

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK**

CHRISTOPHER MUSSO, on Behalf of
Himself and All Others Similarly Situated,

Plaintiff,

vs.

JOHN DOES,

Defendants.

Civil Action No. 18-2269

CLASS ACTION COMPLAINT

JURY TRIAL DEMANDED

Plaintiff Christopher Musso (“Plaintiff”), individually and on behalf of all others similarly situated, alleges the following based upon personal knowledge as to Plaintiff and Plaintiff’s own acts, and upon information and belief as to all other matters based on the investigation conducted by and through Plaintiff’s attorneys, which included, among other things, media reports and other publicly disclosed reports and information. Plaintiff believes that substantial additional evidentiary support will exist for the allegations set forth herein after a reasonable opportunity for discovery.

NATURE OF THE ACTION

1. This is a civil action seeking treble damages arising out of Defendants’ unlawful scheme to manipulate the price of financial instruments linked to the Chicago Board Options Exchange (CBOE) Volatility Index (“VIX”) (“VIX Derivatives”). As set forth below, Defendants’ scheme violates Section 1 of the Sherman Act, 15 U.S.C. § 1, the Commodities Exchange Act (“CEA”), 7 U.S.C. §§ 1, *et seq.* and Rules 180.1 and 180.2 promulgated thereunder by the Commodity Futures Trading Commission (“CFTC”) pursuant to the 2010 Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 753, 124

Stat. 1739 (2010).

2. The settlement price for VIX Derivatives is calculated using a subset of the CBOE S&P 500 Index Options (SPX) during a narrow auction window from 7:30 a.m. to 8:30 a.m. CST on the settlement date for the contracts.

3. Upon information and belief, Defendants colluded with each other and consciously acted in concert to manipulate the trading prices of VIX Derivatives. It is implausible that one Defendant was capable of unilaterally manipulating the prices of VIX Derivatives as ordinary market forces would counteract its efforts or other investors would manipulate the prices of VIX Derivatives in an opposite direction.

4. Upon information and belief, Defendants—through the placing of manipulative SPX options orders that were intended to cause, and at minimum recklessly caused, artificial VIX Derivative settlement prices in the expiring contracts—caused monthly settlement price of expiring VIX contracts to be artificially set. Due to Defendants' orders, the VIX settlement price spiked dramatically.

5. As a result of Defendants' scheme to manipulate prices of the VIX Derivatives, Defendants caused, and continue to cause, injury to investors in VIX Derivatives.

6. Plaintiff, on behalf of himself and all other members of the proposed Class, seeks damages caused by Defendants' and co-conspirators' violations of the Sherman Act and the CEA.

7. The identity of Defendants is not publicly known or knowable to Plaintiff at this time as the manipulative orders placed electronically were done so anonymously. Only the CBOE and the Defendants know the identities of the parties entering the manipulative orders. It will thus be necessary for Plaintiff to subpoena third parties (such as the CBOE) to obtain

information concerning Defendants' identities.

JURISDICTION AND VENUE

8. This Court has jurisdiction over the subject matter of this action as it arises under Section 1 of the Sherman Act, 15 U.S.C. § 1, Sections 4 and 16 of the Clayton Act, 15 U.S.C. §§ 15, 26, and Section 22 of the CEA, 7 U.S.C. § 25. Further, this Court has jurisdiction under 28 U.S.C. §§ 1331, 1337(a).

9. Venue is proper in this District pursuant to 15 U.S.C. §§ 15 and 22, Section 22 of the CEA, 7 U.S.C. § 25(c), and 28 U.S.C. § 1391(b), (c), and (d), because Defendants are believed to have transacted business throughout the United States, including in this District, and are believed to have resided, found, or have agents within this District, and a significant portion of the affected interstate trade and commerce discussed below was carried out in this District.

10. This Court has personal jurisdiction over each Defendant because, *inter alia*, each Defendant is believed to have: (a) transacted business throughout the United States, including in this District; (b) committed overt acts in furtherance of their illegal scheme and conspiracy throughout the United States, including the manipulation of the prices of VIX Derivatives traded in this District on the NASDAQ and New York Stock Exchange ("NYSE"); (c) had and maintained substantial contacts within the United States, including in this District; and/or (d) directed at and had the intended effect of causing injury to persons residing in, located in, or doing business throughout the United States, including in this District.

11. In connection with the acts alleged in this complaint, defendants, directly or indirectly, used the means and instrumentalities of interstate commerce, including, but not limited to, the mails, interstate telephone communications, and the facilities of the national securities markets. The activities of Defendants were within the flow of, were intended to, and

did have a substantial effect on the interstate commerce of the United States.

PARTIES

a. Plaintiff

12. Plaintiff Christopher Musso transacted in VIX Derivatives, including Proshares Ultra VIX Short-Term Futures (NYSEArca: UVXY) and Velocity Shares Daily 2x VIX ST ETN (Nasdaq: TVIX). As a result of Defendants antitrust conspiracy and collusive and manipulative conduct alleged herein, Plaintiff was injured in his business and his property.

b. Defendants

13. As detailed herein, Defendants engaged in an illegal conspiracy to manipulate the prices of VIX Derivatives by, *inter alia*, manipulating the prices or bid/ask quotes of SPX Options traded on the Cboe and the prices of VIX. Plaintiff does not know the specific identities of the Defendants because trading of SPX Options on the Cboe is anonymous. For that reason, Plaintiff does not know the precise number of Defendants but, based on the nature of the manipulative conduct alleged herein, believes that Defendants are a group of financial institutions, market makers, and/or traders on the Cboe. As a result, non-party Cboe Global Markets, Inc. (“Cboe Global Markets”)—the publisher of VIX and operator of the Cboe and CFE exchanges—is in possession of information capable of specifically identifying Defendants and, thus, Plaintiff will be able to identify Defendants through discovery. Plaintiff will request leave to amend this complaint upon learning the identity of Defendants.

c. Relevant Non-Parties

14. Cboe Global Markets, Inc. (“Cboe Global Markets”), is the publicly-traded holding company of, among other entities, the CBOE Futures Exchange, LLC (“CFE”) and Chicago Board Options Exchange, Inc. (“CBOE”). Its offices are located at 400 South LaSalle

Street, Chicago, Illinois.

15. The CFE, a Delaware limited liability company with its principal place of business in Chicago, is an exchange founded in 2004. It became a wholly-owned subsidiary of Cboe Global Markets in June 2010.

16. The CBOE, a Delaware corporation with its principal place of business in Chicago, is an exchange founded in 1973. It became a wholly-owned subsidiary of Cboe Global Markets in 2010.

