UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

CITY OF PROVIDENCE, RHODE ISLAND, PLUMBERS AND PIPEFITTERS NATIONAL PENSION FUND, EMPLOYEES' RETIREMENT SYSTEM OF THE GOVERNMENT OF THE VIRGIN ISLANDS, STATE-BOSTON RETIREMENT SYSTEM, AND FÖRSTA AP-FONDEN Individually and on Behalf of All Others Similarly Situated, Plaintiffs, vs. BATS GLOBAL MARKETS, INC., et al., Defendants.	Civil Action No. 1:14-cv-02811-JMF **(Consolidated)** CLASS ACTION CONSOLIDATED AMENDED COMPLAINT FOR VIOLATION OF THE FEDERAL SECURITIES LAWS DEMAND FOR JURY TRIAL

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SUMMARY OF ALLEGATIONS

1. This securities class action is brought on behalf of public investors who purchased and/or sold shares of stock in the United States between April 18, 2009 and the present (the "Class Period") on a registered public stock exchange generated by defendants (collectively, the "Exchanges")[1] or on the alternative trading venue operated by Barclays PLC identified herein (collectively, the "Defendants"), and were injured as a result of the misconduct detailed herein (the "Class").

2. This case arises out of a scheme and wrongful course of business whereby the Exchanges and Barclays, together with sophisticated high frequency trading ("HFT") firms, employed devices, contrivances, manipulations and artifices to defraud in a manner that was designed to and did manipulate the U.S. securities markets and the trading of equities on those markets, diverting billions of dollars annually from buyers and sellers of securities and generating billions more in ill-gotten kickback payments for Defendants.[2]

3. Contrary to the duties imposed upon them by law, U.S. Securities and Exchange Commission ("SEC") rules, the Financial Industry Regulatory Authority ("FINRA") and their own rules and regulations, Defendants together with HFT firms participated in the scheme and wrongful course of business complained of herein whereby the Exchanges and Barclays provided certain market participants with material, non-public information and trading advantages so that those market participants could use the advantage obtained to manipulate the U.S. securities markets to the

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[1] Defendants are nationally registered securities exchanges on which U.S. equity stocks were traded during the Class Period, and include BATS Global Markets, Inc., Chicago Stock Exchange, Inc., Direct Edge ECN, LLC, The NASDAQ Stock Market LLC, NASDAQ OMX BX, Inc., New York Stock Exchange, LLC and NYSE Arca, Inc.

[2] In addition to operating its own dark pool, Barclays also ran its own proprietary HFT desk, itself engaging in many of the same predatory practices of HFT as more fully described herein.

detriment of plaintiffs and the Class. The Exchanges, having evolved from member-owned not-for-profit entities that focused solely on trade-matching to for-profit enterprises with the financial incentive to create an uneven playing field for investors, engaged in and facilitated this unlawful course of conduct by providing HFT firms with complex order types, proprietary data feeds and co-location services that allowed those firms to, *inter alia*, access enhanced trading information at faster speeds and position their trades to disadvantage plaintiffs and the Class.

4. Notwithstanding their legal obligations and duties to provide for orderly and honest trading and to match the bids and orders placed on behalf of investors at the best available price, and in direct conflict with their own public statements to their own customers and investors and in breach of their fiduciary duties, the Exchanges and Barclays demanded and received substantial kickback payments in exchange for providing HFT firms access to material trading data via preferred access to exchange floors and enriched data feeds. To satisfy the demands of HFT firms and attract order flow (and thus more fees), the Exchanges designed and implemented hundreds of new complex "order types" – preprogrammed commands traders use to tell the Exchanges how to handle their bids and offers – with the knowledge that those same HFT firms would use these order types to detect investors' trading patterns and trade in front of them to their detriment.

5. Moreover, in an effort to increase their own trading volumes – and therefore revenues – the Exchanges and Barclays encourage HFT firms to exploit their other customers by providing kickback payments to HFT firms for directing their trades to their own trading venues that they and the HFT firms knew were subject to informational asymmetries as a result of Defendants' scheme and wrongful course of business. Additionally, the Exchanges purchased retail and institutional order flow from various retail brokerages in order to provide victims to HFT firms' predatory practices.

6. Defendants utilized devices, contrivances, manipulations and artifices to defraud, which operated as a fraud and deceit on plaintiffs and the Class in violation of the Securities Exchange Act of 1934 (the "Exchange Act") and SEC rules promulgated thereunder.[3] Defendants' misconduct rigged the market and manipulated the prices at which shares were traded during the Class Period, causing substantial damage to plaintiffs and the Class as a result thereof.[4]

Defendants' Scheme and Wrongful Course of Business

7. Throughout the Class Period, the Exchanges engaged in manipulative and deceptive conduct, and participated in such conduct by others by: (i) charging kickback payments to HFT firms in exchange for situating HFT firms' servers in close proximity to the Exchanges' own order matching servers ("co-location") to create informational asymmetries and otherwise rig the market so that HFT firms could profit from access to, and utilization of, material non-public information;[5] (ii) charging kickback payments to HFT firms in exchange for providing enhanced proprietary data feeds that allow HFT firms to receive enriched trading information at faster delivery speeds than the

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[3] Those rules include SEC Regulation National Market System ("Reg NMS"), implemented in 2007, which requires that investors receive the best price executions for their bids and orders.

[4] As set forth more fully herein, numerous government and regulatory agencies are now investigating this misconduct. The SEC has been investigating the Exchanges' practices of selling co-location and direct data feeds, and providing complex order types to HFT firms, and on multiple occasions has issued fines for misconduct relating to such practices. Since late March, the U.S. Federal Bureau of Investigation ("FBI") and the U.S. Department of Justice ("DOJ") have both announced they are investigating HFT. Likewise, New York Attorney General Eric Schneiderman (the "NY AG"), the Commodity Futures Trading Commission ("CFTC") and the SEC are also probing the unlawfulness of HFT. On June 6, 2014, SEC Chairman Mary Jo White ("White") unveiled a sweeping set of initiatives to address concerns about HFT, including the possible conflicts of interest created by the mass of complex order types. On June 9, 2014, a Senate panel announced it would hold a hearing to investigate the possible conflicts between rebates paid by exchanges to brokers and brokers' obligations to honor their clients' trades.

[5] By one account, as of 2010, Exchanges collected $1.8 billion on an annual basis from HFT firms in co-location fees alone. Peter Cohan, *Rigged Market: How Latency Arbitrage Picks $3 Billion From Your Pockets* (updated June 6, 2010), *available at* http://www.dailyfinance.com/2010/06/05/rigged-market-latency-arbitrage-3-billion/.

widely available securities information processor ("SIP") feeds; (iii) designing and implementing new and exceedingly complex order types to attract order flow and fees from HFT firms and make it possible for those firms to pick off of and manipulate investors' trades; and (iv) paying hundreds of millions of dollars annually in kickback payments and rebates to brokerage firms to entice them to direct their customers' bids and offers to exchanges ("payment for order flow") where HFT firms would be able to preview this material non-public data before the rest of the market, to the detriment of plaintiffs and the Class.

8. Through these practices, the Exchanges have sold out their position of public trust in exchange for increasing their bottom line and satisfying the demands of their own stakeholders, and have created the conditions for HFT firms to employ predatory trading strategies to the detriment of plaintiffs and the Class and created a structure of fees and kickbacks that interfered with the duty of best execution owed by brokers to their customers. As two of the foremost experts on the predation of the new stock market have aptly explained:

> ***The primary purpose of the stock exchanges has devolved to catering to a class of highly profitable market participants called high frequency traders, or HFTs, who are interested only in hyper-short term trading, investors be damned***. The stock exchanges give these HFTs perks and advantages to help them be as profitable as possible, even if doing so adversely affects you, the investors, because HFT firms are the exchanges' biggest customers.[6]

9. Barclays likewise engaged in similar misconduct in operating its own alternative trading venue, for the benefit of HFT and to the detriment of its own customers and other market participants. In an effort to grow its dark pool, Barclays also: (i) misrepresented the way it operated its dark pool in order to lure institutional investors and thereby knowingly subject them to HFT

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[6] Sal Arnuk & Joseph Saluzzi, *Broken Markets: How High Frequency Trading and Predatory Practices on Wall Street are Destroying Investor Confidence and Your Portfolio* 1 (2012) (emphasis in original).

abuses described herein and including those engaged in by Barclays itself; and (ii) operated Barclays' order routing system in a way to favor its own trading venue to the detriment of plaintiffs and the Class. As detailed herein, Barclays has been sued by the NY AG for this and related misconduct.

10. Defendants' wrongful acts and unlawful practices constitute the manipulative use of devices and contrivances in violation of the Exchange Act and the SEC rules promulgated thereunder and constitute a scheme and wrongful course of business that has operated as a fraud or deceit on investors on U.S.-based exchanges for at least the past five years.

Defendants Created and Benefitted from the Conditions Under Which HFT Firms Participate in the Scheme

11. Defendants' unlawful practices were designed to and did position HFT firms to identify investors' desire to transact in securities and then enable those firms to front-run those same investors in transactions that generated almost riskless profits for HFT firms and a constant stream of revenue for Defendants in the form of kickback payments for providing HFT firms faster access to material data before it was disclosed to other market participants. During the Class Period, some HFT firms had average holding periods of just seconds and some did not report a single losing day of trading over periods ranging from several months to half a decade.

12. For example, leading HFT firm Virtu Financial, Inc. disclosed in March that it had just one day of trading losses in five years. At one point, Tradebot, an HFT firm headed by the founder of defendant BATS Global Markets, Inc., had not had a losing day of trading in four years and typically held stocks for only 11 seconds. Likewise, the proprietary trading desks of JP Morgan, Bank of America, Citigroup and Goldman Sachs combined posted 244 winning trading days against zero losses in the first quarter of 2010.

13. In coordination with the Exchanges and Barclays, HFT firms engaged in the misconduct detailed herein knowing that plaintiffs' and Class members' bids and orders were not being given time priority nor fulfilled at the best available prices, as required by applicable law and the rules of the SEC and Defendants' own rules, but instead were being manipulated for the benefit of Defendants and HFT firms. Thus, in addition to diverting billions of dollars from plaintiffs and the Class through electronic front-running, rebate arbitrage, latency arbitrage, spoofing, layering and contemporaneous trading, HFT firms knowingly paid the Exchanges and Barclays massive sums of money for access to material non-public data.

14. Public investors are entitled to be treated fairly and honestly when they trade equities on registered national securities exchanges. Defendants' manipulation of the U.S. securities markets during the Class Period, however, has eroded the investor confidence that is so vital to well-functioning capital markets. In addition to destroying trust in the U.S. capital markets, the misconduct alleged herein has siphoned off billions of dollars from private and public pension funds and individual retirement accounts that millions of Americans depend upon. Defendants' misconduct has deprived these investors of the very "market integrity" the Supreme Court acknowledges all "'buyer[s] [and] seller[s] . . . rely on.'" *Basic Inc. v. Levinson*, 485 U.S. 224, 247 (1988) (citation omitted). Instead, plaintiffs and the Class have been victimized in what can fairly be characterized as "'a crooked crap game.'" *Id.* (citation omitted). As such, plaintiffs request the damages, disgorgement and injunctive relief sought herein.

JURISDICTION AND VENUE

15. The claims asserted herein arise under and pursuant to §§6(b) and 10(b) of the Exchange Act, 15 U.S.C. §§78f(b) and 78j(b), and Rule 10b-5 promulgated thereunder by the SEC (17 C.F.R. §240.10b-5).

16. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §1331 and §27 of the Exchange Act (15 U.S.C. §78aa).

17. Venue is proper in this District pursuant to §27 of the Exchange Act and 28 U.S.C. §1391(b). Many of the Defendants maintain their principal places of business in this District and many of the acts and practices complained of herein occurred in substantial part in this District.

18. 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 facilities of the national securities markets.

PARTIES

Plaintiffs

19. Plaintiff City of Providence, Rhode Island ("City of Providence") is a municipal corporation with a principal address of 444 Westminster Street, Suite 220, Providence, Rhode Island. As of December 12, 2013, plaintiff City of Providence managed hundreds of millions of dollars in assets on behalf of thousands of beneficiaries associated with the City of Providence, including active and retired public employees and their dependents. As detailed in its Certification previously filed with the Court, plaintiff City of Providence purchased and sold tens of millions of shares of U.S.-based stock exchange listed stock for investment purposes in trades executed by various brokers during the Class Period, including on exchanges and the dark pool operated by Defendants herein. City of Providence suffered substantial damages as a result of Defendants' unlawful conduct.

20. Plaintiff Plumbers and Pipefitters National Pension Fund ("Plumbers and Pipefitters"), is a national pension fund with a principal address of 103 Oronoco Street, Alexandria, Virginia 22314. As of June 30, 2013, Plumbers and Pipefitters had over $4.9 billion in assets on

behalf of more than 136,000 participants and their families. Plumbers and Pipefitters provides retirement benefits to plumbers and pipefitters working in the building and maritime construction industries. As detailed in its Certification previously filed with the Court, Plumbers and Pipefitters purchased and sold tens of millions of shares of U.S.-based stock exchange listed stock for investment purposes in trades executed by various brokers during the Class Period, including on exchanges operated by Defendants herein. Plumbers and Pipefitters suffered substantial damages as a result of Defendants' unlawful conduct.

21. Plaintiff Employees' Retirement System of the Government of the Virgin Islands ("Virgin Islands") is a defined-benefit pension plan for officials and employees of the Government of the Virgin Islands. With over $1.3 billion in assets, Virgin Islands is the principal investment organization of the U.S. Virgin Islands' retirement plans. Virgin Islands provides retirement, health, and other pension benefits to over 8,200 retirees and pensioners and a little more than 11,000 active members. It is estimated that Virgin Islands has served approximately 22,000 members since operations began in 1959. As set forth in its Certification previously filed with the Court, plaintiff Virgin Islands purchased and sold millions of shares of U.S.-based stock exchange listed stock for investment purposes in trades executed by various brokers during the Class Period, including on exchanges operated by Defendants herein. Virgin Islands suffered substantial damages as a result of Defendants' unlawful conduct.

22. Plaintiff State-Boston Retirement System ("State-Boston") is an institutional investor and a governmental defined benefit plan that provides retirement benefits for the employees of the City of Boston, Boston Redevelopment Authority, Boston Housing Authority, Boston Public Health Commission and Boston Water & Sewer Commission. State-Boston has approximately 34,000 active and retired participants, representing approximately $5.4 billion in assets. As detailed in its

Certification previously filed with the Court, plaintiff State-Boston purchased and sold tens of millions of shares of U.S.-based stock exchange listed stock for investment purposes in trades executed by various brokers during the Class Period, including on exchanges and the dark pool operated by Defendants herein. State-Boston suffered substantial damages as a result of Defendants' unlawful conduct.

23. Plaintiff Första AP-fonden ("AP1") is a national pension fund based in Stockholm, Sweden, whose management contributes to ensuring a high and predictable retirement pension for every person employed in Sweden. AP1 is one of five buffer funds in the Swedish national income pension system. The capital reserves in the AP1 funds are used to cover the deficit when disbursements from the pension system exceed contributions to the system. With net assets of approximately $40 billion, AP1 is one of Sweden's largest pension funds. As set forth in its Certification previously filed with the Court, plaintiff AP1 purchased and sold millions of shares on U.S.-based stock exchange listed stock for investment purposes in trades executed by various brokers during the Class Period, including on exchanges operated by Defendants herein. AP1 suffered substantial damages as a result of Defendants' unlawful conduct.

The Exchange Defendants

24. During the Class Period, the following "national securities exchanges" were registered with the SEC under §6 of the Exchange Act and trade equities.

25. Defendant BATS Global Markets, Inc. ("BATS"), along with its operating subsidiaries BATS BZX Exchange, Inc. and BATS BYX Exchange, Inc., is an electronic stock exchange based in Lenexa, Kansas. BATS was founded in June 2005 as an Electronic Communication Network ("ECN") and its name stands for Better Alternative Trading System. BATS operates two stock exchanges in the United States, the BZX Exchange and the BYX

Exchange. As of the filing of the initial complaint in this case, BATS averaged daily trading volumes of approximately 630 million and 200 million shares, respectively, which accounted for approximately 8.5% and 2.7%, respectively, of U.S. equity daily trading volume. In 2014 BATS merged with defendant Direct Edge (defined below).

