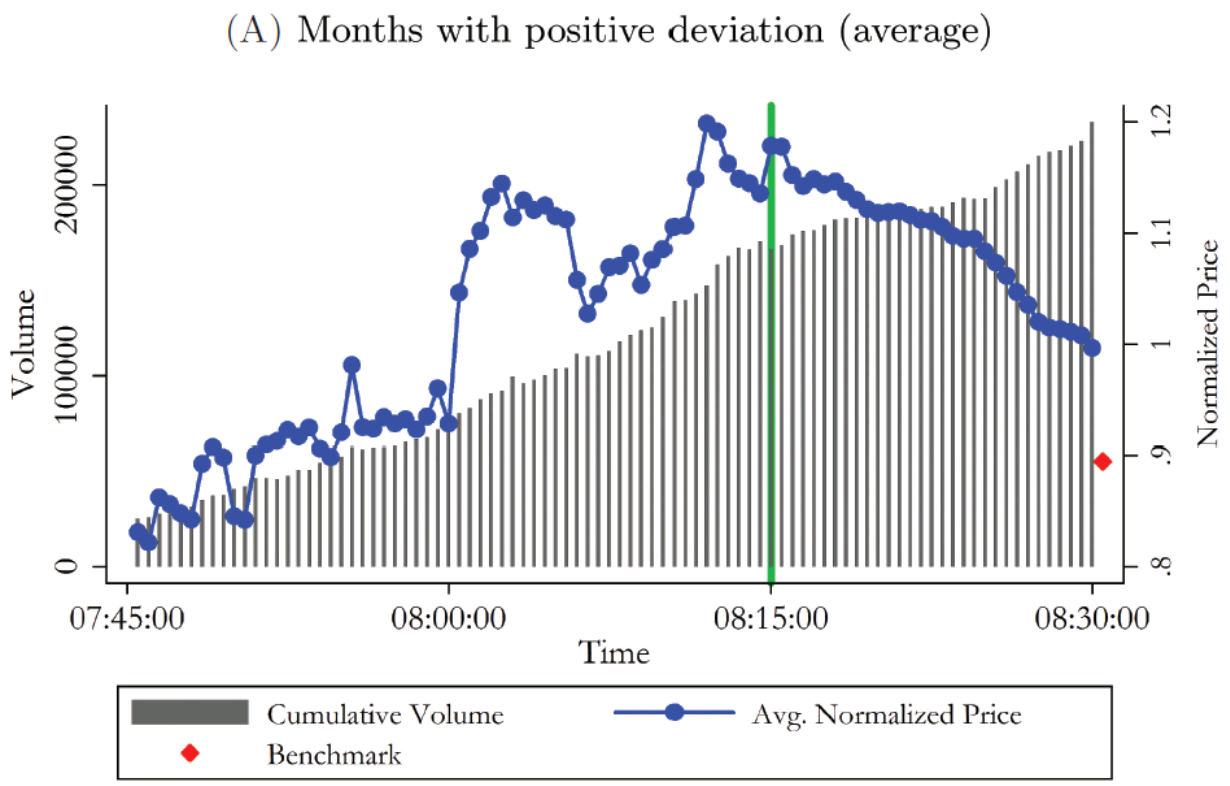


(B) Settlement volume



79. *Fourth*, on settlement days where the settlement value is higher than the value for VIX after the market opens, trading patterns show an effort to run up SPX Option prices during the settlement auction. SPX Option prices rise until strategic orders related to VIX positions are

no longer allowed. In the period where only non-strategic orders are allowed, SPX Option prices drop but not enough to undo the "run up."



C. The Manipulation Is Achieved Through Collusion

80. The identity of the John Doe Defendants who have manipulated VIX must be determined through discovery. The CBOE Defendants have an obligation to maintain detailed trading data, which Plaintiffs will analyze to determine the identity of the John Doe Defendants. *See* 7 U.S.C. § 7(d)(10) (CBOE "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."); 17 C.F.R. § 38.256

("The designated contract market must have the ability to comprehensively and accurately reconstruct all trading on its trading facility," including "audit-trail data and reconstructions.")