17. The CBOE and CFE are central repositories for trade information placed on their respective exchanges. They collect a range of information, including Order Entry Operator identifications (“OEO IDs”), Tag 50 IDs, User Assigned IDs, and Clearing Info. They also generate reports following the occurrence of certain trading volumes—particularly during the auctions that lead to VIX contract settlement prices.

FACTUAL ALLEGATIONS

1. BACKGROUND

a. The VIX Index

18. Established in 1993, the CBOE Volatility Index—referred to by its ticker symbol, VIX—is a financial indicator of market sentiment and volatility. Often referred to as the *fear gauge* or the *fear index*, the VIX purports to measure stock market volatility of the near future.

19. According to the CBOE, the VIX “is based on the S&P 500[®] Index (SPX), the core index for U.S. equities, and estimates expected volatility by averaging the weighted prices of SPX puts and calls over a wide range of strike prices.” It accomplishes this as follows:

The VIX calculation measures 30-day expected volatility of the S&P 500 Index. The components of the VIX calculation are near- and next-term put and call options with more than 23 days and less than 37 days to expiration. These include SPX options with “standard” 3rd Friday expiration dates and “weekly” SPX options that

expire every Friday, except the 3rd Friday of each month. Once each week, the SPX options used to calculate VIX “roll” to new contract maturities. 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 be the “next-term” options.

20. The resulting VIX price is published every fifteen seconds during regular trading hours (8:30 a.m. to 3:15 p.m. CST) and extended trading hours (2:00 a.m. to 8:15 a.m. CST time) for SPX Options on the CBOE.

b. The VIX Derivatives

21. As the VIX is an index based on an ever-changing group of SPX Options, investors cannot directly invest in the index. CBOE Global Markets, however, has created several derivative investment vehicles linked to the VIX. VIX Futures trade on the CFE and VIX Options trade on the CBOE. These financial instruments allow for investors to invest based on the VIX’s potential rise and fall.

22. VIX futures and options contracts are like all other futures contracts, with two distinctions: (1) as the underlying commodity is the VIX Index itself, they can only be cash settled; (2) the reference prices for VIX futures and options at expiration are determined by a special auction held by CBOE, and not the price of the VIX Index on any given day. This second distinction is explained further below.

23. In addition to the CBOE VIX Futures and Options derivatives, financial institutions, such as Credit Suisse AG (with VelocityShares), Barclays Bank PLC (as iPath), and ProShares, have issued various exchange-traded funds and exchange-traded notes linked to the pricing of VIX Futures. These instruments include, *inter alia*: (a) VelocityShares Daily Inverse VIX Short-Term ETN (“XIV”); (b) VelocityShares Daily 2x VIX Short-Term ETN (“TVIX”);

(c) ProShares Short VIX Short-Term Futures ETF (“SVXY”); (d) ProShares Ultra VIX Short-Term Futures ETF (“UVXY”); and (e) iPath S&P 500 VIX Short-Term Futures ETN (“VXX”).¹

24. These VIX-Linked ETFs & ETNs allow investors to take long and short (or inverse) positions based on the pricing of short-term or medium-term VIX Futures. Billions of dollars in these VIX-Linked ETFs & ETNs provide investors with easier access to the volatility-based financial instruments. XIV, for example—an inverse VIX-Linked ETN offered by Credit Suisse and traded on the NASDAQ—allowed investors to take a position that the prices of VIX Futures will decline (i.e., that the market will increasingly expect subsiding volatility). February 20, 2018 was the last day of trading XIV before Credit Suisse liquidated the ETN. UVXY—a VIX-Linked ETF offered by ProShares and traded on the NYSE—allows investors to wager that the prices of VIX Futures will increase (i.e., that the market will increasingly expect intensifying volatility).

25. Trading activity in these investments has substantially increased in recent years, with billions of dollars in VIX-Linked ETFs & ETNs changing hands daily.

26. VIX Futures, VIX Options, and VIX-Linked ETFs and ETNs are collectively referred to herein as “VIX Derivatives.”

¹ “ETN” means “exchange traded note” and “ETF” means “exchange traded fund.”

2. MARKET MANIPULATION OF THE VIX AND VIX DERIVATIVES

a. Basic Settlement Procedures for VIX Derivatives

27. When a futures or option contract expires, the settlement price—*i.e.*, the reference price against which the futures or option contract is measured—determines the contract’s value. If the settlement price can be manipulated, the value of the derivative can be manipulated.

28. Expiring VIX futures and options typically settle on the third or fourth Wednesday of each month, with the final settlement values for VIX Derivatives determined on the morning of their respective expiration dates.

29. The settlement price for VIX Derivatives is not based on the spot price of the asset underlying the VIX futures (the VIX Index). Instead, the settlement price is determined by an auction yielding a price quoted using the ticker symbol VRO. The auction, conducted using a “Hybrid Opening System,” or “HOSS,” allows market participants to transact in SPX options, which yields an opening price for such options from which VRO is calculated, which in turn determines the final settlement value of VIX derivatives.

30. According to the CBOE and CFE:

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

31. This separate auction of SPX Options (known as the Special Opening Quotation or SOQ), begins at 7:30 a.m. CST:

Beginning at approximately 7:30 a.m. Chicago time, Cboe starts disseminating messages approximately every 30 seconds that contain certain information about the opening of individual series via the Cboe Streaming Markets (CSM) data feed. . . . On expiration days for VIX derivatives, this information is additionally published on the CFE website.³

32. At 8:30 a.m. CST, the auction ends, as the trading on non-expiring VIX Derivatives begins.

33. In summary, once a month an auction is held between 7:30 a.m. and 8:30 a.m. CST on the day VIX Derivatives expire, during which traders submit bids and offers for SPX put and call options, the auction matches those bids and offers to determine clearing prices, and those clearing prices are used to compute the settlement price for VIX Derivatives.

b. The Settlement Procedure Leaves VIX Derivatives Open to Manipulation

34. In May 2017, Professor John M. Griffin and Ph.D. candidate Amin Shams of University of Texas-Austin published a paper entitled “Manipulation in the VIX?”⁴ in which they highlight the flaws in the foregoing final settlement procedure.

35. Griffin and Shams begin by describing the makeup of the VIX, as “[t]he VIX setting is one with two markets with different liquidities and transactions costs: SPX options

² CBOE, *Settlement Information for VIX Derivatives*, available at <http://cfe.cboe.com/cfe-products/vx-cboe-volatility-index-vix-futures/settlement-information-for-vix-derivatives> (last accessed March 12, 2018).

³ CBOE, *Cboe Volatility Index® (VIX® Index®) FAQs*, available at <http://www.cboe.com/products/vix-index-volatility/vix-options-and-futures/vix-index/vix-faqs> (last accessed March 12, 2018).