26. Defendant Chicago Stock Exchange, Inc. ("CHX") is a stock exchange headquartered in Chicago, Illinois. The CHX is a national securities exchange and self-regulated organization, which operates under the oversight of the SEC. Originally founded as a non-profit, non-stock corporation owned by its members, the CHX demutualized in 2004, thereafter becoming a wholly owned subsidiary of a holding company, CHX Holdings, Inc. ("CHX Holdings"). CHX Holdings is a for-profit, stock corporation headquartered in Delaware. Prior to the merger of BATS and Direct Edge, CHX was the third most active stock exchange by volume, and the largest exchange outside New York City.

27. Defendant Direct Edge ECN, LLC ("Direct Edge") is a Jersey City, New Jersey-based electronic stock exchange operating through two separate trading exchanges, EDGX Exchange and EDGA Exchange. As of the filing of the initial complaint in this action, Direct Edge averaged daily trading volumes of approximately more than 500 million and more than 200 million shares, respectively, and accounted for approximately 7% and 3%, respectively, of all U.S. daily equity trading volume. EDGX utilizes a so-called maker/taker pricing model offering high rebates for those who place bids and offers and charging those who merely fill orders. EDGA is a low cost exchange with a taker/maker pricing model. According to its website, Direct Edge now is "a BATS Global Markets company," following a merger between the companies in January 2014. Accordingly, the companies are working to combine operations under the BATS technology platform and brand.

28. Defendant The NASDAQ Stock Market LLC ("NASDAQ"), is a New York City-based electronic stock exchange. In 1971, NASDAQ stood for National Association of Securities Dealers Automated Quotations. NASDAQ was founded in 1971 by the National Association of Securities Dealers ("NASD"), who divested themselves of it in a series of sales in 2000 and 2001. NASDAQ is now owned and operated by the New York City-based NASDAQ OMX Group, which also owns the OMX stock market network. It is regulated by FINRA, the successor to the NASD. The NASDAQ is the second largest stock exchange in the world by market capitalization of the companies listed thereon, after the New York Stock Exchange. The NASDAQ typically trades in excess of 1.3 billion shares daily, and accounts for just less than 20% of all U.S. equity trading on a daily basis.

29. Defendant NASDAQ OMX BX, Inc. ("BX") (formerly the Boston Stock Exchange) is one of the many stock exchanges owned and operated by the NASDAQ OMX Group. It focuses on nationally listed securities. BX typically trades an average of 220 million shares on an average daily basis, and accounts for approximately 3% of all daily U.S. equity trading volume.

30. Defendant New York Stock Exchange, LLC ("NYSE") is a stock exchange headquartered in New York City. The NYSE is operated by NYSE Euronext, which was formed by the NYSE's 2007 merger with the fully electronic stock exchange Euronext. In December 2012, it was announced that the NYSE was being sold to Intercontinental Exchange ("ICE"), a futures exchange headquartered in Atlanta, Georgia, for $8 billion. NYSE and Euronext then became subsidiary divisions of ICE, and in 2014 Euronext became an independent public company through an initial public offering ("IPO"). The NYSE is by far the world's largest stock exchange, with its listed companies accounting for more than $16 trillion as of May 2013. Average daily trading value was approximately $169 billion in 2013. The NYSE has been fined twice by the SEC in a little over

two years for violations of exchange rules, the Exchange Act and Reg NMS, regarding the manner in which it sent data through its proprietary feeds vis-à-vis the SIP feeds and the method in which it offered co-location services.

31. Defendant NYSE Arca, Inc. ("ARCA") is headquartered in Chicago, Illinois. Previously known as ArcaEx, an abbreviation of Archipelago Exchange, it is a securities exchange on which both stocks and options are traded. It was owned by NYSE Euronext, which merged (as NYSE Group) with Archipelago Holdings in a reverse merger on February 27, 2006.

The Dark Pool Defendant

32. Defendant Barclays PLC ("Barclays") is a financial services company headquartered in the United Kingdom with offices in New York City. Barclays' brokerage division placed bids or offers and/or transacted on behalf of the Class on stock exchanges and alternate trading venues during the Class Period. Barclays, through its subsidiary Barclays Capital Inc., which provides securities brokerage services and is headquartered in New York City, operates the alternate trading venue or "dark pool" called Barclays LX. In late 2013, Barclays LX became the leading alternate trading venue according to published trading volumes. During the Class Period, Barclays also maintained its own proprietary trading divisions or trading desks that engaged in HFT.

CLASS ACTION ALLEGATIONS

33. Plaintiffs bring this class action pursuant to Federal Rule of Civil Procedure 23 on behalf of all public investors who purchased and/or sold shares of stock listed on a U.S.-based equity exchange operated by the Exchanges or the dark pool operated by Barclays during the Class Period and were injured thereby. Excluded from the Class are Defendants, any officer, director, partner or owner of any of the Defendants, members of their immediate families and their legal representatives, heirs, successors or assigns and any entity in which Defendants have or had a controlling interest.

34. The members of the Class are so numerous that joinder of all members is impracticable. While the exact number of Class members is unknown to plaintiffs and can only be ascertained through proper discovery, plaintiffs believe there are millions of members in the proposed Class.

35. Plaintiffs' claims are typical of the claims of the members of the Class as all members of the Class are similarly affected by Defendants' wrongful conduct that is complained of herein.

36. Plaintiffs will fairly and adequately protect the interests of the members of the Class and have retained counsel competent and experienced in class actions and securities litigation.

37. In addition, Defendants have acted and refused to act, as alleged herein, on grounds generally applicable to all members of the Class, thereby making final injunctive relief concerning the Class as a whole appropriate.

38. Common questions of law and fact exist as to all members of the Class and predominate over any questions solely affecting individual members of the Class. Among the common questions of law and fact are:

(a) whether Defendants implemented the manipulative acts, devices or contrivances or engaged in the alleged fraudulent scheme and course of business alleged herein;

(b) whether the Exchange Act and SEC rules were violated by Defendants' conduct alleged herein;

(c) whether Defendants acted knowingly or recklessly in connection with the misconduct alleged herein;

(d) whether the trading prices of shares purchased and sold during the Class Period were distorted by Defendants' conduct;

(e) whether and what equitable relief should be granted to plaintiffs and the Class; and

(f) the extent of damages sustained by members of the Class, and whether the Class is entitled to disgorgement and injunctive relief, and the appropriate measure of such damages and disgorgement.

39. A class action is superior to other available methods for the fair and efficient adjudication of this controversy since joinder of all members of the Class is impracticable. Further, as the damages suffered by most individual members of the Class may be relatively small, the expense and burden of individual litigation makes it virtually impossible for most members of the Class to redress the wrongs done to them individually. The Class is readily definable, and prosecution of this action as a class action will reduce the possibility of repetitious litigation and different treatment of different defendants for the same misconduct and damages. There will be no significant difficulties in managing this action as a class action.

FACTUAL ALLEGATIONS

The Recent Evolution of U.S.-Based Public Stock Markets

40. In 1972, the U.S. market for securities was quite fragmented. The same stock often traded at different prices at different trading venues, and the NYSE ticker tape did not report transactions of NYSE-listed stocks that took place on regional exchanges or on other over-the-counter securities markets. This fragmentation made it difficult for traders to comparison shop.

41. In 1975, Congress authorized the SEC to facilitate a national market system ("NMS") to ensure that stock listed on registered exchanges traded at the same or similar prices across all public exchanges. One of the objectives of creating an NMS was the linking of all markets for qualified securities through communication and data processing facilities, facilitating simultaneous

quoting from all exchanges and allowing investors to obtain the best price. Section 11A of the Exchange Act, enacted in 1975, provides for the establishment of the NMS for securities.

42. An NMS plan is a structured method of transmitting securities transactions in real-time. In the United States, NMS's are governed by §11A of the Exchange Act and SEC Rule 11(a)(1). In addition to processing the transactions themselves, these plans also emit the price and volume data for these transactions. Information on each securities trade is sent to a central network at the Securities Industry Automation Corporation ("SIAC") where it is consolidated with other trades on the same "tape" and then distributed. There are three major tapes in the United States. Tape A is for trades in securities listed on NYSE; Tape B is for trades in securities listed on NYSEMKT (formerly AMEX), NYSEARCA and BATS (together, the "consolidated tape," which contains all NYSE and regional exchange trades); and Tape C which contains all trades in securities listed on NASDAQ. When Congress mandated an NMS for trading securities in 1975, it emphasized that consolidated data "would form the heart of the national market system."[7]

43. During the early 2000's, U.S. stock regulators became worried that the U.S. markets were falling behind financial centers such as London, Frankfurt and Hong Kong, which were embracing electronic trading systems. SEC officials worried that control of U.S. capital markets could begin to shift offshore if the U.S. system did not evolve. In 2005, the rules promulgating the national market system were consolidated into Reg NMS, which went into effect in 2007. The purpose of Reg NMS was to ensure that – as required by §11A of the Exchange Act – orders were always carried out at the best price available. Some of the more notable Reg NMS rules included:

- ***Order Protection (or Trade-Through) Rule*** – providing intermarket price priority for quotations that are immediately and automatically accessible (Rule 611);

[7] H.R. Rep. No. 94-229, 94th Cong., 1st Sess. 93 (1975).

- ***Access Rule*** – addressing access to market data such as quotations (Rule 610);
- ***Sub-Penny Rule*** – establishing minimum pricing increments (Rule 612); and
- ***Market Data Rules:***

  a) Allocation amendment – instituting a new Market Data Revenue Allocation Formula;

  b) Governance amendment – creating advisory committees; and

  c) Distribution and Display Rules – governing market data (Rules 600, 601 and 603).

44. In explaining the purpose of Reg NMS, the SEC reiterated that "the NMS [was] designed to achieve the objectives of efficient, competitive, ***fair***, and orderly ***markets that are in the public interest and protect investors***."[8] The SEC also stated that in connection with enacting the Order Protection Rule, its primary purpose was to provide "strengthened assurance that ***orders will be filled at the best prices***," and to provide investors "***greater confidence that they will be treated fairly when they participate in the equity markets***."[9] The SEC went on to emphasize that "***[m]aintaining investor confidence is an essential element of well-functioning equity markets***."[10] Noting that the public comment portion of the rulemaking process highlighted the divergent interests of short-term traders and long-term investors, the SEC emphatically stated that Reg NMS was being structured to favor the interests of long-term investors over short-term traders, stating, in pertinent part, as follows:

> Noting that any protection against trade-throughs could interfere to some extent with such short-term trading strategies, the release framed the Commission's policy

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[8] Regulation NMS, 17 C.F.R. Parts 200, 201, 230, 240, 242, 249 and 270, Release No. 34-51808, File No. S7-10-04, RIN 3235-AJ18 ("Reg NMS") at 6, *available at* http://www.sec.gov/rules/final/34-51808.pdf. All emphasis is added unless otherwise noted.

[9] *Id*. at 11.

[10] *Id*.

> choice as follows: "Should the overall efficiency of the NMS defer to the needs of professional traders, many of whom rarely intend to hold a position overnight? Or should the NMS serve the needs of longer-term investors, both large and small, that will benefit substantially from intermarket price protection?" ***The Reproposing Release emphasized that the NMS must meet the needs of longer-term investors, noting that any other outcome would be contrary to the Exchange Act and its objectives of promoting fair and efficient markets that serve the public interest***.[11]

The SEC also emphasized how protecting long-term investors over short-term traders satisfied its regulatory mandate to protect "investors," emphasizing that "it makes little sense to refer to someone as 'investing' in a company for a few seconds, minutes, or hours," so "when the interests of long-term investors and short-term traders conflict . . . , the Commission believes that" it is the SEC's "clear responsibility . . . to uphold the interests of long-term investors."[12]

45. As enacted, Reg NMS required that exchanges and brokers accept the most competitive bid or offer prices posted at any U.S. trading venue that displayed price quotes, so as to speed up the stock market and ensure that investors got the best prices. For stock exchanges, Reg NMS made it important that they be able to display the national best bid and offer ("NBBO") prices, and ***having a heavy flow of orders could increase the perception that the exchange was offering the best prices***. In order to obtain robust order flow, exchanges began to offer incentives to trading firms whose business was to constantly buy and sell stocks – firms known as "market makers." These incentives took the form of rebates paid to traders (including brokers) to offer to sell or buy securities on those exchanges.

46. Exchanges had begun charging fees to investors who sought to merely accept the prices the market makers quoted. Reg NMS cemented this pricing practice by allowing exchanges to continue charging such fees to so-called "takers" of liquidity, while not charging so-called "makers."

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[11] *Id*. at 16 (citation omitted).

[12] *Id*. at 18-19.

This new fee system is called "maker-taker." It was initiated by newer private exchanges in the early 1990s, and by the late 2000s had spread so that it was used by exchanges including NYSE-Arca, NASDAQ and BATS.[13] Under the maker-taker system, exchanges offer a transaction rebate, (for example $0.002 per share), to parties who are "makers" or providers of liquidity, *i.e.*, traders submitting non-marketable limit orders, while charging a fee (for example $0.003 per share) to parties who accept the makers' bids or offers, *i.e.*, "takers" of liquidity (such as traders submitting market orders or marketable limit orders). In this example the exchanges pocket the $0.001 difference, which given the volume of trading in the U.S. adds up to enormous amounts of money annually.

47. An example of "maker-taker" pricing model is as follows:

> Imagine a grocery store in which you can haggle over prices. The grocer is willing to sell you an apple for $1. You, however, are offering to pay 95 cents for the apple. If the grocer agrees and takes your lower offer, ***he pays the take fee*** while ***you get the make fee***. If, however, you decide to give in and pay $1 for the apple, ***you*** pay the take fee and the grocer gets the make fee. Whoever gives in and crosses the spread between the bid and the offer pays.[14]

48. The "maker-taker" model runs counter to the traditional "customer priority" design, under which customer accounts are given order priority without having to pay exchange transaction fees. Under the "customer priority" model, exchanges did not charge transaction fees to investors; rather, they charged transaction fees to market-makers (specialists in particular stocks who held relatively large amounts of shares in those stocks in order to facilitate trading) and paid broker-dealers for order. Practically, the "maker-taker" pricing model disfavors investors who purchase

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[13] There is also the reverse of this rebate/fee system, "taker-maker," which has been adopted by at least one exchange. *See, e.g.*, ¶27 *supra* (EDGA exchange imposes a "taker-maker" model. Unless otherwise noted, the Exchanges herein generally impose the "maker-taker" pricing structure.).

[14] Scott Patterson, *Dark Pools: The Rise of the Machine Traders and the Rigging of the U.S. Stock Market* 42 (2012) ("*Dark Pools*").

stocks to hold and sell them when they have an independent reason to, and favors traders who engage in flipping stocks for short-term profits, such as HFTs. While the Exchanges continue to pay broker-dealers for order flow, over the last decade, they have instituted the maker-taker pricing structure that incentivizes HFTs and their predatory practices rather than ensuring an orderly and fair market.

49. For the market-making firms, as they constantly placed bids and offers for securities, the stock exchanges' frequently shifting schemes of rebates and discounts created an arbitrage opportunity. With more than a dozen U.S. stock exchanges and more than 40 private stock-trading venues, this provision of Reg NMS added additional complexity to the financial markets – leading to rebate arbitrage (where traders decide which exchange to trade on based on the rebate paid to them for doing so).

50. Following the adoption of Reg NMS, it became more valuable for a trading platform to qualify as a full-fledged stock exchange because if an exchange displayed the best price for a stock, then that was where an order for the stock had to be filled (providing market flow and the related financial incentives). The same was not true of other types of trading platforms, some of which do not publicly display price quotes. For instance, in 2008 defendant BATS converted its electronic trading platform to a full-fledged public exchange registered with the SEC in order to capture new trading business precipitated by the new Reg NMS rules. Defendant Direct Edge followed suit in 2010. In addition, established exchanges such as NASDAQ purchased fading exchanges that once represented regional markets in Philadelphia, Boston and Cincinnati, reestablishing them as electronic platforms geared toward specific niches. From 2007 to 2011, seven new stock exchanges opened for business.