81. Although the identity of the John Doe Defendants is unknown, there is already sufficient evidence that the John Doe Defendants have colluded.

82. As set forth above, there is abundant evidence that VIX has been manipulated. Such manipulation imposes costs on the manipulators. They must take substantial positions in VIX Futures, VIX Options, and VIX ETPs; they must submit artificial trade orders in SPX Options; and they may need to satisfy margin requirements for selling SPX Options. The John Doe Defendants would not undertake those costs if they were not certain that their manipulation efforts would be successful.

83. Without collusion, the John Doe Defendants could not be certain that their manipulation efforts would be successful. If a single firm wanted to manipulate VIX upwards, they would submit aggressive buy orders on out-of-the-money put options to drive the prices of those SPX Options (and hence, VIX) upwards. However, at the same time, another firm could want to manipulate VIX downwards by submitting aggressive sell orders on out-of-the-money put options to drive the price of those SPX Options (and hence, VIX) downwards. Neither would attempt these efforts without assurances that other large traders would either support the manipulation or would not stand in the way.

84. The necessity of collusion is especially high for attempts to manipulate VIX downward. Downward manipulation requires aggressively selling out-of-the-money put options. To do so, the would-be manipulator would need large amounts of capital because selling options triggers margin requirements. These margin requirements ensure that the seller of options has sufficient capital to afford realizing a loss on the options in the event the S&P 500 Index

decreases. These margin requirements significantly raise the costs for a single entity to manipulate VIX downward.

D. Recent Developments Provide Further Evidence Of VIX Manipulation

85. On June 28, 2016 – years into the manipulation of VIX – the CBOE Defendants fined Morgan Stanley & Co. $400,000 and disgorged another $152,664 for violations of trading rules through the same conduct involved in manipulating VIX. *See In re Morgan Stanley & Co.*, CFE No. 15-0003 (June 28, 2016). The CBOE Defendants found that, on November 21, 2012 – the settlement day for VIX Futures for emerging markets ("VXEM") – Morgan Stanley placed orders to sell approximately 45,000 options contracts. This caused "approximately half of the strike prices used to calculate VXEM settlement" to "[open] at prices significantly lower than where they had been on the previous day, and where they closed that same day. The orders and trades caused the CFE's VXEM to settle approximately ***17.75% lower*** than the previous day's settlement price." *Id.* ¶ 3.

86. On December 15, 2017 – also years into the manipulation of VIX – the CBOE Defendants fined DRW Securities, LLC $1,250,000 and disgorged another $257,056 for violations of trading rules concerning the same type of conduct involved in manipulating VIX.[32]

87. The CBOE Defendants found that, on nine trade dates between February 2014 and March 2015, DRW Securities, LLC submitted "safety bids" to ensure consecutive SPX

[32] *See In re DRW Sec., LLC*, File No. 17-0063 (Dec. 29, 2017), *available at* http://www.cboe.com/publish/DisDecision/17-0063.pdf.

Options did not have zero bids thus "ensuring that certain option series were included in the final settlement calculations of the SOQ. This conduct impacted the final settlement calculations."[33]

88. Other trading firms have also been fined for various practices related to VIX manipulation. *See In re Ronin Capital, LLC*, File No. 15-0036 (Aug. 10, 2015) (submitting impermissible "strategy orders" during the settlement auction on February 19, 2014), http://www.cboeholdingsinc.com/publish/DisDecision/15-0036.pdf; *In re Wolverine Execution Servs. LLC*, File No. 15-0100 (Dec. 29, 2015) (same for settlement auction on August 20, 2014), https://www.cboe.com/publish/DisDecision/15-0100.pdf; *In re Morgan Stanley & Co.*, File No. 12-0029 (Sept. 24, 2012) (same for settlement auction on July 20, 2011 and September 21, 2011), https://files.brokercheck.finra.org/firm/firm_8209.pdf; *In re Wolverine Execution Servs. LLC*, File No. 14-0161 (Feb. 12, 2015) (same for settlement auction on December 18, 2013), http://www.cboedirect.com/publish/DisDecision/14-0161%20(WEX).pdf.