⁴ See generally John M. Griffin & Amin Shams, *Manipulation in the VIX?*, THE REVIEW OF FINANCIAL STUDIES (Aug. 2, 2017), available at http://www.jgriffin.info/wp-content/uploads/2017/12/vix_pub.pdf (the “Griffin/Shams Paper”).

market with large bid-ask spreads that make it difficult to arbitrage away price deviations, and large and liquid VIX derivative market tied to it that translates such deviations into sizable potential payoffs.”⁵ Throughout, they “refer to the SPX contracts as ‘lower-level’ contracts because they are the base level option contracts that serve as inputs for calculating the value of the VIX, through which the ‘upper-level’ VIX futures and options values are ultimately determined at the settlement.”⁶

36. According to Griffin and Shams, the VIX settlement process is particularly open to manipulation. “First, the upper-level VIX market is large and liquid, enabling a trader to invest a sizeable position in VIX derivatives. In contrast, many of the lower-level SPX options, where the VIX values are derived from, are illiquid.”⁷ Thus, a small number of trades in the illiquid, deep out-of-the-money SPX options⁸ can move the price of those options, which would significantly swing the value of the VIX.⁹

37. “Second, the VIX derivatives are cash settled. Therefore, if the VIX settlement value deviates from its true value, the VIX position will automatically be cashed out at the deviated price.”¹⁰ Where an asset with physical settlement is trading at an irregular price when a given futures contract settle, a would-be manipulator simply takes possession of a physical asset at an inflated price. That price may in turn revert to a competitive value before the

⁵ *Id.* at 2.

⁶ *Id.*

⁷ *Id.* at 7.

⁸ Out-of-the-money (“OTM”) options have no intrinsic value as they have a strike or exercise price that would cause the holder of the option to suffer a loss when exercising the option. In-the-money (“ITM”) options have intrinsic value because they have a strike or exercise price that would cause the holder of the option to experience a gain when exercising the option. At-the-money (ATM) options have a strike or exercise price that is equal to the underlying asset and would in result in no gain or less when exercised.

⁹ See Griffin/Shams Paper, at 7-8.

¹⁰ *Id.* at 8.

manipulator can sell the asset. Where the VIX is artificially inflated though, a would-be manipulator cashes out his position “at the deviated price.”¹¹

38. “Third, the settlement occurs within a short period of time based on the SPX options pre-open auction.”¹² A manipulator thus need only intervene over a short period of time to keep prices artificially high.

39. “Although not all three conditions may be simultaneously needed for manipulation, the occurrence of all three potentially provides a ripe setting for profitable manipulation.”¹³

40. According to Griffin and Shams, the “basic steps that a manipulator needs to take include: (1) opening long positions in the VIX derivatives prior to settlement, (2) submitting aggressive buy orders in the SPX options during the settlement auction, and thereby causing the auction-clearing prices of SPX options, and as a result, VIX settlement price to rise, and (3) obtaining the higher price for the upper-level futures or options when they settle.”¹⁴ Such trading “leave patterns in the data that can be examined.”¹⁵ In examining these patterns, “volume spikes in the SPX options[,]” emerge.¹⁶

41. Figure 1, Panel A of the Griffin/Shams Paper depicts a volume spike in the average daily trade volume for SPX options thirty days prior to maturity.¹⁷ This spike is not attributable to “any kind of obvious S&P 500 market-related event” but is instead “the date that

¹¹ *Id.*

¹² *Id.*

¹³ *Id.*

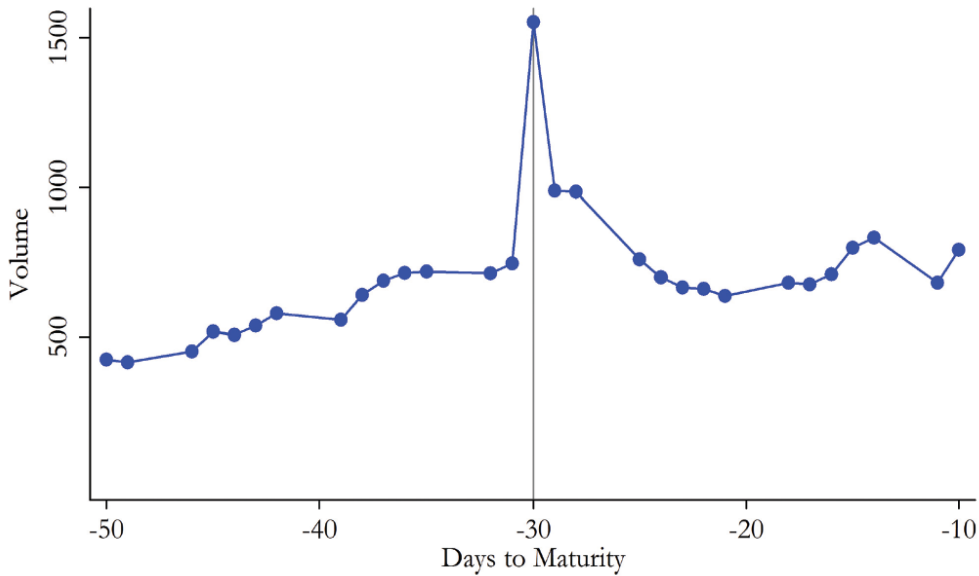
¹⁴ *Id.* at 9.

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ *Id.* at 10-11.

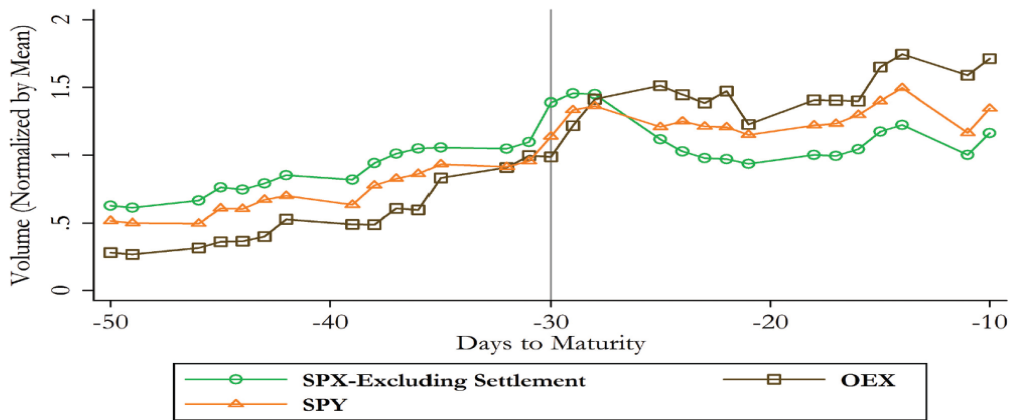
(A) S&P 500 options daily trade volume



the VIX settles.”¹⁸

42. Figure 1, Panel B of the Griffin/Shams Paper depicts the “average daily trade volume calculated in the same way as in Panel A for S&P 500 options but excluding the trades occurring at the preopening settlement (marked with circles), S&P 100 options (marked with squares), and SPY options (marked with triangles).”¹⁹ These trading volumes “exhibit no major