The Proliferation of Dark Pools

51. Reg NMS also spurred the proliferation of alternate trading venues that do not publicly display bid and offer prices and allowed for anonymous trading (commonly referred to as "dark pools"). The fees public stock exchanges charge investors incentivize them to direct stock orders toward these and other private trading platforms, where trading is often cheaper.

52. Dark pools are alternative trading systems ("ATS"), that evolved from the "upstairs trading" provided for decades by exchanges, in which the size and price of electronic orders are hidden from other market participants. Historically, stock exchanges with "upstairs trading" would match large buy and sell orders after the close of trading, at the closing price. Trades matched in this way were only disclosed after the event and, thus, did not change the exchange-quoted price. To avoid influencing exchange prices with clues about outstanding demand, unfilled order data was not disclosed. The role of these original dark pools was to provide institutional investors with a venue to make trades they would not otherwise make.

53. Without "upstairs trading," frequently large institutional orders would be split into smaller orders in an attempt to hide within regular trading activity. In the 1980s, however, algorithmic trading facilitated by complex computer programs was created specifically to identify these "order splitting" strategies.

54. In 2007, Reg NMS made it possible for anyone to start a dark pool, in part, by eliminating the protections afforded manual quotations by exchanges and allowing investors to bypass exchanges for a better price. Large investment banks recognized the growing importance of dark pool trading and quickly created or expanded their own dark pools, matching both buyer and seller from their own client pool to avoid paying transaction fees twice.

55. Unlike Exchanges' "upstairs trading" which were designed as an added service for institutional investors, broker-dealer dark pools were designed as independent revenue streams requiring significant order flow and execution rates. This revenue-focused model eliminated daily matching orders and ushered in the advent of continuous crossing in which orders are either immediately matched, re-routed or returned. Broker-dealer dark pools also allowed "resting" orders and "limit" orders, and most eliminated the minimum order size which defined exchange dark pools.

56. Broker-dealer dark pools market themselves as alternative trading venues that provide anonymity and information barriers. When an institutional investor submits a large order to a dark pool, the investor is revealing valuable information. Protection against short-selling, front-running and other HFT schemes based on that information by the broker-dealer, or those to whom that information could be passed, is the foundation upon which the broker-dealer markets its dark pool to institutional investors.

57. In 2008, dark pools accounted for 16% of all stock trading. By 2013, that figure had risen to over 40% with average daily trading volume of 920 million in January of that year compared with just 900 million on NYSE. All dark pools are registered with the SEC and FINRA as broker-dealers.

The Rise of High Frequency Trading

58. The new structure Reg NMS attempted to address also ramped up cat-and-mouse games played by sophisticated electronic traders operating in the stock market. Computerized HFT firms tried to obtain clues about what Class members, in particular big institutional investors, were planning to trade through techniques such as repeatedly placing and instantly canceling thousands of stock orders to detect demand (referred to colloquially as "pinging"). If such an HFT firm's algorithms detected that a Class member was planning to purchase or sell a certain stock, the HFT

firm's computers would rush to buy (or sell) it first and then sell it back to that Class member at a higher or lower price, pocketing the difference. That process made purchases or sales costlier for Class members.

59. Institutional investors making large stock purchases have long been accustomed to breaking up their orders to avoid tipping off the market. But because buy and sell orders were being bounced around so widely following the enactment of Reg NMS, it became easier for HFT firms' algorithms to detect what and how much Class members were planning to trade – including their price sensitivity and margin requirements – based on knowing each investor's historical practices. For instance, as an Illinois appellate court found in February 2010 in a decision involving HFT firm Citadel's claim to intellectual property rights over its proprietary HFT information gathering systems:

> High frequency trading . . . requires the development of a vast collection of historical market data. Citadel has been gathering market data since it began the high frequency business, which was built on the foundation of Citadel's prior quantitative investment work. ***The data system contains the rough equivalent of approximately 100 times the amount of data included in the Library of Congress***. In order to use the historical market data, codes and programs must be written to ***translate, organize and replay it***. This process involves writing code to review and organize the data into a coherent and usable format. ***Market data replayers allow a particular signal or "alpha" to be tested over historical market data***. Citadel developed these tools in building its high frequency business. A combination of signals or "alphas" may be used in a trading strategy.
>
> ***Moreover, Citadel built trading engines that read incoming real-time market data and, when the opportunity arises, execute its trading strategies and alphas to buy and sell securities***. This is a critical piece of the infrastructure and of the entire interrelated network.[15]

[15] *Citadel Inv. Grp., LLC v. Teza Techs. LLC*, 924 N.E. 2d 95, 97-98 & n.1 (Ill. 2010) ("Signals or 'alphas' are mathematical price prediction algorithms or models developed and tested by Citadel.").

60. With the dramatic change in the stock exchange model following the introduction of Reg NMS, exchanges no longer generated most of their revenue from listing fees. In addition to listing fees, stock exchanges now make fees in several ways including:

- Exchanges make approximately three-hundredths of a penny for every 100-stock order;
- HFT firms pay exchanges for the right to install their computer servers in the limited space as close as possible to the actual exchange, so that their electronic trade requests will arrive milli- and microseconds earlier than their competitors' requests;
- HFT firms pay exchanges for faster access to direct proprietary data feeds containing enhanced material trading data;
- Financial researchers, news companies and HFT firms pay exchanges for access to trade data – who sold what, when and for how much; and
- Traders purchase special trading software from exchanges.

Rather than relying on listing fees, exchanges "now receive most of their revenue from transactions and the sale of market data and related services based on those transactions."[16]

61. By providing co-location services, enhanced data feeds and complex order types to favored HFT firms as discussed herein, Defendants paved the way for a plethora of practices that HFT firms use to prey on less sophisticated investors. HFT is a type of algorithmic trading, specifically the use of sophisticated technological tools and computer algorithms to rapidly trade securities. HFT uses proprietary trading strategies carried out by computers to move in and out of positions in fractions of a second. As of 2009, studies suggested HFT trading accounted for 60%-73% of all U.S. equity trading volume. By value, actual HFT was estimated in 2010 by consultancy Tabb Group to make up just ***56%*** of equity ***trades*** in the U.S. Financial services firms that engage in proprietary HFT on their own firms' accounts sometimes also engage in trading for their customers'

[16] Comment Letter from Sal Arnuk and Joseph Saluzzi, Themis Trading, to Elizabeth Murphy, SEC at 2 (Apr. 21, 2010), *available at* http://www.themistrading.com/article_files/0000/0543/4-21-10_THEMIS_--_SEC_Comment_Letter.pdf.

accounts. Indeed, many of the nation's largest financial institutions have in-house HFT divisions under their umbrellas. HFT is proprietary trading done on the firm's own account though, not trading done on behalf of that firm's customers. Financial services firms earn profits ***off the market*** when they engage in proprietary, HFT against other market participants, whereas they earn commissions ***for trading*** on the accounts of their customers ***on the market***.

62. HFT has grown exponentially since its inception in 1999 following the SEC's authorization of electronic exchanges in 1998. At the turn of the 21st century, HFT trades had an execution time of several seconds, whereas by 2010 this had decreased to milli- and even microseconds.[17]

63. In the early 2000s, HFT accounted for fewer than 10% of equity orders, but according to data provided by the NYSE, overall trading volume grew by about 164% between 2005 and 2009, a material portion of which can be attributed to HFT. Proponents of permitting HFT claim HFT firms are market-makers and provide liquidity to the market which lowers volatility and helps narrow bid-offer spreads, making trading and investing cheaper for other market participants. In the U.S., dedicated HFT firms represent 2% of the approximately 20,000 firms operating today, ***yet account for 73% of all equity bids and orders volume***.

64. High frequency traders move in and out of positions very quickly, aiming to capture sometimes just a fraction of a cent in profit on every trade – providing very low margins. But HFT firms do not employ significant leverage, accumulate positions or hold their portfolios for minutes – much less overnight. As a result, HFT has a potential Sharpe ratio (a measure of risk and reward)

[17] A millisecond is one thousandth of a second; a microsecond is one millionth of a second. By way of comparison, one millisecond is to one second as one second is to 16.67 minutes and one microsecond is to one second as one second is to 11.574 days. Estimates of the time it takes to blink your eye range from 100 millisecond (100,000 microsecond) to 400 millisecond (400,000 microsecond) – just a mere fraction of a second.

thousands of times higher than traditional buy-and-hold strategies. HFT firms make up for their low margins with incredibly high volumes of trading, frequently numbering in the millions.

65. However, HFT firms execute on very few of the bids and orders they place on stock exchanges and alternate trading venues, often placing those bids and orders for only seconds and only for the purpose of discovering the intentions of investors. In 1999, there were 1,000 quotes per second, streaming from U.S. stock exchanges and approximately two billion shares traded each day. Today, there are two million quotes per second, but the market trades just over five billion shares per day, which is just over twice the volume of stock traded, but 2,000 times more quotes. These quotes are essentially HFT firms at war with each other, to the detriment of the investing public. "In other words, the HFTs generate a crushing, expensive amount of information (data) that don't need to be sent to millions of computers around the world," and "[t]hey spend a vast majority of their time spoofing, or trying to fake out algorithms of other HFTs."[18]

66. As set forth more fully herein, some examples of typical trading methods utilized by HFT firms include:

(a) ***Trading Ahead***. Most retirement savings, such as public and private pension funds or 401(k) and individual retirement accounts in the U.S., are invested in mutual funds, the most popular of which are index funds which periodically "rebalance" or adjust their portfolio to account for current prices and market capitalization of the underlying securities in the stock or other index that they track. This allows trading algorithms to anticipate and trade ahead of stock price movements caused by mutual fund rebalancing, making a profit on advance knowledge of the large institutional block orders. This results in profits being transferred from investors to algorithmic

[18] *See generally* Jon Najarian, *How to 'Unrig' Markets* (Apr. 11, 2014), *available at* http://www.cnbc.com/id/101575733.

traders, estimated to be at least 21 to 28 basis points annually for S&P 500 index funds, and at least 38 to 77 basis points per year for Russell 2000 funds.

(b) ***Electronic Front-Running***. Electronic front-running is a practice whereby a market participant seeks to exploit large orders being placed out in the market. For example, a large order from a pension fund to buy will be broken into small parts and trading takes place over several hours or even days, and will cause a rise in price due to increased demand. An HFT firm can utilize preferred access to material trade data to try to identify this happening and then trade in front of the fund, buying the relevant security elsewhere and then profiting from selling back to the pension fund at increased prices.

(c) ***Latency Arbitrage***. This practice relies on outdated market access technology employed by customers unable or unwilling to spend tens of thousands of dollars per month for special services from the Exchanges. Utilizing HFT strategies, HFT traders use speed to gain minuscule advantages in arbitraging price discrepancies in some particular security trading simultaneously on disparate markets. This practice alone can and has generated virtually riskless profits for Defendants. "Riskless profits" is not a speculative statement but is an industry norm for HFT firms. For example, Rishi Narang, co-founder of HFT firm Tradeworx Inc., explained the process in a documentary film about HFT as follows: "So let's say I can buy the S&P here for 10% down on the day, but I can sort of sell it here at the exact same moment for 8% down on the day, I've made 2% with zero risk. If you have the exact same instrument priced differently in two different

places, that's ***free money***."[19] By one account, latency trading advantages have been estimated to account for $21 billion in profit per year.[20]

67. High frequency traders have claimed their practices substantially improve market liquidity, narrow bid-offer spreads, lower volatility and make trading and investing cheaper for other market participants. However, in September 2011, Nanex, LLC (an HFT software company) published a report stating the contrary, revealing that the amount of quote traffic compared to the value of actual trade transactions over four and half years demonstrated a ten-fold ***decrease*** in efficiency. Moreover, the liquidity that high frequency traders provide is illusory as it can disappear in an instant, worsening an unstable situation when liquidity matters most, as occurred during the "Flash Crash" of May 6, 2010 when several leading HFT firms such as Tradeworx Inc. stopped trading during severe market turmoil.

68. With the influx of high frequency traders in the market, more fully automated markets such as NASDAQ, Direct Edge and BATS have gained market share from less automated markets such as the NYSE. The speeds of computer connections, measured in milliseconds or microseconds, have become important. For example, in 2009, the London Stock Exchange bought a technology firm called MillenniumIT and announced plans to implement its Millennium Exchange platform, which they claim has an average latency of 126 microseconds. Since then, exchanges have continued to evolve to reduce latency, competing to attract high frequency traders, and today, with

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[19] Marije Meerman, *Money & Speed: Inside the Black Box* at 26:43-27:00 (Jan. 31, 2011), *available at* https://www.youtube.com/watch?v=aq1Ln1UCoEU.

[20] Elaine Wah & Michael Wellman, *Latency Arbitrage, Market Fragmentation, and Efficiency: A Two-Market Model* (June 16-20, 2013), *available at* http://web.eecs.umich.edu/srg/wp-content/uploads/2013/02/ ec38-wah.pdf.

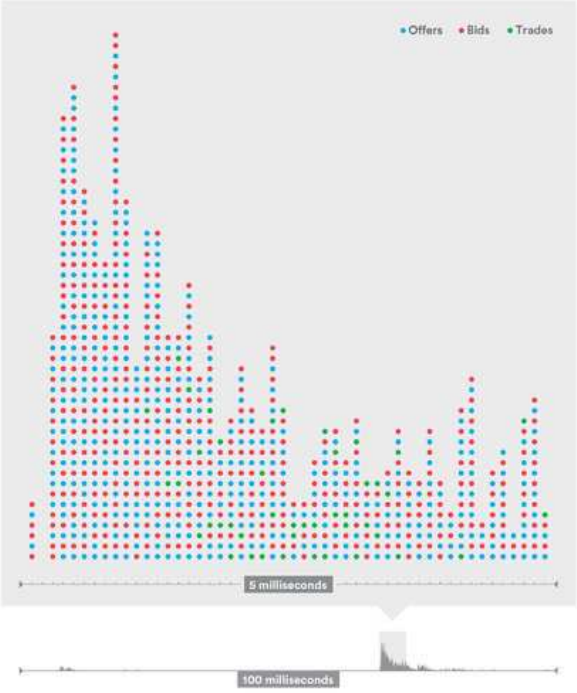
turnaround times of three milliseconds available, these very fast exchanges allow high frequency traders to pinpoint the consistent and probable performance ranges of stock prices.

69. Especially since 2011, there has been a trend to use microwaves to transmit data across key connections, such as the one between New York and Chicago. This is so because microwaves travelling in air suffer a less than 1% speed reduction compared to light travelling in a vacuum, whereas with conventional fiber optics light travels over 30% slower. In the microseconds it takes a high frequency trader – depicted below in blue – to reach the various stock exchange servers housed in these New Jersey towns, the conventional trader's order, theoretically, makes it only as far as the red line. The time differences can be financially advantageous in a number of ways.

Michael Lewis, *The Wolf Hunters of Wall Street: An Adaptation From "Flash Boys: A Wall Street Revolt*," (Mar. 31, 2014), *available at* http://www.nytimes.com/2014/04/06/magazine/flash-boys-michael-lewis.html.

70. HFT was initially introduced to allow participants like market-makers the opportunity to meet or improve on the NBBO to ensure incoming orders were matched at the most advantageous prices according to Reg NMS. However, in practice, these programs have been manipulated by HFT firms to inspect major orders as they come in and use that information to profit to the detriment of ordinary investors.

71. The fact that HFT firms are electronically front-running the trades of ordinary investors is demonstrated by the fact that HFT activity is not constant; it occurs in microbursts – showing that it is only triggered by the placing of a bid or order by an ordinary investor, revealing that investor's intention. The example below is illustrative. The line at the bottom of this graphic is the stock market activity involving General Electric shares over 100 milliseconds (one-tenth of a second) at 12:44 p.m. on December 19, 2013. The gray box magnifies a five-millisecond window, during which General Electric experienced very heavy bid and offer activity, but only a total of 44 trades:



Lewis, *The Wolf Hunters of Wall Street, supra*.

72. The SEC does not regulate HFT. The brief but dramatic stock market crash in 2010 known as the Flash Crash, when the Dow Jones Industrial Average plunged to its largest intraday point losses, only to recover much of those losses within minutes, is believed to have been caused by HFT. After almost five months of investigations, the SEC and the CFTC issued a joint report

identifying the cause that set off the sequence of events leading to the Flash Crash and concluding that the actions of HFT firms contributed to volatility during the crash. To date the SEC has enacted no rules or regulations regarding HFT.