89. In each of these instances, the CBOE Defendants delayed bringing any enforcement action for years.

90. Beginning in February 2018, there were widespread public reports of the possibility of VIX manipulation. For the first time, it was also reported that the Financial Industry Regulatory Authority ("FINRA"), the Securities and Exchange Commission ("SEC"), and the CFTC had begun investigating VIX manipulation.

91. On February 12, 2018, an anonymous whistleblower, who "has held senior positions at some of the largest investment firms in the world," reported widespread

[33] *Id.* ¶ 8; *see In re DRW Sec., LLC*, CFE No. 17-0010 (Dec. 21, 2017), http://cfe.cboe.com/publish/CFEDisDecision/CFE%2017-0010%20DRW%20620%20Decision1.pdf.

manipulation of VIX to the SEC and CFTC. The whistleblower described a "pervasive flaw" in the calculation process that 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."[34]

92. On February 13, 2018, press reports indicated that FINRA had begun to investigate the possibility of manipulation in VIX-related financial products.[35]

93. On February 14, 2018, former CFTC Commissioner Bart Chilton stated in an interview that "the VIX has been suspect" and "people have been concerned about prices being pushed around."[36]

94. On February 16, 2018, former SEC Chairman Harvey Pitt was quoted as saying that "it's quite clear that these indexes' options can be manipulated" and that "when there were complaints about possible manipulation, CBOE, as the marketplace, should have sprung into action."[37]

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[34] Brian Louis & Nikolaj Gammeltoft, *VIX Manipulation Costs Investors Billions, Whistle-Blower Says*, Bloomberg (Feb. 12, 2018), https://www.bloomberg.com/news/articles/2018-02-13/vix-manipulation-costs-investors-billions-whistle-blower-says.

[35] *See* Gunjan Banerji, *Regulator Looks into Alleged Manipulation of VIX, Wall Street's "Fear Index,"* Wall St. Journal (Feb. 13, 2018), https://www.wsj.com/articles/wall-street-regulator-probes-alleged-manipulation-of-vix-a-popular-volatility-gauge-1518547608.

[36] *See The VIX Has Been Suspect For At Least Seven Years, Says Former CTFC Chief*, CNBC (Feb. 14, 2018), https://www.cnbc.com/video/2018/02/14/the-vix-has-been-suspect-for-at-least-7-years-says-former-cftc-chief.html.

[37] *See* Mark DeCambre, *Ex-SEC Chairman Says 'It's Quite Clear' Wall Street's 'Fear Gauge' Can Be Manipulated*, Market Watch (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.

95. On February 23, 2018, press reports indicated that the SEC and CFTC began reviewing trading in VIX-related financial products.[38]

96. On the first settlement date following the widespread reporting of VIX manipulation – March 21, 2018 – there suddenly was no manipulation. For the first time in a year-and-a-half, the settlement value exactly matched the value of VIX immediately after opening, which is what one would expect to occur without manipulation.

Settlement Date	VIX Settlement Value	VIX Open (Day Of Settlement)	Deviation
3/21/2018	17.76	17.76	0.00%
2/14/2018	21.87	23.48	7.36%
1/17/2018	12.61	11.35	-9.99%
12/20/2017	8.75	9.69	10.74%
11/15/2017	13.79	12.52	-9.21%
10/18/2017	10.53	10.34	-1.80%
9/20/2017	9.87	10.04	1.72%
8/16/2017	12.95	11.59	-10.50%
7/19/2017	10.11	9.69	-4.15%
6/21/2017	10.71	11.03	2.99%
5/17/2017	12.98	11.89	-8.40%
4/19/2017	14.37	14	-2.57%
3/22/2017	12.74	12.95	1.65%
2/15/2017	12.26	10.84	-11.58%
1/18/2017	12.52	11.79	-5.83%
12/21/2016	11.15	11.44	2.60%
11/16/2016	14.76	13.51	-8.47%
10/19/2016	14.56	15.45	6.11%

[38] *See* Benjamin Bain & Matt Robinson, *VIX Funds Face Fresh Scrutiny from U.S. Regulators*, Bloomberg (Feb. 23, 2018), https://www.bloomberg.com/news/articles/2018-02-23/vix-fund-blowups-spur-u-s-to-probe-if-misconduct-played-a-role.