(B) Options daily trade volume (normalized by the mean)

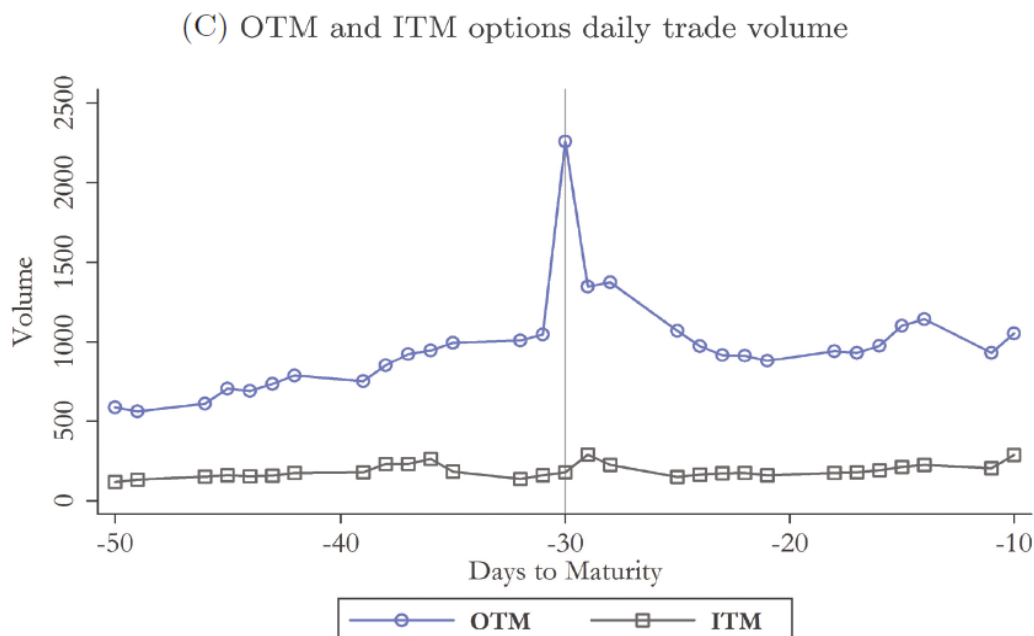


¹⁸ *Id.* at 11.

¹⁹ *Id.* at 11.

movement 30 days prior to maturity.”²⁰

43. Figure 1, Panel C of the Griffin/Shams Paper depicts no volume spike in “in-the-money” (“ITM”) options trading thirty days prior to their expiration, indicating “that the volume spike is entirely driven by the [“out-of-the-money” (“OTM”)] options[.]”²¹ The VIX formula uses only OTM options.²²



44. The Griffin/Shams paper continues, stating that “someone wishing to manipulate the index should submit increasing volume as [the] sensitivity [of the VIX to price changes of individual put options] increases.”²³ And indeed, the data depicts just that, as “[v]olume does increase [at strike prices] with VIX sensitivity, and the relationship is highly statistically

²⁰ *Id.* at 12.

²¹ *Id.*

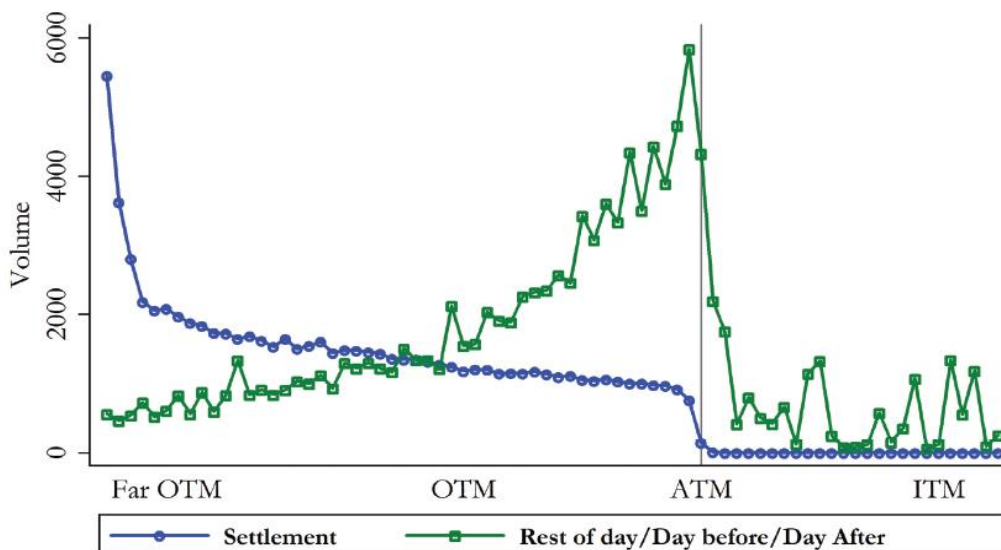
²² *Id.*

²³ *Id.* at 13.

significant.”²⁴ This relationship is “economically significant, with over half of the variation in settlement volume explained by the VIX sensitivity measure and the date fixed effects.”²⁵

45. Figure 2, Panel C confirms this by showing that “the positive relationship between VIX sensitivity and volume is only confined to the settlement.”²⁶ On other days, “put options with higher VIX sensitivity trade significantly less.”²⁷

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



46. Finally, Griffin and Shams explain how certain options are given disproportionately high weight in the VIX settlement formula and exhibit volume spikes at settlement that are not present at any other times.²⁸

47. The Griffin/Shams Paper thus demonstrate a pattern of a dramatic increase in

²⁴ *Id.*

²⁵ *Id.*

²⁶ *Id.*

²⁷ *Id.*

²⁸ *Id.* at 15.

trading of SPX options at the time of the VIX settlement. This pattern of trading spikes at settlement is not observable “in nearly identical OEX or SPY options” nor in “ITM options that are excluded.”²⁹ Moreover, the paper demonstrates a “strong and statistically significant increase in volume” of trading at settlement—and only at the settlement—of the OTM options to which the VIX settlement is particularly sensitive. Griffin and Shams conclude that this “evidence is consistent with attempted manipulative activity[.]”³⁰

48. The Griffin/Shams Paper also rules out alternative phenomena that could potentially be driving SPX option trading volume spikes.³¹

49. Griffin and Shams note that deep OTM options are typically illiquid and expensive, and contemplate whether “the VIX settlement auction . . . provides an opportunity for those who have pent-up demand to trade deep OTM options.”³² OTM call options, though included in the special settlement procedure however, exhibit lower trading volume at settlement. That comparable OTM options trade at lower volumes at settlement contravenes the pent-up liquidity hypothesis, but is compatible with manipulation and collusion.³³

50. Regression analysis further reveals an inverse relationship between pre-settlement liquidity and settlement volume for put options.³⁴ Griffin and Shams compare the VIX to an analogous European index, the VSTOXX, and determine that “the differences in volume patterns . . . and timing of trades between the VIX and VSTOXX are most consistent with aggregate trading volumes patterns capturing gaming of the respective settlement

²⁹ *Id.* 15-17.