The Duties and Obligations of Stock Exchanges

73. As registered national stock exchanges under the Exchange Act, the Exchanges are required to ensure that they operate in conformity with the Exchange Act and SEC rules and their own rules, and that its members comply with the Exchange Act, as well as the SEC's and the Exchanges' own rules. In fact, many of the Defendants hold or have held themselves out as protectors of investors and have stated that they treat all investors equally and fairly. For example, defendant NASDAQ's own equity rules reference the "protection of investors" 17 times. ICE, in its most recent annual report, acknowledged that defendants NYSE and ARCA, as self-regulatory organizations ("SROs") registered with the SEC, are charged with "providing fair and orderly markets and protecting investors."[21] Moreover, NYSE's Code of Business Conduct and Ethics states that its employees, officers and directors should not "take unfair advantage of anyone through manipulation, concealment, abuse of privileged information, misrepresentation of material facts, or any other unfair-dealing practice."[22]

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[21] ICE 2013 Annual Report (Form 10-K) at 25 (Feb. 14, 2014), *available at* http://ir.theice.com/files/doc_financials/10-K/10K2013.pdf. The NYSE has more explicitly laid out this duty in earlier annual reports. *See* Nan S. Ellis et al., *The NYSE Response to Specialist Misconduct: An Example of the Failure of Self-Regulation* at 104 (June 2010) ("The NYSE acknowledges that '***[b]efore committing their trust and savings to the market, investors must be guaranteed a fair and level playing field along with equal access to information and guidance they can trust***.'") (quoting 2002 NYSE Annual Report), *available at* http://scholarship.law.berkeley.edu/cgi/viewcontent.cgi?article=1070&context=bblj.

[22] NYSE Manual, Section 3, Corporate Responsibility, *available at* http://nysemanual.nyse.com/lcm/sections/lcm-sections/chp_1_4/default.asp.

74. Under §6(a)-(b) of the Exchange Act, 15 U.S.C. §78f(a)-(b), entitled "National securities exchanges":

> (a) . . . An exchange may be registered as a national securities exchange under the terms and conditions hereinafter provided in this section . . . by filing with the Commission an application for registration in such form as the Commission, by rule, may prescribe containing the rules of the exchange and such other information and documents as the Commission, by rule, may prescribe as necessary or appropriate in the public interest or for the protection of investors.
>
> (b) . . . An exchange shall not be registered as a national securities exchange unless the Commission determines that –
>
> (1) Such exchange is so organized and has the capacity to be able to carry out the purposes of this title . . . and to comply, and . . . to enforce compliance by its members and persons associated with its members, with the provisions of this title . . . , the rules and regulations thereunder, and the rules of the exchange.
>
> * * *
>
> (4) ***The rules of the exchange provide for the equitable allocation of reasonable dues, fees, and other charges among its members and issuers and other persons using its facilities***.
>
> (5) ***The rules of the exchange are designed to prevent fraudulent and manipulative acts and practices, to promote just and equitable principles of trade . . . to remove impediments to and perfect the mechanism of a free and open market and a national market system, and, in general, to protect investors and the public interest***; ***and are not designed to permit unfair discrimination between customers***, ***issuers, brokers, or dealers*** . . . .
>
> (6) The rules of the exchange provide that . . . its members and persons associated with its members shall be appropriately disciplined for violation of the provisions of this title . . . , the rules or regulations thereunder, or the rules of the exchange, by expulsion, suspension, limitation of activities, functions, and operations, fine, censure, being suspended or barred from being associated with a member, or any other fitting sanction.

75. Rule 601 of Reg NMS allows SROs, which by definition include registered national securities exchanges such as Defendants, to distribute their own market data independently for a fee. By virtue of distributing such data on an exclusive basis, an exchange is deemed an "exclusive processor." Rule 603(a) establishes uniform standards for distribution of both quotations and trades.

Specifically, "Rule 603(a)(1) requires that any market information distributed by an exclusive processor . . . that is the exclusive source of the information, be made available to securities information processors [also known as "SIPs"] on terms that are fair and reasonable. Rule 603(a)(2) requires that any SRO . . . that distributes market information must do so on terms that are not unreasonably discriminatory."[23]

76. The standards set forth in Rule 603(a) were designed "to ensure that the independently distributed market data would be made available to all investors and data users,"[24] and to "promote efficiency and competition among market centers by helping to assure that independently reported trade and quotation information is distributed on terms that are fair and reasonable and not unreasonably discriminatory."[25] Moreover, the SEC has stated that "'[r]obust technology governance is just as important to preventing investor harm as any other compliance or supervisory function.'"[26]

The Exchanges Mislead Investors to Induce Them to Trade Against HFT

77. Aware of their obligation to provide fair and orderly markets, the Exchanges assured investors that their markets are "fair and orderly," and for the benefit of traditional individual and institutional investors. In this way they induced individual and institutional investors to trade on their exchanges while simultaneously selling and profiting from services provided to HFT in order to take advantage of those same individuals and institutions.

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[23] Reg NMS at 279.

[24] *Id*. at 270.

[25] *Id*. at 385.

[26] Press Release, *SEC Charges New York Stock Exchange for Improper Distribution of Market Data* (Sept. 14, 2012), *available at* http://www.sec.gov/News/PressRelease/Detail/PressRelease/1365171484740#.VAS8tKPn_5o.

NASDAQ

78. The NASDAQ OMX Group made public statements throughout the Class Period assuring the investing public that it operated fair and orderly exchanges, all the while knowing that through the provision of co-location services, proprietary data feeds, order types and payment for order flow, it had stacked the deck in favor of certain market participants, especially HFT firms. Such statements trumpeted the NASDAQ OMX Group's "[c]ommitment to regulatory integrity," and its desire "to ensure transparent trading and a fair and orderly market for the benefit of investors."[27] Moreover, the NASDAQ OMX Group acknowledged that its exchanges as "SROs . . . are an essential component of the regulatory scheme of the Securities Exchange Act of 1934 . . . for providing fair and orderly markets and protecting investors."[28] As the NASDAQ OMX Group admitted, transparency was an important part of its efforts to maintain fair and orderly markets.

79. But this was a subterfuge, as the NASDAQ OMX Group was providing preferred market participants with trading advantages to the substantial detriment of all other investors, and the NASDAQ OMX Group benefitted greatly from these dealings. Throughout much of the Class Period, NASDAQ's Access Services business, which included co-location services, and Market Data business, which included proprietary data products, provided large, ever-increasing sources of revenue for the exchange. For example, in the year ending December 31, 2012, Access Services revenues increased $16 million when compared with the same period in 2011, totaling $238 million in 2012, and Market Data revenues increased $15 million to a total of $344 million in 2012, "primarily from U.S. market data products," which include proprietary data feeds. Even when

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[27] NASDAQ OMX Group 2011 Annual Report (Form 10-K) at 4 (Feb. 24, 2012), *available at* http://ir.nasdaqomx.com/secfiling.cfm?filingID=1193125-12-77518&CIK=1120193.

[28] *Id*. at 18.

overall revenues for the Access Services and Market Data businesses decreased from one year to the next, co-location services and proprietary data products continued to thrive.

80. While the NASDAQ OMX Group benefitted directly from the payments it received for co-location services and proprietary data products, it also catered to preferred market participants, such as HFT firms, because of the high volume of trading they brought to the exchanges. As NASDAQ stated in regulatory filings throughout the Class Period, volume, and especially volume provided by HFT firms, was a key revenue driver for its exchanges:

> Current initiatives being considered by regulators and governments, such as restrictions on algorithmic (high-frequency) trading, could have a material adverse effect on overall trading and clearing volumes. Because a significant percentage of our revenues is tied directly to the volume of securities traded and cleared on our markets, it is likely that a general decline in trading and clearing volumes would lower revenues and may adversely affect our operating results if we are unable to offset falling volumes through our pricing.[29]

81. The potential for conflict between its desire to increase revenues and its obligations to investors was not lost on NASDAQ. As it noted, "[w]e have self-regulatory obligations and also operate for-profit businesses, ***and these two roles may create conflicts of interest***."[30] In providing certain preferred market participants with co-location services, proprietary data feeds, special order types and payment for order flow, NASDAQ abrogated its obligation to promote fair, orderly and transparent markets for all investors.

NYSE

82. NYSE Euronext similarly represented to investors that it provided fair trading venues which treated customers equitably. NYSE consistently stated that market participants could trade

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[29] *Id*. at 24.

[30] *Id*. at 31.

"anonymously"[31] and that its customers received market data in "real-time."[32] However, NYSE profited by betraying the interests of traditional investors such as plaintiffs, in favor of HFT customers who were willing to pay tens of thousands of dollars a month for an edge on the market.

83. Despite its proclamations about "anonymous market access," NYSE profited by providing faster speeds and expensive enhanced data feeds which NYSE's favored customers could use to overcome the purported anonymity. The revenues NYSE generated by selling these technological advantages grew rapidly during the Class Period. The Information Services and Technology Solutions segment's annual revenues increased by roughly $50 million each year. NYSE publicly highlighted this segment and set a target of $1 billion in revenues by 2015. As set forth more fully below, NYSE knew that its statements regarding anonymity were false and

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[31] "NYSE and NYSE MKT . . . build on our core attributes of liquidity, pricing efficiency, low trading costs and tight spreads by broadening customers' ability to trade quickly and anonymously." ICE 2013 Annual Report (Form 10-K) at 6 (Feb. 14, 2014). The same language was used in the NYSE's Forms 10-K for fiscal years 2009 through 2012. *See* NYSE 2009-2012 Annual Reports (Forms 10-K) (Mar. 1, 2010; Feb. 28, 2011; Feb. 29, 2012; Feb. 26, 2013).

"NYSE Arca's trading platform provides customers with fast electronic execution and open, direct and anonymous market access." ICE 2013 Annual Report (Form 10-K) at 6 (Feb. 14, 2014). The same language was used in the NYSE's Forms 10-K for fiscal years 2009 through 2012. *See* NYSE 2009-2012 Annual Reports (Forms 10-K) (Mar. 1, 2010; Feb. 28, 2011; Feb. 29, 2012; Feb. 26, 2013).

[32] "Orders can be matched either on a price/time or pro rata basis, configurable by contract, with transacted prices and volumes and the aggregate size of all bids and offers at each price level updated on a real-time basis. Users are continually notified of all active orders in the central order book, making market depth easy to monitor." ICE 2013 Annual Report (Form 10-K) at 16 (Feb. 14, 2014). The same language was used in the NYSE's Forms 10-K for fiscal years 2009 through 2012. *See* NYSE 2009-2012 Annual Reports (Forms 10-K) (Mar. 1, 2010; Feb. 28, 2011; Feb. 29, 2012; Feb. 26, 2013).

"Our primary market data services include the provision of real-time information relating to price, transaction and order data on all of the instruments traded on the cash and derivatives markets of our exchanges." ICE 2013 Annual Report (Form 10-K) at 7 (Feb. 14, 2014). "NYSE Technologies' Market Data Platform provides real-time market data distribution . . . ." NYSE 2009-2012 Annual Reports (Forms 10-K) (Mar. 1, 2010; Feb. 28, 2011; Feb. 29, 2012; Feb. 26, 2013).

misleading because NYSE empowered its favored customers in a way that allowed HFT firms to defeat the purported anonymity. And NYSE profited by doing so.

84. Contrary to NYSE's representations to shareholders about distributing data in "real-time," NYSE offered co-location for a fee, and provided market data to its customers at two different speeds. In truth, NYSE had two classes of customers, only one of whom received data in "real-time." With this systemic advantage, created and maintained by the NYSE, favored NYSE customers such as HFT firms could skim profits off of average Americans and institutional investors by imposing unknown transaction fees.

85. In September 2012 NYSE settled an enforcement action by the SEC regarding this speed differential between its proprietary feed and the public quotation system. NYSE was charged with violating Reg NMS by providing trade data to its direct data feeds faster than it was provided to its SIP. NYSE and NYSE Euronext paid a $5 million penalty.

BATS

86. Like the other exchanges, defendant BATS represented that its trading platform facilitated fair and orderly markets, yet offered a competitive advantage in the form of co-location services, proprietary data feeds and complex order types to a favored group of predatory HFT customers. For example, in connection with its attempted IPO, BATS stated in an amended Form S-1 filing on March 12, 2012: "Our trading platform is designed to facilitate fair and orderly markets, and we deploy cutting-edge regulatory surveillance technology in the United States and Europe to monitor our customers' trading."[33] Similarly, in an open letter to BATS customers and the trading community in general, BATS CEO Joe Ratterman ("Ratterman") stated, also in connection with its

[33] BATS Amendment No. 4 to Form S-1 Registration Statement at 121 (Mar. 12, 2012) ("BATS Amended Form S-1"), *available at* http://www.sec.gov/Archives/edgar/data/1519917/000119312512107970/d179347ds1a.htm, at 121.

failed IPO: "Our listing Exchange has an obligation to operate and maintain fair and orderly markets . . . . [W]e will work even harder to earn your trust and confidence in the months and years ahead."[34] In practice, however, BATS operates anything but fair and orderly markets.

87. The founder of BATS, David Cummings ("Cummings"), also founded the pioneering HFT firm Tradebots Systems Inc. ("Tradebots"). In 2007, Cummings stepped down as CEO of BATS to remove "any apparent conflict of interest" based on his ownership of Tradebots, but continued to serve on the BATS board of directors while running Tradebots. In its March 12, 2012 filing, BATS disclosed that affiliates of its "strategic investors," including Tradebots (run by Cummings) and another powerhouse HFT firm, Getco LLC (now KCG Holdings, Inc.), accounted for "a significant percentage of [BATS's] revenue," including approximately 30% of revenue from 2009 to 2011 (and up to 10% by any one such affiliate for each year).[35] BATS also provides rebates to favored HFT firms as part of its maker-taker model, and from 2009 to 2011, between 31% and 53% of such rebates (as part of its "total cost of revenues") were generated by these "strategic investors." Perhaps most astonishingly, in 2009 ***51% of BATS rebates were paid to a single affiliate***.

88. Just weeks after BATS's March 2012 disclosures, it was reported that the SEC was examining the trading activities of BATS investors Getco LLC and Tradebots and whether those firms "used their close links to computerized stock exchanges [with a focus on BATS] to gain an

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[34] Steve Schaefer, *BATS Moves Into Damage Control After Scrapped IPO* (Mar. 26, 2012), *available at* http://www.forbes.com/sites/steveschaefer/2012/03/26/bats-moves-into-damage-control-after-scrapped-ipo/.

[35] As of 2012, Tradebot and Getco accounted for roughly 25% of the daily trading on many large U.S. stocks.

unfair advantage over other investors."[36] Not surprisingly, BATS noted in its filing that it has "***self-regulatory obligations that may create conflicts of interests***."[37] But the investigation and conflicts of interest did not preclude BATS from continuing to offer rebates, co-location services, direct and enhanced data feeds and complex order types (discussed in further detail herein) that allow HFT firms to profit off the backs of plaintiffs and the Class. As BATS CEO Ratterman acknowledged before the U.S. Senate Permanent Subcommittee on Investigations on June 17, 2014:

> Certain practices surrounding broker agency relationships, such as payment for order flow and soft dollar arrangements, as well as exchange fee structures create the potential for conflicts of interest . . . .
>
> * * *
>
> Nonetheless, there remain perceptions that differences in content and speed of dissemination confer unwarranted advantages on select market participants. . . . While Rule 603 of Regulation NMS dictates that exchanges do not release market data to private recipients before disseminating that data to the public securities information processor ("SIP"), differences in content and downstream technologies can still create a perception of unfairness.
>
> * * *
>
> Perceptions of unfairness are also present with respect to the market data exchanges use in their matching engines and routing infrastructure to calculate the national best bid and offer ("NBBO"). Some have suggested that exchanges that use the SIP data to calculate the NBBO provide unfair opportunities to sophisticated traders to engage in risk-free latency arbitrage.[38]

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[36] Scott Patterson & Jean Eaglesham, *SEC Probes Rapid Trading* (Mar. 23, 2012), *available at* http://online.wsj.com/news/articles/SB10001424052702304636404577297840134760650.

[37] BATS Amended Form S-1 at 25.