III. The CBOE Defendants Failed To Satisfy Their Statutory Obligation To Prevent Manipulation

97. The CBOE Defendants listed VIX Futures and VIX Options pursuant to their authority as registered entities and boards of trade designated as a contract markets under the Commodity Exchange Act, 7 U.S.C. §§ 1a(6), 1(40). VIX Futures can only be traded on the CBOE Futures Exchange and VIX Options can only be traded on the CBOE Exchange.

98. The CBOE Defendants had a statutory obligation to, among other things:

a. "[E]stablish, monitor, and enforce compliance" with "rules prohibiting abusive trade practices," 7 U.S.C. § 7(d)(2)(A)(iii);

b. "[L]ist . . . only contracts that are not readily susceptible to manipulation," *id.* § 7(d)(3);

c. "[P]revent manipulation, price distortion, and disruptions of the . . . cash-settlement process through market surveillance, compliance, and enforcement practices and procedures," *id.* § 7(d)(4);

d. "[E]stablish and enforce rules – (A) to protect markets and market participants from abusive practices . . . ; and (B) to promote fair and equitable trading on the contract market," *id.* § 7(d)(12); and

e. "[E]stablish and enforce disciplinary procedures that authorize the board of trade to discipline, suspend, or expel members or market participants that violate the rules," *id.* § 7(d)(13).

99. The CBOE Defendants established rules that would have prohibited manipulation of VIX. These rules included the prohibition of "creating or inducing a false, misleading, or artificial appearance of activity in [a] security . . . or for the purpose of unduly or improperly

influencing the market price of [a] security . . . or for the purpose of making a price which does not reflect the true state of the market in [a] security."[39]

100. The CBOE Defendants, however, have failed to enforce these rules to prevent VIX manipulation. Given the substantial revenue they derive from VIX, the CBOE Defendants cannot afford to publicize manipulation of VIX. Doing so would drive away investors and drastically reduce the CBOE Defendants' profits.

101. In 2003, the CBOE Defendants changed the formula for VIX in a way that made it *easier* to manipulate. Prior to the change in formula, VIX used the in-the-money or near-the-money options on the S&P 100 Index. Under this prior formula, VIX was more difficult to manipulate because these options are more deeply traded than the far out-of-the-money put options that are given significant weight under the new formula. The CBOE Defendants reaped tremendous profits from making VIX easier to manipulate, which naturally encouraged manipulators to trade in higher volumes for the purpose of manipulation.

102. In 2013, the SEC fined the CBOE Defendants $6 million for "***systemic breakdowns*** in their regulatory and compliance functions as a self-regulatory organization, including a ***failure to enforce or even fully comprehend*** rules to prevent abusive short selling."[40] This was the first time the SEC had ever penalized "an exchange for violations related to its regulatory oversight."[41] The SEC specifically found that the CBOE Defendants had put their

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[39] CBOE Rule 4.7(a); *see also* CBOE Regulatory Circular RG15-022, at 4 (Feb. 17, 2015), http://www.cboe.com/publish/RegCir/RG15-022.pdf.

[40] Press Release, SEC, *SEC Charges CBOE For Regulatory Failures* (June 11, 2013), https://www.sec.gov/news/press-release/2013-2013-107htm (emphases added).