³⁰ *Id.* at 17.

³¹ *See id.* at 17-27.

³² *Id.* at 17.

³³ *See id.* at 17-22.

³⁴ *Id.* at 18.

formulas.”³⁵

51. The Griffin/Shams Paper also contemplates—and dismisses—possible hedging explanations. First, traders are not attempting to hedge a position in upper-level VIX derivatives through underlying SPX options. Second, investors are not rolling their hedging positions into SPX options in a way that mimics the VIX formula. The trading data reveal no volume spikes in closely related exchange-traded products that would afford a similar payoff.

52. Ultimately, the Griffin/Shams paper explains “that not only is it feasible to influence the VIX settlement, but also we present price and volume patterns at settlement consistent with what one would expect from such strategic trading.”³⁶

53. The research demonstrates that a volume spike occurs:

- a. only at settlement;
- b. only in the OTM options;
- c. not in similar OEX or SPY options, which do not have tradable volatility indices;
- d. proportional to the sensitivity of the VIX to each strike price; and
- e. with a jump for options that have a discontinuously higher weight in the VIX calculation, which does not occur at non-settlement times.

54. Griffin and Shams thus conclude that the most likely explanation is manipulation.

55. Upon information and belief, Defendants combined, conspired, and/or colluded to manipulate the prices of VIX Derivatives.

56. Defendants anticompetitive combination, conspiracy, and/or agreement is a *per*

³⁵ *Id.* at 19-22.

³⁶ *Id.* at 39.

se violation of Section 1 of the Sherman Act, 15 U.S.C. § 1. Alternatively, Defendants' collusion resulted in substantial anticompetitive effects in the market for VIX Derivatives in the United States.

57. Defendants intended to restrain trade and actually restrained trade in violation of Section 1 of the Sherman Act. Defendants shared a conscious commitment to the common scheme designed to achieve the unlawful objective of manipulating the prices of VIX Derivatives.

58. There is no legitimate business justification for, or procompetitive benefits of, Defendants' unreasonable restraint of trade.

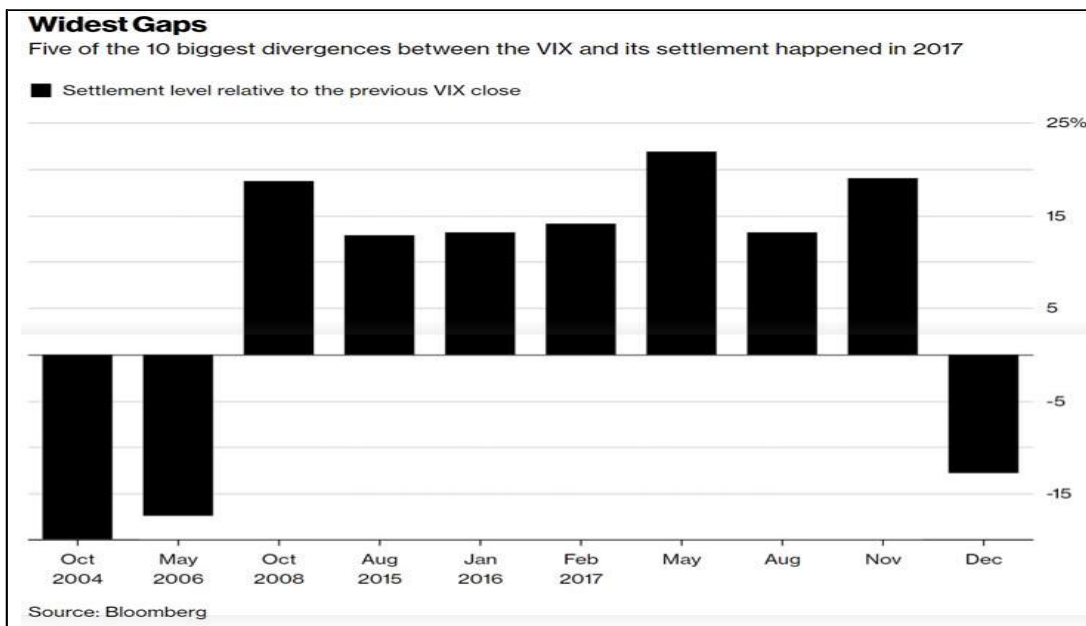
59. Upon information and belief, no one Defendant was capable of unilaterally manipulating the prices of VIX Derivatives without fearing that ordinary market forces would counteract its efforts or that other investors would manipulate the prices in an opposite direction.

60. Defendants are jointly and severally liable for the acts of their co-conspirators.

3. ACTUAL MANIPULATION

61. Defendants' continuing manipulation of the VIX is confirmed by examining recent settlement data. For example, Bloomberg recently noted that "of the 10 biggest gaps between the VIX settlement value and its closing price the night before, five came in 2017, including December's, which was the biggest discount in 11 years."³⁷

³⁷ Nikolaj Gammeltoft and Cecile Vannucci, *Is the VIX Being Gamed? A Sudden Swoon Has Traders Talking Again*, BLOOMBERG (Jan. 10, 2018), available at <https://www.bloomberg.com/news/articles/2018-01-10/is-the-vix-being-gamed-a-sudden-swoon-has-traders-talking-again> (last accessed March 13, 2018).



a. Losses and Antitrust Injury

62. Defendants injured Plaintiff and the Class by manipulating the prices of VIX Derivatives.

63. Pricing of VIX Derivatives—like gold—is based on fundamental market forces of supply and demand. Specifically, the prices of VIX Derivatives are based on the price of VIX and the SPX market. Defendants understood that they could directly manipulate the prices of VIX Derivatives through manipulation of the pricing of the VIX.

64. Defendants' combination, conspiracy, and/or agreement to manipulate the prices of VIX Derivatives injures competition in the market for VIX Derivatives in the United States.

65. Upon information and belief, absent Defendants' collusion, those transacting in VIX Derivatives would have transacted at competitive prices and reaped benefits of competition. Defendants' collusion, however, has the effect of causing VIX Derivatives to trade at artificial prices.

66. Defendants' unlawful conduct deprives Plaintiff and the Class members who transact in VIX Derivatives of a competitive marketplace and exposes them to trade at artificial prices.