[38] Testimony of Joe Ratterman at 4, 6, *available at* http://www.google.com/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=2&ved=0CCQQFjAB&url=http%3A%2F%2Fcdn.batstrading.com%2Fresources%2Fpress_releases%2FJoe-Ratterman-Testimony-06-171-14.pdf&ei=t58CVOHgMYe6iwKqkoH4Aw&usg=AFQjCNEES wkNVXuL3Za_Unv6DP3r7A8gsA.

89. In early August 2014 it was reported that BATS was in advanced talks with the SEC to settle allegations that it gave unfair advantages to high-speed traders, including creating and providing order types that gave HFT firms an edge over investors on its exchanges.

Direct Edge

90. Like BATS and the other exchanges, Direct Edge, which completed a merger with BATS on January 31, 2014, represented during the Class Period that it "maintain[s] a fair and orderly market"[39] for the benefit of all investors. For instance, in 2012, Direct Edge released a "statement of principles" designed to "help restore investor confidence and provide a better environment for the trading of small and large-company stocks alike."[40] As part of these principles, former Direct Edge CEO William O'Brien ("O'Brien") proclaimed:

> To start with the premise that there is an "unlevel playing field" is unfairly accusatory and alarmist, and does nothing to restore investor confidence. . . . [T]he focus should be on ensuring that exchanges can consistently provide great results for a broad spectrum of investors.
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> * * *
>
> Stock exchanges function best when diverse participants all believe they are getting a near-optimal outcome. This gives them the confidence to submit their order into a trading venue with maximum transparency, price discovery and liquidity.
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> * * *

[39] Direct Edge, Clearly Erroneous Review Requests, *available at* http://www.directedge.com/Regulation/ClearlyErroneousPolicy.aspx.

[40] Press Release, *Direct Edge Statement of Market Structure Principles*, Prepared remarks of Direct Edge CEO William O'Brien to be delivered June 20, 2012 before The Committee on Financial Services Subcommittee on Capital Markets and Government Sponsored Enterprises, United States House of Representatives at a hearing titled "Market Structure: Ensuring Orderly, Efficient, Innovative and Competitive Markets for Issuers and Investors" (June 19, 2012), *available at* http://www.directedge.com/About/PressReleases/tabid/363/articleType/ArticleView/articleId/79/Direct-Edge-Statement-of-Market-Structure-Principles.aspx.

> Thus the increasing automation of the stock market should be viewed as something that works to greatly improve investor confidence.[41]

91. But during the Class Period, Direct Edge at times only disclosed its unfair order types to a select group of predatory HFT firms. Additionally, Direct Edge often only marketed its enhanced data feeds and co-location services to those who could afford them. And even assuming all market participants had access to all of Direct Edge's services, Direct Edge's CEO himself admitted that "[t]he process for acquiring and using this [market] data is currently cumbersome and expensive," and "entails significant fixed costs even before any explicit exchange market data fees are paid, with total costs for retail firms of upwards of $1 million or more per month. This leads to such information being restricted to investors, creating the perception of 'haves' and 'have nots.'"[42]

92. As a result of its conduct, Direct Edge has come under the microscope of regulators. In March 2012, it was reported that the SEC was "examining the communications between some rapid-fire trading firms and Direct Edge Holdings LLC."[43] In early August 2014 it was reported that BATS was in advanced talks with the SEC to settle allegations that it, and Direct Edge, gave unfair advantages to high-speed traders, including creating and providing order types that gave HFT firms an edge over investors in their markets. Former Direct Edge CEO O'Brien was reportedly ousted from BATS in large part because of the SEC investigation, forthcoming settlement and related public misstatements surrounding the data feeds BATS utilizes to price stock trades on its exchanges.

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[41] *Id.*

[42] *Id.*

[43] Scott Patterson & Jean Eaglesham, *SEC Probes Rapid Trading* (Mar. 23, 2012), *available at* http://online.wsj.com/news/articles/SB10001424052702304636404577297840134760650.

CHX

93. Launched in 2007, the CHX's Matching System claims to offer "access to a fair, open, and neutral market place with diverse order flow" from retail brokers, CHX Institutional Brokers, NASD market makers and CHX market makers.[44] But having fallen from one of the premier exchanges following the implementation of Reg NMS, CHX actively courted HFT, encouraging co-location in its Chicago Data Center and constantly seeking to upgrade functionality to reduce turnaround time and enhance processing of market data.[45] CHX also provides a "maker-taker" fee structure, paying traders for ostensibly providing liquidity.

94. CHX's desire to decrease latency was discussed in a November 21, 2011, Markets Media article *Chasing Speed*:

> "Speed remains important, it's become the norm," David Herron, chief executive officer of the Chicago Stock Exchange, told Markets Media. "Unfortunately, a couple of thousand miles is an issue."
>
> Because of that, the CHX is looking to open a new data center on the east coast in an effort to lower execution times for its clients that have data centers in the New York and New Jersey area. The new data center will handle its Tape A matching engine, while it[s] Tape B matching engine will remain in Chicago.
>
> "We need to be closer to the bulk of the firms in New York and New Jersey data centers to limit data transmission lag," said Herron. "It will help as far as reducing execution time, turnaround time, and will help with cross connecting."

95. In the May 2013 issue of *Traders Magazine*, CHX's CEO David Herron ("Herron") discussed the need to cater to HFTs and other purported "liquidity providers" in an article entitled *Fund Fight; Nasdaq, NYSE and BATS are slugging it out with incentives, new order types and a new exchange to resuscitate trading in ETFs*:

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[44] Chicago Stock Exchange, Matching System (2008), *available at* http://www.chx.com/trading-information/matching-system/; *see also* The Handbook of World Stock, Derivative & Commodity Exchanges.

[45] http://www.wallstreetandtech.com/dir/?id=462.

> "It's a natural evolution born from the end of the specialist market-making system, where people via rule had an affirmative obligation to lay a tight market and maintain a fair and orderly market and basically provide liquidity when no natural liquidity was available," said Dave Herron, chief executive of the Chicago Stock Exchange.

According to *Traders Magazine*, in Herron's estimation, you need to pay fees to "market makers" that meet specified liquidity and market quality goals to kick-start trading in less-liquid securities.

96. Then on August 15, 2013, the SEC issued a Cease-and-Desist Order and imposed sanctions – including a penalty of $300,000 – on CHX for

> fail[ing] to implement policies and procedures reasonably designed to detect and prevent improper trade-throughs, and failed to regularly surveil to ascertain the effectiveness of such policies and procedures and take prompt action to remedy any deficiencies, in violation of Rule 611 [of Reg NMS]. In addition, CHX failed to monitor and enforce compliance by its members with the Exchange's own rules in violation of Section 19(g)(1) of the Exchange Act.[46]

97. According to the SEC, CHX had been notified of abuses of the validated cross system as early as March 2008 from a broker-dealer customer of the exchange who reported that its traders "repeatedly manipulated the validated cross system to execute trades that advantaged accounts held by hedge funds (which generally paid higher commissions) at the expense of accounts belonging to various employee[s'] stock purchase plans, employees['] stock option plans, and similar plans."[47] Notwithstanding these "red flags," CHX did nothing to "implement effective surveillance procedures reasonably designed to prevent abuses of the validated cross system."[48]

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[46] *In the Matter of Chicago Stock Exchange, Inc.*, SEC Release No. 70214, Order Instituting Administrative and Cease-and-Desist Proceedings, Market Findings, and Imposing Remedial Sanctions and a Cease-and-Desist Order Pursuant to Sections 19(h)(1) and 21C of the Securities Exchange Act of 1934 at 2 (Aug. 15, 2013), *available at* http://www.sec.gov/litigation/admin/2013/34-70 214.pdf.

[47] *Id*. at 5.

[48] *Id*.

The Exchanges Reap Massive Profits by Providing Co-Location and Low-Latency Enhanced Data Feed Services to HFT Firms

98. In the wake of the implementation of Reg NMS, the national stock exchanges faced increasing competition from new exchanges and alternate trading venues, and consequently competition for order flow, which is essential in generating revenue for the Exchanges. At the same time, ultra-fast electronic proprietary trading outfits (*i.e.*, HFT firms) were seeking new ways to capitalize on arbitrage opportunities, including exploiting information latencies.

99. "Latency" is the time between the moment a signal to buy or sell a share is sent from a broker or HFT firm and when it is received by a trading venue. Several factors determine the latency of a trading system, including the boxes, the logic and the lines the broker uses to transmit the order, and whether the order is first sent to a public stock exchange or to an alternate trading venue. The boxes are the machinery through which the signals pass on their way from Point A to Point B, *i.e.*, the computer servers and signal amplifiers and switches. The logic is the software, the code instructions that operate the boxes. The lines used to be just the glass fiber-optic cables that carry the information from one box to another. The single biggest determinant of speed used to be the length of the fiber, or the distance the signal needs to travel. To expedite transmission, some firms now transmit data between Chicago and New Jersey via microwave signals sent from tower to tower as well.

100. With this backdrop, the Exchanges capitalized on HFT firms' demands for speed, most notably the ability to obtain trading data at faster speeds through co-location and low-latency[49] enhanced data feeds, and take advantage of that speed advantage through complex order types. One well-respected *New York Times* financial reporter aptly explained the dynamics between the

[49] In this context, low-latency activity can be defined as strategies that respond to market events in the milliseconds environment.

Exchanges and HFT firms in this context as follows: "[The] exchanges don't just passively allow certain investors to connect to their systems. They have created systems and pricing tiers specifically for high-speed trading. They are charging higher rates for faster speeds and more data for select clients. The more you pay, the faster you trade."[50]

Co-Location

101. One of the pillars of HFT firms' predatory trading strategies is the ability to co-locate their servers near exchange servers in order to obtain trading data and execute trades at lightning-fast speeds. The SEC has defined co-location as a service whereby a stock exchange "rents . . . space to market participants that enables them to place their servers in close physical proximity to a trading center's matching engine. Co-location helps minimize . . . [latency times] between the matching engine of trading centers and the servers of market participants." When trading at the speed of light, close proximity to an exchange matters. A one millisecond advantage can be worth $100 million a year to a single HFT firm.[51] Faster access to trading data through co-location allows HFT firms to engage in predatory trading strategies as detailed below. As a result of such strategies, individual and institutional investors such as plaintiffs and the Class pay higher prices for stocks.

102. The Exchanges boast about their ability to offer faster-speed co-location and other connectivity services to those willing to pay the premium. For example, NASDAQ OMX Group, the parent of defendants NASDAQ, BX and PHLX, claims that its new "1G Ultra Client Connectivity" option "is expected to be an average of ***8 to 9 microseconds faster*** [roundtrip] compared to the

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[50] Andrew Ross Sorkin, *Fault Runs Deep in Ultrafast Trading* (Mar. 31, 2014), *available at* http://dealbook.nytimes.com/2014/03/31/fault-runs-deep-in-ultrafast-trading/?_php=true&_-type=blogs&_r=0.

[51] Ted Oberhaus, *High-Frequency Trading: The Co-Location Advantage* (May 23, 2014), *available at* http://tabbforum.com/opinions/high-frequency-trading-the-co-location-advantage. There are 1,000 milliseconds in one second.

existing 1G connectivity!"[52] It also touts co-location services designed to "reduce latency," offers connectivity between NASDAQ OMX Group's data center and New York metro hubs on "ultra-low latency millimeter wave networks" at speeds "40%-50% faster than the fastest fiber networks."[53] These co-location arrangements are cost prohibitive for most investors. For example, in 2013 defendants NYSE and ARCA charged up to $5,000 upfront and a minimum of $4,800 in monthly co-location rental fees, with fees easily reaching ten times that or more depending on how much space and how many kilowatts customers want.[54] They also generate huge profits for the Exchanges. By one estimate, exchanges take in $1.8 billion annually as of 2010 for co-location services alone.

103. If there was ever any doubt as to whom the Exchanges marketed their co-location services, defendant NYSE's promotional materials make it unequivocally clear that "[h]igh frequency and proprietary trading firms, hedge funds and others who need high-speed market access for a competitive edge" were the intended targets.[55] The materials also tout "extremely low latency access to NYSE Euronext's markets, including NYSE . . . and NYSE Arca," and admit that "[c]onnecting to today's electronic markets is complex and expensive, but is critical for firms

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[52] NASDAQ OMX Connectivity Options – 1G Ultra, Frequently Asked Question (emphasis in original). There are one million microseconds in one second.

[53] NASDAQ OMX | Co-Location (CoLo), *available at* http://www.nasdaqtrader.com/Trader-.aspx?id=colo (emphasis in original). There are one million microseconds in one second.

[54] Aaron Elstein, *NY AG looks into 'Insider Trading 2.0'* (Mar. 18, 2014), *available at* http://www.crainsnewyork.com/article/20140318/BLOGS02/140319867/ny-ag-looks-into-insider-trading-2-0#document; Exhibit 5, Schedule of Fees and Charges for Exchange Services by NYSE Arca Equities, Inc., *available at* http://www.sec.gov/rules/sro/nysearca/2013/34-71130-ex5.pdf.

[55] Service Description, Colocation: NYSE Euronext's U.S. Liquidity Center at 1 ("NYSE Promo"), *available at* http://www.nyxdata.com/doc/35072; *see also* Pam Martens, *High Frequency Trading Is Not Like a First Class Airline Ticket – Unless You Have Also Hijacked the Plane and Robbed the Passengers in Coach* (Apr. 29, 2014), *available at* http://wallstreetonparade.com/2014/04/high-frequency-trading-is-not-like-a-first-class-airline-ticket-%E2%80%93-unless-you-have-also-hijacked-the-plane-and-robbed-the-passengers-in-coach/.

seeking to remain competitive and satisfy clients' performance demands."[56] The image below is an excerpt from these materials.

Lowest Latency Access to NYSE Euronext's Markets in North America

FAST FACTS

What is it?
Fully managed colocation space next to NYSE Euronext's US trading engines in the new state-of-the-art data center.

Who is it for?
High frequency and proprietary trading firms, hedge funds and others who need high-speed market access for a competitive edge.

What does it provide?
Access to NYSE Euronext's US trading engines at extremely low latency and connectivity to NYSE Euronext's market data through NYSE Euronext's SFTI℠ network.

Direct and Enhanced Feeds

104. The Exchanges also provide HFT firms the ability to receive enhanced trading information at faster speeds through the Exchanges' low-latency direct data feeds. These feeds are in contrast to the SIP feeds which include trade and best-price order information reported by the

[56] NYSE Promo at 1.

Exchanges and which are widely available to the public (also referred to as the consolidated feed or consolidated tape). As a leading market data provider has explained, "[t]here are over 2.5 million subscribers paying exchanges approximately $500 million a year for SIP data . . . with the expectation of receiving comprehensive, accurate, real-time prices for stocks: unfortunately . . . they aren't getting any of that."[57] This is because HFT firms receive these direct market data feeds from the Exchanges at speeds faster than the SIP. Moreover, the sensitive direct feed trading data allows HFT firms "to track when an investor changes price on his order, how much stock the investor is buying or selling in accumulation, as well as the ascertaining of hidden order flow."[58] Consequently, "[t]his information assists HFTs in predicting short-term price movements with near certainty."[59]

105. The SEC has continued to emphasize the importance of the consolidated data feeds on many occasions, including in its January 2010 Market Structure Concept Release where it stated that, "[a]s a result [of consolidated market data], the public has ready access to a comprehensive, accurate, and reliable source of information for the prices and volume of any NMS stock at any time during the trading day. This information serves an essential linkage function by helping assure that the public is aware of the best displayed prices for a stock, no matter where they may arise in the national market system."

106. Reg NMS requires that trades be executed on the exchange offering the best price at the time of the order. In order to make compliance with that requirement possible, Reg NMS

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[57] *HFT Front Running, All The Time* (Sept. 30, 2013), *available at* http://www.nanex.net/aqck2/4442.html.

[58] Sal Arnuk & Joseph Saluzzi, *Exchanges and Data Feeds: Data Theft on Wall Street* at 1 (May 11, 2010), *available at* http://www.themistrading.com/article_files/0000/0554/THEMIS_TRADING-_White_Paper_--_Data_Theft_On_Wall_Street_--_05-11-10.pdf.

[59] *Id.*

established an NBBO, which would be the best price at which any trade would have to be executed. The NBBO is determined from bid and order data centralized by SIP, which gathers groups of bids and offers on a computer and disseminates them to market participants through their computers. The SIPs are now maintained by the two primary exchanges, NYSE and NASDAQ, each exchange's SIP collecting all bids and offers on any exchange for all stocks listed on that exchange.