[41] *Id.*

business interests "ahead of [their] regulatory obligations by failing to properly investigate . . . and then ***interfering with the SEC investigation***" – including "fail[ing] to provide information to SEC staff" and then "actually edit[ing]" the Wells submission of a firm under investigation to provide "inaccurate and misleading" information.[42]

103. In 2014, in the wake of the CBOE Defendants' complete disregard for their statutory obligations, they decided to outsource some of their oversight responsibilities to FINRA pursuant to a Regulatory Services Agreement ("RSA").[43] Nonetheless, as the CBOE Defendants have recognized, they "retain[ ] ultimate legal responsibility for, and control of, [their] self-regulating responsibilities."[44]

104. The CBOE Defendants have maintained primary responsibility for overseeing the VIX settlement process despite their prior failures in these areas.[45] As the CFTC explained in a recent review of the CBOE Defendants, the CBOE Defendants' Department of CFE Regulation ("CFER") "performs market surveillance activities related to the settlement of [VIX] and adjudicates disciplinary actions."[46]

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[42] *Id.*

[43] *See* News Release, FINRA, *FINRA Signs Regulatory Services Agreement with CBOE and C2* (Dec. 22, 2014), http://www.finra.org/newsroom/2014/finra-signs-regulatory-services-agreement-cboe-and-c2.

[44] Cboe Global Markets, Inc. and Subsidiaries Regulatory Independence Policy for Regulatory Group Personnel, at 2 (Oct. 17, 2017), https://www.cboe.com/aboutcboe/legal/pdfs/regulatoryindependencepolicyforregulatorygrouppersonnel.pdf.

[45] *See* CFE Regulation, Chicago Board Options Exchange, http://www.cboe.com/about CBOE/legal-regulatory/departmental-overviews/cfe-regulation (last accessed April 16, 2018).

[46] CFTC, Division of Market Oversight, *Trade Practice Rule Enforcement Review of the CBOE Futures Exchange, LLC*, at 11 (June 24, 2016), https://www.cftc.gov/sites/default/files/idc/groups/public/@iodcms/documents/file/rercboefutures062416.pdf.

105. Even after the $6 million fine by the SEC in 2014, government regulators have continued to find problems with the CBOE Defendants' oversight of their trading platforms. In 2016, the CFTC found that a "considerable amount of staff turnover [has] prevented [the CBOE Defendants] from maintaining, on a consistent basis, sufficient compliance staff . . . to conduct and complete investigations in a timely manner."[47]

106. CBOE Defendants have also acted with knowledge or reckless disregard in failing to prevent VIX manipulation. They know or should know that VIX is being manipulated but have failed to address the problem.

107. The Griffin-Shams Study was published in May 2017, and presented the CBOE Defendants with credible evidence of manipulation. The CBOE Defendants responded not by investigating but by giving false and implausible explanations for the trading anomalies to protect the reputation of VIX and their bottom line.

108. Shortly after the Griffin-Shams Study was published, the CBOE Defendants responded, claiming that it "overlooks that traders legitimately seek to replicate VIX futures and options that will expire at final settlement, and to do so those traders logically will need to trade in the very options that Professor Griffin found, and in the same quantities and at the same point in time that Professor Griffin observed."[48] In other words, CBOE Defendants argued that traders seek to replicate exposure to expiring VIX Futures and VIX Options – which give exposure to implied volatility for the next 30 days – by trading in the underlying SPX Options in the same weights that those SPX Options receive in the settlement value calculation.

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[47] *Id.* at 8.

[48] Smith, *supra* note 9.

109. But the Griffin-Shams Study did consider that possibility. Among other things, the authors found that there was no increase in trading in variance swaps around settlement. Because variance swaps are another way to obtain or hedge exposure to volatility, one would expect trading of those instruments to increase if investors were seeking alternatives to the expiring VIX Futures and VIX Options.

110. Indeed, CBOE Defendants' response is off the mark for an additional reason not mentioned by the Griffin-Shams Study. The data indicates abnormal SPX Options trading occurs during the settlement auction but not during the prior day. If traders were seeking to replicate exposure to expiring VIX Futures and VIX Options, there would be no reason why they would do so only during the one-hour settlement auction.