67. As a direct, intended, foreseeable, and proximate result of Defendants' unlawful conspiracy and acts in furtherance of their conspiracy, Plaintiffs and Class members have been injured in their business and property, in violation of the federal antitrust laws.

68. 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.

69. Fideres Partners LLP—an expert consulting firm with substantial experience analyzing manipulation of complex financial instruments and quantifying the resultant losses—performed a preliminary analysis and found that “investors in VIX futures expiring between 2006 and 2017 may have suffered losses of up to \$950million as a result of” the manipulation.³⁸

b. Effect on Interstate Commerce

70. VIX Derivatives are traded in interstate commerce. Many billions of dollars of transactions in VIX Derivatives are entered into each year in interstate commerce in the United States.

71. Defendants' manipulation of the pricing of VIX Derivatives had a direct, substantial, and foreseeable impact on interstate commerce in the United States.

72. Upon information and belief, Defendants intentionally targeted their unlawful conduct to affect commerce, including interstate commerce within the United States, by combining, conspiring, and/or agreeing to manipulate the prices of VIX Derivatives.

³⁸ See Fideres, *Playing on Fear: Manipulation in the Volatility Market*, Fideres (Feb. 16, 2018), available at <http://fideres.com/publications/playing-on-fear> (last visited March 13, 2018).

73. Defendants' unlawful conduct has a direct and adverse impact on competition in the United States. Absent Defendants' combination, conspiracy, and or agreement to manipulate the prices of VIX Derivatives, the prices of VIX Derivatives would be determined by a competitive, efficient market.

c. Regulatory Actions and Other Evidence

74. While Griffin and Shams first uncovered the manipulation, others have since confirmed it. On February 12, 2018, an anonymous whistleblower "who has held senior positions at some of the largest investment firms in the world" submitted a letter to the Securities and Exchange Commission ("SEC") and the CFTC alleging that a "flaw [in the VIX] allows trading firms with sophisticated algorithms to move the VIX up or down by simply posting quotes on S&P options and without needing to physically engage in any trading or deploying any capital."³⁹ According to the Whistleblower Letter, this manipulative activity "has led to multiple billions in profits effectively [being] taken away from institutional and retail investors[.]"

75. As the Whistleblower letter details, "VIX is highly subject to manipulation by market participants with the ability to rapidly post quotes in the market for [SPX Options]" and "because the VIX is a theoretical index, which does not rely on trading activity but mid-prices, [it] can be moved up and down by posting quotes without any physical trading taking place."⁴⁰

76. The Whistleblower Letter further suggests that the collapse of certain VIX Derivatives on February 5, 2018—including XIV and UVXY—was partially the result of market

³⁹ Letter from Jason Zuckerman & Matt Stock to James McDonald, Esq., Director of Division of Enforcement, Commodity Futures Trading Commission & Stephanie Akavian, Esq. & Steven Peikin, Esq., Co-Directors, Division of Enforcement, Securities and Exchange Commission (Feb. 12, 2018), *available at* <https://assets.bwbx.io/documents/users/ijqjWHBFdfxIU/r8LCxXQ4CfqU/v0> (the "Whistleblower Letter").

⁴⁰ *Id.* at 1-2.

manipulation that helped double the price of the VIX.⁴¹

77. According to a report from *The Financial Times*, the Financial Industry Regulatory Authority (“FINRA”) is also investigating whether Defendants “influence[d] prices of derivatives based on the [VIX] benchmark.”⁴² This was also confirmed by *The Wall Street Journal*.⁴³

78. Several of these regulators, including the CFTC, SEC, and FINRA have recently announced that they are investigating the manipulation of VIX contract prices.⁴⁴

79. Several former regulators, including Bart Chilton (former CFTC Commissioner) and Harvey Pitt (former SEC Chairman) have made public statements indicating that VIX contract settlement prices have been, or are being, manipulated. Chilton, on February 14, stated that the allegations of VIX contract manipulation “*“rings true* to me, adding that ‘there’s certainly enough smoke.’”⁴⁵ Pitt further reinforced Griffin and Sham’s findings on February 16 during an appearance on CNBC, where he stated:

The volatility we have is troubling. And a product like VIX could be valuable to institutional investors who want to hedge against a precipitous drop in the market. ***But it’s quite clear that these indexes’ options can be manipulated.*** And when there were complaints about possible manipulation, the Cboe, as the marketplace, should have sprung in to action.⁴⁶

⁴¹ *Id.* at 2-3.

⁴² Robbin Wigglesworth & Nicole Bullock, *US watchdog probes possible manipulation of volatility index*, THE FINANCIAL TIMES (Feb. 13, 2018), available at <https://www.ft.com/content/f2ec8290-1108-11e8-940e-08320fc2a277>.

⁴³ See Gunjan Banerji, *Regulator Looks Into Alleged Manipulation of VIX, Wall Street’s ‘Fear Index,’* WALL STREET JOURNAL (Feb. 13, 2018), available at <https://www.wsj.com/articles/wall-street-regulator-probes-alleged-manipulation-of-vix-a-popular-volatility-gauge-1518547608> (last accessed March 13, 2018).

⁴⁴ See Benjamin Bain and Matt Robinson, *VIX Funds Face Fresh Scrutiny from U.S. Regulators*, BLOOMBERG (Feb. 23, 2018), available at <https://www.bloomberg.com/news/articles/2018-02-23/vix-fund-blowups-spur-u-s-to-probe-if-misconduct-played-a-role> (last accessed Mar. 13, 2018).

⁴⁵ See Matthew J. Belvedere, *Former CFTC commissioner: Whistleblower allegation about volatility index manipulation ‘rings true’*, CNBC (Feb. 14, 2018), available at <https://www.cnbc.com/2018/02/14/ex-cftc-head-bart-chilton-on-whistleblower-vix-manipulation-allegation.html> (last accessed Mar. 13, 2018).

⁴⁶ See Mark DeCambre, *Ex-SEC chairman says ‘it’s quite clear’ Wall Street’s ‘fear gauge’ can be manipulated*,

CLASS ALLEGATIONS

80. Plaintiff brings this action on behalf of itself, and all others similarly situated, as a class action pursuant to Rule 23 of the Federal Rules of Civil Procedure (“FRCP”). The Class is set forth below.

All persons, corporations, and other legal entities that transacted in VIX Derivatives.

Excluded from the Class are the Defendants and their parents, subsidiaries, affiliates, officers, directors, employees, assigns, successors, and co-conspirators, the court, court staff, Defendant’s counsel, and all respective immediately family members of the entities described. Plaintiff reserves the right to revise the definition of the Class based upon subsequently discovered information and reserves the right to establish Sub-Classes where appropriate.

81. The Class is so numerous that individual joinder of all potential members is impracticable. Plaintiff believes that there are at least thousands of proposed members of the Class throughout the United States.