107. NBBO is the heart of the NMS envisioned and purportedly implemented by Reg NMS. It assures that, even with a multiplicity of exchanges, each trade will be executed on the best terms available.

108. Reg NMS did not establish a minimum (or maximum) speed at which data regarding bids and offers must be collected and then transmitted by the SIPs to market participants. Reg NMS does require, however, that the SIPs transmit such data so as to be received by all market participants at the same time. In direct contravention of that rule during the Class Period, the Exchanges sold and continue to sell alternative data feeds to market participants, for extremely high fees, that provide either or both of (a) faster transmission of data regarding bids and offers than provided by the SIPs (*i.e.*, so-called "direct feeds") and (b) a greater depth of data regarding bids and offers than provided by the SIPs (*i.e.*, so-called "enhanced feeds"). These alternative data feeds gives market participants who are able and willing to pay extremely high fees to the exchanges an enormous competitive advantage over other market participants. Given that only two exchanges are paid to maintain SIPs, and these alternative data feeds yield even those exchanges substantially higher fees than their SIP yields them, the exchanges have a clear incentive to put their resources into these alternative feeds at the expense of the SIPs.[60]

[60] In January 2014, NASDAQ gave notice to the Unlisted Trading Privileges Committee of the exchanges, the body responsible for overseeing the administration of the SIPs, that it does not intend

109. A hypothetical example of the advantage provided to market participants by a direct feed follows. An exchange 50 miles away from the NYSE receives a bid for an NYSE-listed stock at 10:00:00.0000 AM. A market participant co-locating with that exchange, or maintaining a computer adjacent to that exchange, who purchases a direct feed from that exchange will receive data regarding that bid almost immediately. However, it might take the data regarding this bid .0002 seconds to reach the computer on which the NYSE aggregates and then transmits bid and order data for its SIP. When such a bid comes into the NYSE's computer, the computer wipes the time-stamp showing the time at which the initial exchange transmitted it, and transmits data via its SIP, at a much slower speed than a direct feed, bearing a time-stamp showing the time of the NYSE's transmission. Accordingly, market participants receiving the data by means of the SIP – the vast majority of investors – do not know that the data was already .0002 seconds stale when first transmitted to them. They do not know that other market participants, willing to pay high fees to the initial exchange, had received the trade data more than .0002 seconds earlier.

110. While the Exchanges understand Reg NMS permits market participants to construct their own "synthetic" and "constructive" NBBOs and to trade according to them, they also know and intend that the subscribers to direct and enhanced data feeds from several exchanges are given an unfair advantage in creating and trading on their own NBBOs based on data that are much timelier and more accurate than the NBBO established by the SIP.

111. Further advantages are provided by "enhanced feeds." Enhanced feeds provide greater depth of information than the SIPs. The SIPs provide "the top of the book": the single best bid and the single best offer for a given stock on any of the exchanges. At ascending price levels,

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to renew its contract to maintain its SIP after it expires in 2016, owing to NASDAQ's dissatisfaction with the Committee's failure to cooperate with NASDAQ's attempts to upgrade its SIP.

enhanced feeds provide greater depths of order book information for the particular exchange providing the feed, starting from a feed providing the single best bid and the single best order on ***that*** exchange (rather than, as with SIP, the single best bid and the single best offer from ***any*** of the exchanges), to a feed providing each and every bid and each and every order on the exchange. This greater depth of market information is important, because the greater depth of market information an investor has, the more informed a decision the investor can make concerning market trends: the state of the market for a given stock or industry, the direction of market movement of that stock or industry, the total market demand for a stock or industry, etc. This greater depth of data is especially useful to HFTs, who feed it into computers with algorithms that analyze and respond to it immediately, enabling them to engage in latency arbitrage and other manipulative conduct described herein.

112. This information, however, comes at a high price, excluding the vast majority of market participants who are unable or unwilling to pay such high fees. Indeed, such high fees are not feasible for traditional buy-and-hold investors, but only make sense for entities making mostly speculative short-term investments that they rarely hold for as long as even a day. Moreover, not only are the monthly fees charged by each exchange enormously high, but in order to get maximum benefit from direct and enhanced data feeds, a market participant must purchase the feeds from many or all exchanges – an expense that few market participants can bear. The only reason HFT firms are willing to pay such exorbitant fees is that the informational and technological advantages sold by the Exchanges give them an unfair advantage over plaintiffs and the Class.

113. In fact, one leading HFT firm, Virtu Financial, Inc., has itself confirmed that subscribers to direct feeds (primarily HFT firms) regularly receive quote and trade data faster than recipients of consolidated market data. The consolidated data, according to Congress, "serves as the

heart of the national market system,"[61] and according to the SEC should provide the public with a "comprehensive, accurate, and reliable source of information for the prices and volume of any NMS stock at any time during the trading day." The Exchanges can charge over $10,000 a month for direct feed fees alone and there are several equity-trading exchanges for which a customer would need a direct feed from each – and that is not including the approximately $10,000 per month in necessary telecommunications fees. Although supporters of the Exchanges' proprietary feeds argue that this information is equally available to all investors, the reality is that not many individual or institutional investors have the resources to pay for this information or invest in the computer and telecommunications systems needed to access this information, assuming they are aware it exists at all.

114. For example, Direct Edge charged enterprises from $50,000 for its most basic feed to $100,000 per month for its most in-depth enhanced feed. Moreover, Direct Edge has described its market data product, BATS One Feed, as "60% less expensive per professional user and more than 85% less expensive for an enterprise license for professional users (50% less for non-professional users) when compared to a similar competitor exchange product."[62] If Direct Edge derived the savings rates based on its cheapest option, BATS One Summary, then, according to Direct Edge, competitive exchanges are charging professional users as much as $333,333 per month for an enterprise license for a budget direct data feed. NASDAQ charges similar rates to enterprises. An enterprise license for a direct NASDAQ data feed costs between $25,000 per month plus additional subscriber fees up to $500,000 per month.

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[61] H.R. Rep. No. 94-229, 94th Cong., 1st Sess. 93 (1975).

[62] Direct Edge, BATS One Feed, *available at* http://www.directedge.com/MarketData/BATSOneFeed.aspx.

115. In 2012, the SEC issued its first-ever financial penalty against an exchange – the NYSE – for giving market data to its own direct feeds faster than to the SIP. The SEC wrote of its $5 million fine that:

> "***[I]mproper early access to market data, even measured in milliseconds, can in today's markets be a real and substantial advantage that disproportionately disadvantages retail and long-term investors***," said Robert Khuzami, Director of the SEC's Division of Enforcement. "That is why SEC rules mandate that exchanges give the public fair access to basic market data. Compliance with these rules is especially important given exchanges' for-profit business interests."[63]

116. In summary, by selling co-location and direct and enhanced information feed services, and in exchange for a premium, the Exchanges provide HFT firms with an enhanced glimpse into what the market is doing before others who do not have similar access. As a result, the Exchanges create a two-tiered market where individual and institutional investors trade with an informational disadvantage to technology-enhanced insiders such as HFT firms. These services offered by Defendants have no beneficial effect on market quality and are designed simply to cater to their most profitable customers, who leverage this non-public information to profit at the expense of plaintiffs and the Class through predatory trading tactics such as electronic front-running, latency arbitrage, spoofing, layering and contemporaneous trading.

The Exchanges' Fee Structure Encourages HFT and Harms Investors

117. Rule 610 of Reg NMS, also known as the "Access Rule," played a key role in the intensification of HFT and HFT firms' ability to leverage new complex order types offered by the Exchanges to the detriment of plaintiffs and the Class. Under Rule 610(d), an exchange must adopt, maintain and enforce rules that "prohibit its members from engaging in a pattern or practice of

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[63] Press Release, *SEC Charges New York Stock Exchange for Improper Distribution of Market Data* (Sept. 14, 2012), *available at* http://www.sec.gov/News/PressRelease/Detail/PressRelease/1365171484740#.VATf_6Pn93w.

displaying quotations that lock or cross any protected quotation in an NMS stock."[64] In other words, Rule 610 banned "locked markets" – where the best price buy order at one exchange is marketable against and priced equally to the best priced sell order at another exchange, but the order itself is designated "non-routable" by the broker and therefore cannot be matched with the order on the other exchange.[65] The concern of regulators was that "displaying quotations that lock or cross previously displayed quotations is inconsistent with fair and orderly markets and detracts from market efficiency."[66]

118. In implementing Rule 610, the SEC was also concerned about the economic incentives created by the "maker-taker" model, where the Exchanges paid HFT firms a rebate to "make" liquidity and charged investors a fee to "take" liquidity. The model "made it economically sensible for parties to lock markets to attempt to execute for rebate, when such parties would otherwise incur a taker fee if they were routed to the venue displaying the best price."[67] As the SEC acknowledged in Reg NMS: "Often, the locking market participant is not truly willing to trade at the displayed locking price, but instead chooses to lock rather than execute against the already-displayed quotation to receive a liquidity rebate."[68] Despite these concerns, in implementing Rule 610 the SEC both failed to take into account the full extent that HFT "is actually inspired by race conditions to get

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[64] Reg NMS at 206. NMS stock effectively includes stocks listed on a national securities exchange.

[65] Non-routable orders are orders sent to an exchange that do not authorize that exchange to route the order to another market for execution when the exchange is not displaying the NBBO. These orders are only executable on the exchange to which they are sent, so as to avoid paying the exchange a routing fee. By contrast, exchanges typically make routable orders the default order type because of their desire to collect routing fees.

[66] *Id*. at 194.

[67] Haim Bodek, *The Order Type Controversy, Part I: Price to Comply* (Mar. 10, 2014), *available at* http://tabbforum.com/opinions/the-order-type-controversy-part-i-price-to-comply.

[68] Reg NMS at 197.

exchange and dark-pool proffered rebates,"[69] and failed to effectively address HFT rebate-subsidized scalping strategies. In reality, the rebates were crucial to HFT firms' existence, and the drive to capture them drove the Exchanges to develop new mechanisms for HFT firms to collect them. The effect of Rule 610 is described in part in the following account:

> The implementation of REG NMS in 2007 changed the mechanisms for achieving queue position in a price-time priority market. This fundamentally changed trading strategies and exchange matching practices. By banning locked markets, REG NMS constrained the mechanisms through which a price movement occurred in the U.S. market. Thus, Rule 610 defines precisely the conditions in which an HFT can achieve a superior place in the queue (*i.e.*, when an order would not lock an away market).
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> * * *
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> The ban resulted in HFTs being forced to engage in "spam and cancel" strategies that repeatedly attempted to get to the top of the order queue on a price move. Such strategies would attempt to "step in the middle" to set a new aggressive price. This invariably locked away markets. Rule 610 demanded that such orders not be accepted at the entered price.
>
> This activity caused immense load on exchanges, but in no way did exchanges want to discourage high-volume HFT order flow. To court HFTs, exchanges provided a number of specialized features to assist "spam and cancel" strategies, many of which are still operational today.[70]

119. The Exchanges cultivated the HFT firms' rebate strategy, while simultaneously attracting HFT order flow and volume on their trading venues, through offering "specialized features" such as new and complex orders types and order type combinations such as "hide and light" and Post-Only Day ISO orders that allow HFT firms to "jump" to the top of an exchange's limit order queue to ensure that the firm captures a rebate and not pay a "taker" fee. While the ban on locked markets interfered with the economic incentives of the Exchanges and sophisticated HFT

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[69] *Let's Talk Locked and Crossed – Lock Stock and Two Smoking Barrels* (Dec. 9, 2013), *available at* http://blog.themistrading.com/lets-talk-locked-and-crossed-lock-stock-and-two-smoking-barrels/.

[70] Haim Bodek, *The Problem Of HFT: Collected Writings On High Frequency Trading & Stock Market Structure Reform* 30-31 (2013) ("*The Problem of HFT*").

firms, the mechanisms developed by the Exchanges in response to Reg NMS, along with other manipulative practices designed to benefit the Exchanges and HFT firms described herein, allowed both the Exchanges and favored HFT firms to reap financial benefits at the expense of plaintiffs and the Class.

The Exchanges Create Complex Order Types Designed for HFT Firms to Prey on Investor Orders

120. To maximize the benefits of high speed trading, the Exchanges have, at the request of HFT firms, designed hundreds of new "order types" – preprogrammed commands traders use to tell exchanges how to handle their bids and their offers to sell. In their simplest form, order types give an exchange's customer different ways to interact with the market. But, as part of the fraudulent and deceptive scheme alleged herein, the Exchanges have developed new and exceedingly complex order types that benefit HFT firms at the expense of plaintiffs and the Class.

121. The ability to gain access to the top of an exchange's "order book," or the queue of buy and sell orders that are typically ranked by price and when they were received, is crucial for HFT firms to execute their predatory strategies and in many instances collect "maker" rebates (and avoid paying the "taker" fee) from the Exchanges. The complex order types created and provided by the Exchanges are the key to providing HFT firms with superior queue positioning, including the ability to jump ahead of other investors in an exchange's order book, enabling HFT firms to regularly and repeatedly profit to the detriment of unsuspecting investors. The complex order types created by the Exchanges that serve to preference HFT firms over ordinary investors include at least the following fraudulent and deceptive practices:

- order handling practices that permit HFT firms to step ahead of investor orders in violation of established rules of priority and precedence;
- rebooking and repositioning of investor orders that permit HFT firms to escape disadvantageous trades;

- conversion of investor orders eligible for maker rebates into unfavorable executions incurring taker fees (under the maker-taker pricing model);
- insertion of HFT intermediaries in between legitimate customer-to-customer matching; and
- discriminatory order handling of investor orders during sudden price movements.[71]

122. With the addition of dozens of alternate trading venues that offered traders the ability to execute bids and offers, exchanges faced increasing competition for order flow, and developing new order types for their most lucrative customers – HFT firms – helped the Exchanges attract and retain their business. This dynamic was explained last year by the Executive Vice President of Global Sales for NYSE Euronext (operator of markets run by defendants NYSE and ARCA), who stated that "'[w]e're always competing for market share, so we try to create products that will attract more volume.'"[72] This growth in order types, she said, was designed "'***to ensure a customer achieves certain economics***.'"[73] As explained by the founder of leading market data firm Nanex, Eric Hunsader, "'[e]xchanges are losing out to dark pools, so when HFTs ask for a new order type, they get a new order type.'"[74]

123. In general, the new order types were created by the Exchanges for and at the behest of their preferred HFT customers (through exclusive, backroom communications), were marketed solely or at least largely to HFT firms and other favored traders and were not adequately disclosed to

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[71] *Id*. at 11-12.

[72] Laurie Carver, *Exchange Order Types Prompt Fears of HFT Conspiracy* (Apr. 23, 2013), http://www.risk.net/risk-magazine/feature/2261626/exchange-order-types-prompt-fears-of-hft-conspiracy.

[73] *Id*.

[74] *Id*.

all market participants. For example, a well-known trader who approached the SEC about the order type controversy, Haim Bodek ("Bodek"), explained:

> My direct experience was that exchange marketing departments tended to segment their customer base . . . . If you were an HFT, you were most likely provided entirely different marketing materials than if you were an agency broker responsible for routing institutional orders. In other words, ***you were either marketed unfair advantages like queue-jumping or you weren't***. It was that simple."[75]

Another high frequency trader hinted at the selective disclosure of order types that allow queue jumping as follows: "'We talk a lot to the exchanges, to optimize the order type for a given trade. Sometimes you'll want to pay the rebate and sometimes want to take it – but ***what's really essential is to jump to the head of the queue. You pay for it, but you jump to the head***.'"[76]

124. Significantly, these sentiments have been substantiated by employees of the stock exchanges themselves, including one who worked for Archipelago (which after a merger with NYSE Group became defendant ARCA) who said of the early creations of the new order types:

> "We created all these different order types to accommodate how [some market participants] wanted to trade . . . . We tweaked how the order would interact with our book according to what they wanted. ***A lot of the unique orders were created at the request of a customer, typically a high frequency customer***. You had to be a sophisticated customer to learn how to use it."[77]

Similarly, a technologist who worked at several exchanges clarified that "'[i]t became about meeting the needs of that specific HFT community . . . . We spent a tremendous amount of money trying to meet their needs. . . . It's all about what functionality can I offer the HFT that they can take

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[75] *The Problem of HFT* at 9.