111. Moreover, the CBOE Defendants recently placed a video on their website defending VIX. In that video, William M. Speth, the CBOE Defendants' VP for Research & Product Development responds to the question "Why is there a difference between spot VIX and the settlement?" by stating: "Some people confuse the VIX SOQ with the first reported VIX index value. However, an important difference between the two values is that we calculate the VIX SOQ based on actual SPX Option trade prices, and we calculate the spot VIX index based on the midpoint of SPX Option bid-ask quotes. Most trades take place at the bid, the offer, or somewhere in between but rarely at the mid-quote price. That really explains the difference between the VIX SOQ and the first-reported VIX value at the open."[49]

[49] CBOE, Settlement Information for VIX Derivatives, http://cfe.cboe.com/cfe-products/vx-cboe-volatility-index-vix-futures/settlement-information-for-vix-derivatives (last accessed Apr. 16, 2018).

112. This explanation is implausible. The settlement value calculation typically includes hundreds of different SPX Options. The fact that the auction clearing prices may occur anywhere within the bid-ask spread for an SPX Option would not have any meaningful effect on the SOQ because such differences would be expected to mostly cancel out for the hundreds of SPX Options at issue. That is, if the auction price for an SPX Option happened to be near the "bid," there would likely be another auction price that occurred near the "ask" for a different SPX Option, and there would be little net effect on the settlement value.

IV. Defendants Have Fraudulently Concealed their Unlawful Activities

113. Any applicable statute of limitations has been tolled by Defendants' knowing and active concealment of their manipulation of the settlement prices of VIX Futures and VIX Options. Through no fault of their own, Plaintiff and others similarly situated were deceived regarding the manipulation of VIX and so could not reasonably have discovered the manipulation.

114. Within the time period of any applicable statute of limitations, Plaintiff and others similarly situated could not have discovered through reasonable diligence that Defendants were manipulating VIX because the identity of the John Doe Defendants is still not known.

115. In addition, the CBOE Defendants repeatedly provided false assertions that VIX was not being manipulated. On June 19, 2017, the CBOE Defendants' Chief Regulatory Officer claimed that there was "a dedicated regulatory department that works with FINRA to monitor certain trading activity for our securities markets, including trading activity that could impact the

VIX settlement."[50] *See also supra* ¶¶ 25, 108-12 (assertions that VIX is "highly reliable" and has "no history of failure" and that the Griffin-Shams Study was flawed).

CLASS ALLEGATIONS

116. Plaintiff brings this action individually and on behalf of others similarly situated pursuant to Federal Rule of Civil Procedure 23(a) and 23(b). The class is defined as all persons who held or traded VIX Futures, VIX Options, SPX Options, and VIX ETPs from March 26, 2004 to the present. Defendants, as well as their employees and corporate affiliates, are excluded from the class.

117. This class is so numerous that joinder of all potential members as plaintiffs is impracticable. Based on the significant volume of trading in VIX Futures, VIX Options, SPX Options, and VIX ETPs, the class likely comprises at least thousands of persons.

118. Plaintiff's claims are typical of the claims of the class. As set forth in this Complaint, Plaintiff and the class have suffered damages as a result of Defendants' common course of conduct. Common questions of law and fact include but are not limited to:

a. Whether the John Doe Defendants engaged in a conspiracy to fix and manipulate the value of VIX in violation of Section 1 of the Sherman Act, 15 U.S.C. § 1, including whether fixing and manipulating the value of VIX amounts to a *per se* violation;

b. Whether the John Doe Defendants manipulated VIX in violation of the Commodity Exchange Act;

[50] Smith, *supra* note 9.

c. Whether the CBOE Defendants failed to prevent manipulation of VIX in violation of the Commodity Exchange Act;

d. The identities of John Doe Defendants; and

e. The appropriate relief for the unlawful conduct set forth in this Complaint.

119. Plaintiff will fairly and adequately protect the interests of the class. Plaintiff has retained counsel with substantial experience in complex civil litigation, including in antitrust and financial litigation.

120. Common question of law and fact, including those specified above, predominate over questions affecting individuals. In addition, a class action is superior to any other method for fairly and efficiently adjudicating this controversy. Plaintiff is unaware of any difficulties likely to be incurred in managing this action as a class action.