82. Common issues of fact and law include but are not limited to:

- a. Whether Defendants unreasonably restrained trade in violation of the Sherman Act;
- b. Whether Defendants’ conduct is a *per se* violation of the Sherman Act;
- c. Whether Defendants engaged in a combination, conspiracy and/or agreement to manipulate the prices of VIX Derivatives;
- d. Whether Defendants manipulated the settlement prices of VIX

MARKETWATCH (Feb. 16, 2018), available at <https://www.marketwatch.com/story/ex-sec-chairman-says-its-quite-clear-wall-streets-fear-gauge-can-be-manipulated-2018-02-16> (last accessed Mar. 13, 2018).

Derivatives in violation of the CEA;

e. Whether Defendants are liable under the CEA for such manipulation;

f. Whether such manipulation resulted in artificial prices for VIX

Derivatives;

g. Whether such injury or the extent of such artificiality may be established by common, class-wide means, including, for example, by regression analysis, econometric analysis, or other economic tests;

h. The identities of the participants of the conspiracy;

i. The operative time period and extent of Defendants' violations; and

j. The appropriate relief.

83. Plaintiff's claims are typical interests are typical of, and not antagonistic to the interests of the Class. As alleged herein, Plaintiff and the Class sustained damages arising out of the same illegal actions and conduct by Defendants.

84. Plaintiff is not antagonistic to the Class, is an adequate class representative, and has retained adequate counsel. Plaintiff is willing and prepared to serve the Class in a representative capacity with all the obligations and duties material thereto. Plaintiff will fairly and adequately protect the interest of the Class and has no interests adverse to or in conflict with the interest of the other members of the Class.

85. A class action is superior to all other available methods for the fair and efficient adjudication of this controversy. Plaintiff knows of no difficult to be encountered in the management of this litigation that would preclude its maintenance as a class action.

86. Class action status is warranted under Rule 23(b)(3) because questions of law or fact common to Class members predominate over any questions affecting only individual Class

members, and a class action is superior to other available methods for the fair and efficient adjudication of this controversy. The records of commodity futures traders are required to be maintained by FCMs (futures commission merchants). Plaintiff does not anticipate any difficulties in the identification of Class members, notice to Class members or other aspects of the management of this action as a class action.

87. The Class may also be certified under Rule 23(b)(1)(A) and (B) because the prosecution of separate actions by individual Class members would create a risk of inconsistent or varying adjudications with respect to individual Class members, which would establish incompatible standards of conduct for Defendants, would be dispositive of the interests of nonparties to the individual adjudications, and would substantially impair the ability of such nonparties to protect their interests.

88. The Class may also be certified under Rule 23(b)(2) because Defendants have acted on grounds generally applicable to the Classes, thereby making it appropriate to award final injunctive relief or corresponding declaratory relief with respect to the Classes.

89. The interest of Class members in individually controlling the prosecution of separate actions is theoretical and not practical. The Class has a high degree of similarity and is cohesive, and Plaintiff anticipates no difficulty in the management of this matter as a class action.

**EQUITABLE TOLLING OF THE STATUTES OF LIMITATIONS AND
FRAUDULENT CONCEALMENT**

90. By its very nature, the unlawful activity, alleged herein, that Defendants engaged in was self-concealing. Any applicable statute of limitations has been tolled by Defendants' knowing and active concealment of their manipulation of the prices of VIX Derivatives. Plaintiff could not in the exercise of due diligence have discovered Defendants' wrongdoing as alleged herein. Because Defendants' manipulative behavior was self-concealing and it took further active steps to conceal its unlawful behavior, Plaintiff and Class Members remained unaware of these violations during the limitations period. Moreover, in these exchange-based transactions, Plaintiff and Class Members have no way of knowing who their trading counterparties were—indeed, they still do not know Defendants' identities.

91. As alleged herein, Defendants' manipulation of the prices of VIX Derivatives was material to Plaintiff and the 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 exercise or reasonable diligence that Defendants were manipulating the prices of VIX Derivatives, which Defendants fraudulently concealed.

92. The CBOE has also promulgated a "Confidentiality Policy for Information Received or Reviewed in a Regulatory Capacity," which, among other things, provides for the confidentiality of "Position Data," which includes "Data collected via the reporting of large trader positions . . . as well as clearing member position data," and "Detailed Transaction Data," which includes "Trade data at the specific account level for individual trades from which market positions and/or profit and loss might be derived."⁴⁷

⁴⁷ CFE, Confidentiality Policy for Information Received or Reviewed in a Regulatory Capacity, *available at* <https://cfe.cboe.com/aboutcfe/legal/pdfs/confidentialitypolicy.pdf> (last accessed Mar. 13, 2018).

93. Because Defendants employed acts and techniques that were calculated to wrongfully conceal the existence of such illegal conduct, Plaintiff and the Class could not have discovered the existence of this unlawful conduct any earlier than the announcement of regulatory investigations in early 2018.

94. Even after the publication of the Griffin/Shams Paper, non-party CBOE—the only entity with access to real trading data—repeatedly denied that manipulation had taken place. As reported in a June 19, 2017 *MarketWatch* article,

CBOE Vice President of Research William Speth says Griffin “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.”

CBOE spokeswoman Suzanne Cosgrove told me, “There are numerous structural safeguards built into the VIX settlement that make it difficult to manipulate, and our regulatory group actively surveils for potential VIX settlement manipulation.” Cosgrove also said: “CBOE has not made any regulatory findings that the VIX final settlement has been manipulated.”

In one other on-the-record comment, CBOE Vice President of Research Speth said: “Professor Griffin does not conclude that there has been manipulation of the VIX settlement, but rather just that it supposedly is susceptible to manipulation.”⁴⁸

95. Due to Defendants’ fraudulent concealment and the facts stated above, any applicable statute of limitations affecting or limiting the rights of action by Plaintiff or members of the Class has been tolled during the period of such fraudulent concealment.

⁴⁸ See Elliot Blair Smith, *Opinion: How S&P 500 options may be used to manipulate VIX ‘fear gauge’*, MARKETWATCH (June 19, 2017), available at <https://www.marketwatch.com/story/how-sp-500-options-may-be-used-to-manipulate-vix-fear-gauge-2017-06-19> (last accessed Mar. 13, 2018).

COUNT I
For Violations of Section 1 of the Sherman Act
(15 U.S.C. § 1)

96. Plaintiff repeats and realleges ¶¶ 1-95 by reference.

97. As alleged herein, Defendants combined, conspired, and agreed to manipulate the prices of VIX Derivatives. This combination, conspiracy, and/or agreement unreasonably restrained trade in violation of the federal antitrust laws.