[76] Laurie Carver, *Exchange Order Types Prompt Fears of HFT Conspiracy* (Apr. 23, 2013), available at http://www.risk.net/risk-magazine/feature/2261626/exchange-order-types-prompt-fears-of-hft-conspiracy.

[77] *Dark Pools* at 205.

advantage of. We're going after ***guaranteed economics***."'[78] In other words, the Exchanges worked with HFT firms to create ways for those firms to make guaranteed profits at the expense of investors and institutions who had no reason to suspect that new order types were being developed and leveraged to their detriment. According to one NYSE executive, some order types "***are to guarantee economic results***."[79]

125. The Exchanges offer hundreds of new order-type options, which translate to thousands of variations because they behave differently depending on how an HFT firm's trading programs are coded. Moreover, defendant BATS has claimed that it has 2,000 different combinations of instructions for placing orders on its exchanges. Bodek summarized the complexity of this system as follows:

> [N]ot even the most sophisticated user would have been able to determine how top HFT firms employed special order types by scrutinizing exchange [application programming interface] manuals and regulatory filings. The most important details (*e.g.* intended usage cases, intended order interaction sequences, order precedence rules, etc.) are not documented in any adequate manner.[80]

126. Further, Bodek stated that often "'the rule descriptions [of the complex order types] did not match what was going on at the exchanges.'"[81] By failing to include important information about how their order types worked in their regulatory filings, or failing to make the filings altogether, the Exchanges thwarted the SEC rule-making process. In doing so, they deprived the

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[78] *Id.* at 204 (emphasis in the original).

[79] *Computerized Trading: What Should the Rule of the Road Be? – Part II: Hearing Before the Subcomm. on Sec., Ins., & Inv. of the S. Comm. on Banking, Hous., & Urban Affairs*, 112th Cong. 22 (2013) (remarks of Joseph Mecane, Executive Vice President and Head of U.S. Equities, NYSE Euronext).

[80] *The Problem of HFT* at 48.

[81] Laurie Carver, *Exchange Order Types Prompt Fears of HFT Conspiracy* (Apr. 23, 2013), *available at* http://www.risk.net/risk-magazine/feature/2261626/exchange-order-types-prompt-fears-of-hft-conspiracy.

investing public of adequate notice of order types; they deprived the public of an opportunity to comment; and they deprived the SEC of information essential to performing its statutory regulatory function. In fact, defendant ARCA was fined by the SEC as recently as May for allowing certain order types to have undocumented features, such as the subpenny functionality.

127. For example, in the wake of Reg NMS's Rule 610, the exchanges used a common order matching engine feature known as the "price slide" order. The practice modifies the price of an order that locked the markets, thereby sliding that order back to a lower queue placement where it would sit. But HFT firms, acting on information about handling mechanisms at the Exchanges not known by the investing public, would "first know that there was an order ahead in a better queue position, and second, cancel the order and retry."[82] As a result:

> While HFTs canceled their slid orders, traditional investor orders would typically just slide without being canceled. This causes the institutional orders to move to the back of the queue and away from the trading action. In this strategy, the HFTs would monopolize the top of the book, interacting with marketable orders, while the institutional-side orders would be at the bottom of the queue only to be executed when a large buyer or seller cleared the book.
>
> * * *
>
> To execute these spam-and-cancel strategies even more quickly, HFTs utilized specialized order confirmation information to detect being slid so they could quickly cancel the price-slid order. Exchanges also provided alternative cancel-back or "opt out" options that literally rejected orders that might have otherwise been placed in a disadvantaged queue position.[83]

By and large, the Exchanges did not adequately inform many of their institutional clients and their brokers such that these investors had no idea that their orders were sliding away from the top of the order book.

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[82] *The Problem of HFT* at 31.

[83] *Id*. at 31-32.

128. As the Exchanges realized that they could generate vast profits from attracting HFT firm orders and fees, they began aligning their interests with those of the HFT firms, including enabling predatory HFT strategies by creating new order types to get them to the top of the queue. One HFT insider and staunch defender of HFT practices estimated that inferior queue positioning can cost investors 1.7 cents per share, resulting "in ***tens of millions of dollars (conservatively) of extra trading costs for investors (and profits for HFTs)***."[84] Set forth in detail below are a few of the most manipulative order types put in place by the Exchanges that harm individual and institutional traders such as plaintiffs and the Class.

"Hide and Light" Orders

129. One of the most abusive order types developed by the Exchanges for the benefit of favored HFT firms are those that allow high frequency traders to post orders that remain hidden at a specific price point at the front of an exchange's trading book when the market is moving, while at the same time pushing other traders to the back of the order book queue. By contrast, limit orders, which simply specify a price limit at which to buy or sell and are regularly used by individual and institutional investors, lose their priority in the queue when the market shifts. These predatory order types, colloquially referred to as "hide and light" orders, were created by the Exchanges under the guise of complying with Reg NMS's ban on locked markets to assist HFT firms in getting to and preserving their spot at the top of the Exchanges' order queues without relying on their spam and cancel strategies.[85]

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[84] Attached chart to April 21, 2010 letter from Manoj Narang, Tradeworx, Inc. CEO, to Elizabeth Murphy, SEC Secretary, at 17, *available at* http://www.sec.gov/comments/s7-02-10/s70210-129.pdf (noting the profitability difference between being first in line versus last in line).

[85] BATS explained that such order types "eliminate[] the need for traders to retry orders multiple times in rapid succession trying to be high in priority at the next NBBO price." BATS Display-Price

130. The ability to dominate the top of the order book allows HFT firms to rapidly and repeatedly collect "maker" rebates from the Exchanges and cause others who thought they might collect a "maker" rebate to pay the "taker" fee. A hide and light order generally is a non-routable order that would ordinarily lock a market, but does not do so because it is initially "hidden" and does not appear in the order book. When the market unlocks, the hidden order "lights" and is booked at the front of the queue.[86] Thus, the Exchanges rebook HFT firms' "hide and light" orders such that traditional investors affected by such orders are "queue jumped," frequently paying higher prices for their trades than they otherwise would have and being subjected to a taker fee.

131. The "hide and light" order type is a key weapon in the HFT arsenal that allows HFT firms to generate "guaranteed profits" from interacting with less sophisticated market participants – even when their profit from a trade would otherwise be zero from buying and then selling a stock at the same price. These order types were specifically marketed by the Exchanges to sophisticated traders employing abusive HFT strategies and ***not*** to institutional investors seeking longer terms investment strategies. Each of the Exchanges' offers or offered order types that "hide and light" or performed analogous behaviors to the detriment of Class members during the Class Period.

132. The following is an example of how an HFT firm employing a "hide and light" order can queue jump a non-routable limit order placed on behalf of a traditional or institutional investor: Suppose the market for General Electric is $30.01 (bid), $30.02 (ask) with 1,000 shares available on exchange X. An institution sends a non-routable limit order to buy 5,000 shares of General Electric for $30.02, which locks an away market because another exchange's best offer is also $30.02. The

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Sliding: Slide orders that lock or cross the NBBO (2011), *available at* http://www.batstrading.com/resources/features/bats_exchange_pricesliding.pdf

[86] In contrast, a traditional non-routable "lit" limit order at the same price, would because it created a locked market, either be immediately cancelled or "price slid" so as not to lock the market.

institution is able to purchase the 1,000 shares on exchange X at $30.02, and is willing to pay up to $30.02 for another 4,000 shares. Upon locking the away market, the institution is price slid to $30.01. But suppose an HFT firm sees the 1,000 shares trade at $30.02 and sees the new $30.01 bid for the remaining 4,000 shares. However, there is no longer a matching offer at $30.02 on that exchange. The HFT firm then steps ahead of the institution by posting a "hide and light" buy order, locking the market at $30.02 ahead of the institutional order. Then, the away market unlocks as the offers clear at $30.02 and the $30.02 hide and light bid is rebooked and lights up. The institution's order is then rebooked and displayed at $30.02, but placed after the HFT order.

133. The effect of these order types, as *Dark Pools* explains, is that "[e]veryday investors . . . were buying stocks for a slightly higher price than they should, and selling for a slightly lower price and paying billions in 'take' fees along the way."[87] In other words:

> By staying at the front of the queue and hidden as the market shifted, the [HFT] firm could place orders that, time and again, were paid the fee. Other traders ***had no way of knowing*** that the orders were there. Over and over again, their orders stepped on the hidden trades, which acted effectively as an invisible trap that made other firms pay the "take" fee.[88]

But as explained above, these order types were not adequately documented and/or disclosed to anyone other than Defendants' favored HFT customers and as a result, the majority of investors, even sophisticated investors handling the portfolios of multi-billion dollar pension funds, did not use

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[87] *Dark Pools* at 49.

[88] *Id*. at 50 (emphasis in original); *see also* Haim Bodek, *HFT Checkmate – The Alpha in Order Types* (Dec. 31, 2013), *available* at http://tabbforum.com/opinions/hft-checkmate-the-alpha-in-an-order-type?page=2 ("For five long years, the greater investment community was subjected to unnecessary transaction costs as they transferred 'guaranteed economics' to HFT firms and exchanges through mechanisms unbeknownst to them.").

them. If they did, limit orders, which most investors rely on to invest in stock, would become obsolete, and limit orders are "the food the new order types fed on."[89]

134. Each of the Exchanges' "hide and light" orders described below were designed to and did assist HFT firms in employing predatory trading strategies to the detriment of plaintiffs and Class members during the Class Period.

Direct Edge: Hide Not Slide (+ ALO)

135. In May 2009, Direct Edge added its own hide and light order type called "Hide Not Slide," specifically to benefit a limited number of powerful HFT firms in efforts to attract order flow and increase revenue. Hide Not Slide works as follows:

> Say an order to buy Microsoft Corp. for up to $30.01 a share is sent to electronic stock exchange Direct Edge Holdings LLC, with instructions to be filled only there and not routed elsewhere.
>
> Meanwhile, though there is no matching sell order on Direct Edge, another market, such as Nasdaq, has an order to sell Microsoft at $30.01. It is also an order to be filled only on that exchange.
>
> The SEC considers this a "locked market" and doesn't allow it. The fear is it could encourage manipulation such as buying and selling a stock merely to generate fees. The ban means an order to buy for $30.01 can't be displayed on Direct Edge. The order will "slide" to a lower price, $30.
>
> Here's where Hide Not Slide orders can take advantage. They are hidden from other investors – not displayed on the exchange's order book.
>
> The locked-markets ban applies only to displayed orders. So if a $30.01 Hide Not Slide order is placed now, it won't slide to a lower price.
>
> When the market "unlocks" – such as if the sell order on Nasdaq is filled or canceled – the Hide Not Slide order is converted back to a displayed order at $30.01 and is eligible to trade against Microsoft shares posted for sale on Direct Edge at that price.
>
> As for the first investor's order – the one that slid to $30 – it converts back to the original $30.01 price, but is placed in line behind the Hide Not Slide order. If a

[89] *Dark Pools* at 51.

> $30.01 sell order for Microsoft enters Direct Edge, the Hide Not Slide order will get it first.
>
> If not many Microsoft shares are offered for sale on Direct Edge at $30.01, the first investor may not get any.[90]

136. Direct Edge also provides HFT firms the option to combine the Hide Not Slide order with an Adding Liquidity Only ("ALO") order, which executes only when the order makes liquidity, thus allowing it to execute only when it will capture the exchange's rebate and protecting it from ever having to pay the "taker" fee.[91]

137. In efforts to keep the Hide Not Slide order exclusive and conceal its actual functionality from anyone other than a select group of HFT firms, Direct Edge did not adequately disclose the existence of the order type and the full extent of how it operated to either the SEC or the investing public. For example, over five months after the order type was released, Direct Edge's portal application programming interface ("API") specifications failed to refer to the order handling priority function of the order type. As Direct Edge did not formally convert from an ECN to a national securities exchange until March 2010, it was not ***required*** to file a public order type description with the SEC describing the functioning of the order type.[92] However, even after Direct Edge's two trading platforms (EDGX and EDGA) converted to national exchanges, Direct Edge's

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[90] Scott Patterson & Jenny Strasburg, *How "Hide Not Slide" Orders Work* (Sept. 19, 2012), *available at* http://online.wsj.com/news/articles/SB10000872396390444812704577605840263150860.

[91] Direct Edge and some other exchanges at times refer to ALO-type orders and other functions as order "modifiers." Semantics aside, an order designated or functioning as an ALO order or modifier clearly functions as an order type, *i.e.*, a set of instructions that traders use to communicate to exchanges how to handle their order, rather than an order "modifier."

[92] Under Regulation ATS, however, as an ECN Direct Edge was required to file an amendment prior to implementing a "material change" to its operation. 17 C.F.R. §242.301(b)(2)(ii). As such filings are not public, it is unknown whether Direct Edge actually made such a filing. Moreover, Direct Edge had filed its application to register both the EDGX and EDGA exchanges as national securities exchanges by the time Hide Not Slide was implemented.

regulatory disclosures and technical documentation as to the "Hide Not Slide" functionality continued to remain inadequate and failed to mention queue priority and other abuses.[93] Additionally, Direct Edge never fully disclosed how the "Hide Not Slide" order combined with ALO functionality could adversely affect buy-side investors and convert orders otherwise eligible to receive a rebate into orders subject to paying the "taker" fee.

138. The disclosures that Direct Edge made to its customers concerning the new order type were similarly wholly inadequate and often non-existent. Direct Edge initially marketed the Hide Not Slide order type specifically to an exclusive group of ultra-high frequency traders at the expense of traditional long-term investors, and slowly revealed the functionality of the order to others when it was either pressured to do so or when it thought it was necessary to attract order flow or generate revenues from certain trading firms. For example, at a December 2009 holiday party, the Director of Sales for Direct Edge told one investor whose firm had been bleeding profits for several months using standard limit orders that he is "totally screwed" unless he takes advantage of complex order types available at Direct Edge such as Hide Not Slide. This investor, who operated a sophisticated trading operation, had been "complaining . . . for months about the bad executions he'd been getting, and had been told nothing about the hidden properties of the order types until he'd punished the exchange by cutting it off."[94] The Direct Edge representative, Eugene Davidovich, even admitted

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[93] On July 16, 2014, Direct Edge disclosed for the first time in a regulatory filing that its Hide Not Slide order type permits queue jumping. In the same month, Direct Edge made explicit that EDGX and EDGA have different version of the Hide Not Slide.

[94] *Dark Pools* at 50-51; Scott Patterson & Jenny Strasburg, *For Superfast Stock Traders, a Way to Jump Ahead in Line* (Sept. 19, 2012), *available at* http://online.wsj.com/news/articles/SB/00008723963989204577559924369356167 0.

that the Hide Not Slide order "'probably should be illegal, but if we changed things, the high-frequency traders wouldn't send us their orders.'"[95]

139. As evident from the above exchange, there was no announcement or marketing materials widely available describing the release of Hide Not Slide and its functionality. Tellingly, there was no way that even many sophisticated Direct Edge customers could independently decipher the order interaction between Hide Not Slide and the exchange's default price sliding mode. Direct Edge implemented these marketing strategies with the specific knowledge of the adverse impact on the majority of investors whom Direct Edge deliberately kept in the dark as to the existence and full functionality of the Hide Not Slide order.

NASDAQ: Price to Comply and Post Only + "Automatic Re-Entry"

140. NASDAQ is believed to have developed one of the first "hide and light" orders known as Price to Comply. The stated purpose of the Price to Comply order type is to re-price an order to comply with Reg NMS's ban on locked markets. In reality, the Price to Comply order was designed primarily to, like other "hide and light" orders, assist in effectively locking markets. It did this by exploiting a regulatory loophole that distinguished between protected quotations and hidden orders when complying with Rule 610(d). Under the rule, hidden orders are not considered protected quotations and thus can freely lock markets. In essence, NASDAQ allowed customers using the Price to Comply order to "lock[] a market with an exempt hidden order in the cases where

[95] *Dark Pools* at 51; Scott Patterson & Jenny Strasburg, *For Superfast Stock Traders, a Way to Jump Ahead in Line* (Sept. 19, 2012), *available at* http://online.wsj.com/news/articles/SB/00008723963989204577559924369356167 0.