121. If separate actions were prosecuted against Defendants for the course of conduct set forth in this Complaint, there would be a risk of inconsistent or varying adjudications that would establish incompatible standards of conduct for Defendants. If a class action were prosecuted, however, all parties and the judicial system would realize economies. A class action would also promote a uniform disposition as to all persons similarly situated without sacrificing procedural fairness.

CLAIMS

COUNT ONE
Price Fixing In Violation of Section 1 Of The Sherman Act Against The John Doe Defendants

122. Plaintiff incorporates by reference the allegations set forth above.

123. The John Doe Defendants have conspired since at least January 1, 2009 to unreasonably restrain trade. This conspiracy entails an agreement or understanding among the John Doe Defendants to manipulate VIX.

124. The John Doe Defendants' conspiracy to manipulate VIX is a *per se* violation of Section 1 of the Sherman Act, 15 U.S.C. § 1.

125. The John Doe Defendants' conspiracy to manipulate VIX – which affects financial instruments bought and sold throughout the United States – has occurred within the flow of interstate commerce and has substantially affected interstate commerce.

126. As a direct and foreseeable result of the John Doe Defendants' conspiracy and their acts in furtherance of the conspiracy, Plaintiff and class members have suffered injuries to their businesses or properties within the scope of Section 4 of the Clayton Act, 15 U.S.C. § 15. Plaintiff's and class members' injuries are the type of injuries the antitrust laws were designed to prevent.

127. Plaintiff and class members request a judgment in their favor and against Defendants, jointly and severally, awarding damages suffered as a result of the John Doe Defendants' conspiracy.

COUNT TWO
Failure To Prevent Market Manipulation In Violation The Commodity Exchange Act Against CBOE Defendants

128. Plaintiff incorporates by reference the allegations set forth above.

129. The CBOE Defendants did not enforce several rules that they were required to enforce as "registered entit[ies]" under the Commodity Exchange Act, 7 U.S.C. §§ 25(b), 1(a)(40). Such rules include, but are not limited to, those codified at 7 U.S.C. §§ 7(d)(2)(A), 7(d)(3), 7(d)(4), and 7(d)(12), which require registered entities to "enforce compliance with the

rules of the contract market, including . . . rules prohibiting abusive trade practices," "list on the contract market only contracts that are not readily susceptible to manipulation," "have the capacity and responsibility to prevent manipulation, price distortion, and disruptions of the delivery or cash-settlement process," and "establish and enforce rules . . . to promote fair and equitable trading on the contract market."

130. The CBOE Defendants acted with knowledge or reckless disregard in not enforcing rules as required by the Commodity Exchange Act. The CBOE Defendants knew – or should have known – that VIX was susceptible to manipulation and was in fact being manipulated.

131. The CBOE Defendants also acted in bad faith in not enforcing rules as required by the Commodity Exchange Act. The CBOE Defendants earn revenues in proportion to the volume of transactions in VIX Futures, VIX Options, and SPX Options. They also revenues from licensing fees on VIX ETPs. Accordingly, the CBOE Defendants chose to protect the reputation of VIX (and their revenues) rather than investors. When confronted with credible allegations of manipulation, the CBOE Defendants offered demonstrably false and implausible explanations.

132. As a result of the CBOE Defendants' conduct, Plaintiff and class members have suffered damages within the scope of Section 22 of the Commodity Exchange Act. *See* 7 U.S.C. § 25(b).

COUNT THREE
Market Manipulation In Violation Of The Commodity Exchange Act
Against The John Doe Defendants

133. Plaintiff incorporates by reference the allegations set forth above.

134. The John Doe Defendants specifically intended to cause and did cause unlawful and artificial prices for VIX Futures, VIX Options, SPX Options, and VIX ETPs in violation of Sections 4(b), 4(c), and 9(a) of the Commodity Exchange Act. *See* 7 U.S.C. §§ 6b, 6c, and 13(a)(2). The John Doe Defendants did so by submitting artificial orders for SPX Options to make VIX no longer reflect legitimate market prices for SPX Options.