98. Specifically, the anticompetitive combination, conspiracy, and/or agreement alleged herein is a *per se* violation of Section 1 of the Sherman Act, 15 U.S.C. § 1 (“Section 1”). Alternatively, the anticompetitive combination, conspiracy, and/or agreement alleged herein resulted in substantial anticompetitive effects in the market for VIX Derivatives in the United States in violation of Section 1.

99. Defendants intended to restrain trade and actually restrained trade in violation of Section 1. Defendants shared a conscious commitment to the common scheme designed to achieve the unlawful objective of manipulating the prices of VIX Derivatives.

100. The anticompetitive combination, conspiracy, and/or agreement alleged herein unreasonably restrained trade. There is no legitimate business justification for, or procompetitive benefits of, Defendants’ unreasonable restraint of trade. Any alleged procompetitive benefit or business justification is pretextual and/or could have been achieved through less restrictive means.

101. The anticompetitive combination, conspiracy, and/or agreement alleged herein occurred within the flow of and substantially affected interstate commerce.

102. As a direct and proximate result of Defendants’ anticompetitive scheme and concrete acts in furtherance of that scheme, Plaintiff and members of the Class have been injured

in their business and property by reason of Defendants' violations of Section 1, within the meaning of Section 4 of the Clayton Antitrust Act, 15 U.S.C. § 15.

103. Unless enjoined, Defendants' anticompetitive combination, conspiracy, and/or agreement will continue.

104. Plaintiff's and the Class's injury are of the type the antitrust laws were designed to prevent and are a direct result of Defendants' unlawful anticompetitive activity.

105. Plaintiffs and the Class are entitled to treble damages for violations of the Sherman Act alleged herein.

106. Plaintiff and the Class are also entitled to injunctive relief, costs, attorneys' fees, and equitable relief, pursuant to 15 U.S.C. § 26.

COUNT II
For Violations of the Commodity Exchange Act and Rule 180.2
(7 U.S.C. §§ 1, *et seq.*)

107. Plaintiff repeats and realleges ¶¶ 1-95 by reference.

108. Defendants specifically intended to and did cause unlawful and artificial final settlement prices of VIX Derivatives in violation of the CEA, 7 U.S.C. §§ 1, *et seq.*

109. As alleged herein, Defendants traded a substantial number of OTM SPX options during the auctions for determining the final settlement price of VIX Derivatives.

110. Defendants had no legitimate economic purpose for their transactions in OTM SPX options, and instead engaged in those transactions for the sole or principal purpose of influencing the final settlement price of VIX Derivatives.

111. Defendants' transactions created false and misleading market signals—including about the true level of supply and demand for SPX options at various strike prices and for VIX Derivatives—resulting in artificial final settlement prices for VIX Derivatives that did not reflect

the legitimate forces of supply and demand.

112. Defendants knowingly engaged in such transactions for the express purpose of influencing the final settlement price of VIX Derivatives because they held significant positions that would benefit from that influence.

113. By their intentional and unlawful conduct, Defendants caused the prices of VIX Derivatives to be artificial in violation of 7 U.S.C. §§ 9(3), 13(a)(2), 25(a), and 17 C.F.R. § 180.2.

114. Plaintiff and others who transacted in VIX Derivatives transacted at artificial and unlawful prices resulting from Defendants' manipulations and as a direct result thereof were injured and suffered damages.

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

COUNT III
For Violations of the Commodity Exchange Act and Rule 180.1
(7 U.S.C. §§ 1, *et seq.*)

116. Plaintiff repeats and realleges ¶¶ 1-95 by reference.

117. Under Section 6(c)(1) of the CEA, as amended, codified at 7 U.S.C. § 9(1), 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, which shall promulgate by not later than 1 year after July 21, 2010.

118. In July 2011, the CFTC promulgated Rule 180.1(a), 17 C.F.R. § 180.1(a), which provides, in relevant part:

§ 180.1 Prohibition on the employment, or attempted employment, of manipulative and deceptive devices.

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 the 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.

119. Defendants intentionally, or at least recklessly, violated Rule 180.1(a) by transacting in OTM SPX options during the auction for determining the final settlement prices of VIX Derivatives, transactions for which Defendants had no legitimate economic purpose

and instead which were engaged in for the sole or principal purpose of influencing the final settlement price of VIX Derivatives. Defendants' transactions created false and misleading market signals—including about the true level of supply and demand for SPX options at various strike prices and for VIX Derivatives—resulting in artificial final settlement prices for VIX Derivatives that did not reflect the legitimate forces of supply and demand.

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

COUNT IV
For Aiding and Abetting Violations of the Commodity Exchange Act and
(U.S.C. §§ 1, *et seq.*)

121. Plaintiff repeats and realleges ¶¶ 1-95 by reference.

122. Defendants are liable for aiding and abetting manipulation.

123. Each and every Defendant had extensive knowledge of the manipulation and, with such knowledge, materially assisted the manipulation by the other Defendants.

124. Each Defendant made and benefited from the manipulative acts and willfully aided, abetted, counseled, induced, or procured the commission of violations of the CEA by the other Defendants.

125. Each Defendant supervised the making of and benefited from the manipulative acts and willfully aided, abetted, counseled, induced, or procured the commission of violations of the CEA by the other Defendants.

126. Each Defendant, by and through their respective partners, agents, employees and/or other persons, benefited from the manipulative acts and willfully aided, abetted, counseled, induced, or procured the commission of violations of the CEA by the other Defendants.

127. Each Defendant participated in the development of the manipulative scheme and

participated in the execution of, and supervised, the manipulative acts. Each Defendant also benefited from the manipulative acts and willfully aided, abetted, counseled, induced, or procured the commission of violations of the CEA by the others.

128. Defendants each played their component role and each knowingly aided, abetted, counseled, induced, or procured the violations alleged herein. Defendants did so knowing of each other's manipulation of the final settlement prices of VIX Derivatives, and willfully intended to assist these manipulations, which resulted in artificiality in the market for those instruments.

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

PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays for relief and judgment, as follows:

A. Determining that this action is a proper class action, designating Plaintiff as Lead Plaintiff and certifying Plaintiff as a class representative under Rule 23 of the Federal Rules of Civil Procedure and Plaintiff's counsel as Lead Counsel;

B. Awarding compensatory damages in favor of the Plaintiff and the other Class members against all defendants, jointly and severally, for all damages sustained as a result of defendants' wrongdoing, in an amount to be proven at trial, including interest thereon;

C. Awarding Plaintiff and the Class treble damages, as well as punitive or exemplary damages, against Defendants for their violations of the Sherman Act, together with prejudgment interest at the maximum rate allowable by law;

D. Awarding Plaintiff and the Class damages, as well as punitive or exemplary damages, against Defendants for their violations of the CEA, together with prejudgment interest

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