135. Plaintiff and class members have transacted in VIX Futures, VIX Options, and VIX ETPs during the Class Period and, as a direct and foreseeable result of the John Doe Defendants' manipulation of the prices of those contracts, Plaintiff and the class members have suffered damages within the scope of Section 22 of the Commodity Exchange Act. *See* 7 U.S.C. § 25(a).

CLAIM FOUR
Aiding and Abetting Market Manipulation
In Violation Of The Commodity Exchange Act
Against The John Doe Defendants

136. Plaintiff incorporates by reference the allegations set forth above.

137. The John Doe Defendants specifically intended to cause and did cause unlawful and artificial prices for VIX Futures, VIX Options, SPX Options, and VIX ETPs in violation of the Commodity Exchange Act. *See* 7 U.S.C. §§ 6b, 6c, and 13(a)(2). The John Doe Defendants did so by submitting artificial orders for SPX Options to make VIX no longer reflect legitimate market prices for SPX Options.

138. The John Doe Defendants had knowledge of a scheme to manipulate and, with that knowledge, materially and willfully assisted each other in violating the Commodity Exchange Act. The John Doe Defendants aided and abetted one another in violating the

Commodity Exchange Act through collusive posting of bids and asks for SPX Options for the purpose of affecting the prices of VIX Futures, VIX Options, SPX Options, and VIX ETPs.

139. Plaintiff and class members have transacted in VIX Futures, VIX Options, SPX Options, and VIX ETPs during the Class Period and, as a direct and foreseeable result of the John Doe Defendants' aiding and abetting manipulation of the prices of those contracts, Plaintiff and class members have suffered damages within the scope of Section 22 of the Commodity Exchange Act. *See* 7 U.S.C. § 25(a).

CLAIM FIVE
False Reporting Of Market Information
In Violation Of The Commodity Exchange Act
Against The John Doe Defendants

140. Plaintiff incorporates by reference the allegations set forth above.

141. The John Doe Defendants used or employed manipulative or deceptive devices or contrivances in connection with their trading of VIX Futures, VIX Options, SPX Options, and VIX ETPs. Their conduct included posting bids and asks for out-of-the-money SPX Options for the purpose and with the effect of manipulating the prices for VIX Futures, VIX Options, SPX Options, and VIX ETPs.

142. This conduct generated false and misleading reports about the true levels of supply and demand in SPX Options and, by extension, the true prices for VIX Futures, VIX Options, SPX Options, and VIX ETPs in violation of the Commodity Exchange Act. *See* 7 U.S.C. § 9; 17 C.F.R. § 180.1(a). The John Doe Defendants had no legitimate purpose for such conduct.

143. Plaintiff and class members have transacted in VIX Futures, VIX Options, SPX Options, and VIX ETPs during the class period and, as a direct and foreseeable result of the John

Doe Defendants' aiding and abetting manipulation of the prices of those contracts, Plaintiff and class members have suffered damages within the scope of Section 22 of the Commodity Exchange Act. *See* 7 U.S.C. § 25(a).

REQUESTED RELIEF

Plaintiff and class members seek the following relief:

a. An order certifying this civil action as a class action under Federal Rule of Civil Procedure 23, declaring Plaintiff as the representative of the classes, and Plaintiff's counsel as counsel for the classes;

b. An order finding Defendants jointly and severally liable for the damages incurred by Plaintiff and the class members;

c. An order awarding Plaintiff and the class members actual damages in an amount to be determined at trial and trebled under applicable law;

d. An order awarding Plaintiff and the class members costs, including reasonable expenses and attorneys' fees under applicable law;

e. An order requiring Defendants to pay pre- and post-judgment interest on any damages awarded under applicable law; and

f. An order awarding Plaintiff and the class members such other relief as the Court may deem appropriate and equitable.

JURY TRIAL DEMANDED

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

Date: April 17, 2018

Respectfully submitted,

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