[the user's] displayed order would violate the ban on locked markets."[96] The order type operated as follows:

> When NASDAQ received a Price to Comply order, it would check if the order price locked an away market. If the order was in fact impermissible according to Rule 610(d) and the ban on locked markets, NASDAQ would book the Price to Comply order as a hidden order at the locking price. Price to Comply was the "have your cake and eat it too" order, conveniently booked as displayed or hidden – whichever was more preferable when considered in the context of a permissible display price according to Rule 610(d).[97]

141. NASDAQ also provided HFT firms the ability to repeatedly capture NASDAQ's rebate, and only pay the "taker" fee when obtaining price improvement, by utilizing its Post-Only order. In short, for HFT firms using this order type it became a guaranteed profit. NASDAQ's Post-Only order, similar to Direct Edge's ALO order, was designed to allow HFT firms to submit orders at potentially marketable prices and not execute against booked or outstanding orders (so as to protect the user from being charged a "taker" fee). When a Post-Only order would match the best sell order on the NASDAQ OMX market's book and pay the taker fee, the order is price slid and displayed one tick away from the best sell price to avoid the fee. If a Post-Only order would lock or cross a protected quote at another exchange but not lock the NASDAQ OMX order book, the order will be handled as though it were a Price to Comply order such that it will be booked at the national locking price and displayed one tick away. On NASDAQ and BX, a Post-Only order that crosses the book will only execute if the amount of price improvement that would be received by trading against that order exceeds the cost to remove liquidity.

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[96] Haim Bodek, *The Order Type Controversy, Part I: Price to Comply* (Mar. 10, 2014), *available at* http://tabbforum.com/opinions/the-order-type-controversy-part-i-price-to-comply.

[97] *Id.*

142. Prior to 2012, NASDAQ knowingly facilitated a two-tiered system in which HFT firms communicated with NASDAQ through a superior interface filled with advantageous order types while other market participants, including plaintiffs and the Class, communicated through an inferior interface offering order types susceptible to HFT abuse.

143. The first-tier, high-speed interface, called OUCH, was developed for HFT firms and offered order types such as Post-Only orders for those market participants informed, presumably through undisclosed channels such as direct marketing campaigns and personal relationships, regarding the advantageous features utilized by these order types.

144. The second-tier interface, called FIX, did not offer the HFT-friendly order types and was utilized by large institutional investors unfamiliar and uninformed about the advantageous features of the OUCH order types. The investors using the FIX interface did not and could not know the disadvantages intrinsic to the order types they were being offered because NASDAQ did not properly disclose the functionality of the OUCH order types, the interplay between combinations of various order types and order modifiers offered on the OUCH interface or the interplay with order types delivered via the inferior FIX interface.

145. In October 2011, NASDAQ normalized the asymmetry between the OUCH and FIX interfaces by providing Post-Only and other superior order types on FIX. Therefore, from the start of the Class Period through the time at which NASDAQ ended the two-tiered interface system described herein, plaintiffs and the Class were systematically disadvantaged and injured as a direct result of the informational asymmetries and undocumented order types offered to HFT firms by NASDAQ.

BATS: BATS Only Post Only

146. "Hide and light" functionality on the BATS exchanges operated through "Display-Price Sliding" and the BATS Only and Post Only order types (or combination thereof – *e.g.*, "BATS Only Post Only" or "BOPO"). According to BATS, as of 2011, "Display-Price Sliding allows orders that would normally be cancelled automatically because of locking or crossing the NBBO to temporarily 'slide' (adjust) to the NBBO and reside in the BATS matching engine."[98] The BATS Post Only order allows "users to make a market and specify not to remove liquidity unless adequate price improvement is accessible. Any incoming post only orders that cross with a resting displayed order that does not offer adequate price improvement will be rejected."[99] In other words, the Post Only order on the BATS exchanges ***guarantees*** that the trader employing it will not "take liquidity" as the order will either generate a rebate for the trader, create a profitable trade or be rejected. BATS Only orders are only executable on the applicable BATS exchange and neither BATS Only nor BATS Post Only orders are routed to other markets.

147. The BOPO order and lighting functionality has been available on the BATS exchanges since at least 2009. BATS admittedly developed its Display-Price Sliding functionality to "eliminate[] the need for traders to retry orders multiple times in rapid succession trying to be high in priority at the next NBBO price."[100] In other words, Display-Price Sliding was developed to cater to HFT techniques of capturing rebates and achieving top of the queue status without having to send new orders at the time quotes move. In fact, a regulatory filing related to BATS's IPO revealed that

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[98] BATS Display-Price Sliding: Slide orders that lock or cross the NBBO (2011), *available at* http://www.batstrading.com/resources/features/bats_exchange_pricesliding.pdf.

[99] BATS Definitions & Order Types: Order and Routing Instruction Descriptions (2013), *available at* http://www.batstrading.com/resources/features/bats_exchange_definitions.pdf.

[100] BATS Display-Price Sliding: Slide orders that lock or cross the NBBO (2011), *available at* http://www.batstrading.com/resources/features/bats_exchange_pricesliding.pdf.

in 2009 BATS "paid 51% of such rebates to a single firm, which it described as 'an affiliate of one of [BATS's] strategic investors.'"[101] The firm is widely suspected to be Tradebots, the Chairman and CEO of which is also the founder of BATS.

148. Although in 2012 and 2013 BATS amended how price sliding and Post Only interactions were handled on its exchanges, the complexity with which these functions operated at BATS prior to and continuing to the present assisted its efforts in catering to favored HFT customers at the expense of traditional investors. BATS did not adequately disclose the functionality of these order types to the overwhelming majority of investors, and at a minimum early in the Class Period traders would be required to call the BATS trading desk in order to receive an explanation of the BOPO functionality, assuming the trader even knew to ask about it in the first instance.

ARCA: Post No Preference ALO Blind ("ALO PNP B")

149. ARCA released the Post No Preference Blind ("PNP B") order type in December 2007. This "hide and light" order is an undisplayed limit order priced at or through the NBBO, with a tradable price set at the contra side of the Protected Best Bid and Offer ("PBBO") which is the same as the NBBO). Where the PBBO moves away from the price of the PNP B, but the prices continue to overlap, the limit price of the PNP B will remain undisplayed and its tradable price will be adjusted to the contra side of the best protected offer or best protected bid. Where the PBBO moves away from the price of the PNP B and the prices no longer overlap, the PNP B will convert to a displayed PNP limit order.

150. In other words, PNP ALO B is booked hidden when it locks an away market and ARCA will permit it to track, through continuous rebooking, at the locking price when the NBBO is

[101] Jean Eaglesham, et al., *Scrutiny of High-Speed Trade – Links to Exchanges Scrutinized, New Types of Trades, Too* (Apr. 5, 2012), *available at* http://online.wsj.com/news/articles/SB30001424052702303816504577321864050711038

fluid. For example, if an order locks the away market by trying to buy at 10.05 when the away market is offered at 10.00, that order will be hidden at 10.00. Then, when the away market changes to 10.03, the order will be booked hidden at 10.03. This will continue indefinitely until the order can be properly displayed or "lit" on ARCA.

151. In 2008, ARCA released its version of an ALO order, which is a limit order that is posted to the ARCA order book only when the order adds liquidity, and once posted, does not route to other exchanges, in order to allow firms using it to collect rebates and only pay "taker" fees in a small number of scenario relative to other order types. When these functions are combined, ARCA's ALO PNP B order type provides predatory HFT firms the ability to jump to and remain at the top of ARCA's order queue and collect rebates from the exchange over and over again while subjecting Class members' orders to lower queue priority and/or increasing the frequency of incurring taker fees for investor orders.[102] ARCA never properly disclosed the full extent of the combined order type, and failed to market the PNP B and ALO orders to all market participants on a fair and equal basis in violation of its duties as a national stock exchange.

CHX

152. According to the CHX website, CHX Article 1, Rule 2 purports to provide "a complete list of order types, modifiers, and related terms and complete definitions" for market participants.

153. According to the information and documentation provided in CHX Article 1, Rule 2, combined with the "Order Types and Modifiers" page on its website, CHX non-routable orders function, in part, as follows:

[102] According to ARCA's own order type usage statistics, the ALO PNP B combination order is used on average two to three times as much as the PNP B order alone.

> **CHX Only**: a limit order modifier that requires an order to be ranked and executed on the Exchange without routing away to another trading center and is eligible for the CHX Only Price Sliding Processes. A CHX Only order that is price slid will be assigned a Regulation NMS and Regulation SHO compliant executable price and a Regulation NMS and Regulation SHO compliant display price by the Matching System upon receipt. Thereafter, the Matching System will continue to price slide the order to the extent that it could be executable or displayable at a more aggressive price, but shall under no circumstances price slide the order through its original limit price. CHX Only orders must be fully displayed limit orders. Orders marked Do Not Display or Reserve Size cannot be designated as CHX Only orders.
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> * * *
>
> **Do Not Route**: a limit or market order modifier that requires an order to only be executed or displayed within the Exchange's Matching System and not be routed to another market.[103]

154. The information provided by CHX to market participants fails to disclose or document the circumstances in which post only non-routable orders on CHX can achieve queue priority over other order types. The lack of disclosure to market participants regarding these features and conditions results in predatory trading strategies employed by HFT firms to the detriment of plaintiffs and Class.

155. The concept of queue priority describes the ability of certain orders to be rebooked at the top-of-queue in ways that traditional order types cannot as top-of-book price changes. CHX non-routable orders which achieve queue priority could be an order type which manages maker-taker fees and rebates, while also serving as a powerful tool for "lighting" at top-of-queue at an aggressive price in a manner that is algorithmically managed by CHX.

156. CHX's non-routable order provides queue-priority features that advantage these orders over traditional orders. In order to comport with its obligation to "remove impediments to and perfect the mechanism of a free and open market" and prevent "unfair discrimination between

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[103] Chicago Stock Exchange, CHX Order Types and Modifiers, *available at* http://www.chx.com/trading-information/order-types/.

customers, issuers, brokers, or dealers" (15 U.S.C. §78f(b)(5)), CHX has a duty to fully and publically disclose material order interactions between particular orders which may reserve top-of-queue positions over other orders.

157. In addition, the information provided by CHX to market participants fails to disclose or document the circumstances and conditions in which CHX Only orders will be financially harmed by paying taker fees in trades with Post Only orders during price-sliding events. The lack of disclosure by CHX regarding the interaction of competing orders, including, but not limited to, those described above, resulted in predatory trading strategies employed by HFT firms to the detriment of plaintiffs and Class.

Intermarket Sweep Order Types

158. Reg NMS Rule 611 was originally designed to bind multiple markets into a single, unified NBBO system by prohibiting exchanges from executing trades when a better price was available on another exchange. Such trades are commonly referred to as "trade-through" violations and (prior to the implementation of Reg NMS Rule 611) were enforced by requiring exchanges to either reject marketable orders or route them to the trading center (*i.e.*, exchange) displaying the best price.

159. In an attempt to serve institutional investors seeking to execute unusually large trades without signaling to the market their intention to buy or sell a large block of shares (and potentially influencing the market price), and to otherwise avoid the potential for trade-through violations, in 2005 the SEC introduced the Intermarket Sweep Order ("ISO") order type as an exception to Reg NMS Rule 611. This exception allowed investors to use an ISO order type to "sweep" the various exchanges and execute large trades even where it might otherwise result in a trade-through.

160. Although the ISO as originally contemplated, as set forth above, by Reg NMS was intended as an accommodation to (primarily) institutional investors, it has since been highjacked by the Exchanges and subverted (without the requisite SRO rule making) into a device that facilitates rather than prevents fraudulent and manipulative acts and practices. The most egregious examples of these, the Day ISO and Post-Only ISO, are explained below.

The Day ISO Order Type

161. The Day ISO order type was designed to sweep through the best price on all market centers at the NBBO to capture as many shares as possible without being limited by the delayed executions that might otherwise be caused by compliance with Rule 611 as trading centers updated their protected quotations. For example, if a trader wishes to buy 1000 shares of ABC, and there are 100 shares of ABC being offered at $5.00 at "Exchange A" and 1,000 shares at $5.10 being offered at "Exchange B," Rule 611 would limit a non-ISO order to buying only the 100 shares at Exchange A at $5.00, after which the trader would need to send additional orders to ascertain the desired 900 shares after waiting for Exchange A to reflect that its offer price of $5.00 had been eliminated. In contrast, however, the Day ISO order would allow the trader to buy the 100 shares at Exchange A for $5.00 while simultaneously routing a buy order for the remaining 900 shares to Exchange B for $5.10. In this scenario, there are only 100 shares at $5.00 so by sweeping the market at $5.00 the trader is allowed to simultaneously post a buy order for 900 shares at the more aggressive price of $5.10 on Exchange B because the market on Exchange A has been swept. Such a use is conceivably legitimate under Rule 611.

162. This seemingly legitimate use of the Day ISO order type to "sweep" to fill large orders is not in fact the primary reason that Day ISOs are used by HFT firms. Rather, the Exchanges have permitted HFT firms to ostensibly use these order types to "jump" to the top-of-queue in a

manner inconsistent with the original Reg NMS. Day ISOs can queue-jump price-slid orders and hide-and-light orders when booked at their limit price. HFTs will typically send Day ISOs the nanosecond after a market change because this change presents a new opportunity to be at the top of the queue. Unlike traditional market participants, such as plaintiffs and the Class, the HFT uses fast price feeds to determine that the price of $5.00 on Exchange A (in the example above) has already traded and is no longer available so the HFT firm can now post a Day ISO order to buy on Exchange B at $5.05 which would normally be rejected as a violation of Rule 611. As previously discussed, the HFT firm knows the $5.00 price is stale based on the faster feed provided by the exchange while other market participants do not have access to that information as a result of the exchange using slower feeds to inform the SIP. The ISO-specific abuse is that the HFT firm does not have to sweep away any markets in this case because the exchange's fast price feeds communicates that there are no eligible prices to sweep. Thus, the HFT order is booked on Exchange B at $5.05 and queue-jumps hide-and-light orders as well as every other order type that was not permitted to post at $5.05 on Exchange B.

163. When combined with the Exchanges' efforts to sell access to unusually fast data feeds to HFT firms while selling access to slow data feeds to other market participants, the exchange corrupted the Day ISO into a device primarily used by HFT firms to queue-jump less advantaged trades to post at normally impermissible prices and to queue-jump less advantaged order types that only a select group of market participants, namely their HFT customers, can use to gain an unfair advantage. Indeed, such an advantage is virtually inevitable where HFT firms combine the use of a Day ISO order type with high speed data feeds because it allows them to trade at prices that are inaccessible to non-HFT firms and that would otherwise be rejected as impermissible transactions under Rule 611 as trade-through violations.

164. Exchanges and dark pools often choose to use the slow consolidated data feeds (the SIP) to restrict access to prices, a practice which harms investors by denying them access to liquidity in fast moving markets and which serves to further advantage HFTs that employ Day ISOs for rebate posting and queue priority purposes to get ahead of aggressive customer orders. Thus, the speed advantages created by co-location and fast data feeds, along with complex order types like the Day ISO and the Post-Only ISO (discussed below), resulted in a two-tiered system – created by the Exchanges solely for their own profit – whereby HFT users were the hunter while non-HFT users were the hunted.

165. HFT firms using Day ISO order types strategies are able to post ahead of those relying on the slow SIP data feeds and execute trades at prices that are systematically denied to other traders. Indeed, the ISO has been transformed by the Exchanges from an order type primarily intended to sweep markets to fill large order into an order type that is intended (by HFT firms, at least) to ***avoid*** sweeps and to post ahead of the slow SIP. In fact, the Post-Only ISO order type, a particularly advanced version of the Day ISO, serves as a primary example of how the Day ISOs were created by the Exchanges to be exploited by the HFT firms at the expense of the investing public.

The Post-Only ISO Order Type

166. Unlike the Day ISO and hide and light, prior to July 2014, the Post-Only ISO order type had never appeared as a proposed rule change in the Exchanges' SEC filings with the exception of CHX from 2009 to 2013.[104]

[104] CHXwas the first exchange to admit that it approved and permitted the use of the Post-Only ISO. However, in May 2013, the exchange submitted to the SEC a proposal to remove this order type as redundant, maintaining that it could be replicated by a limit order with certain modifiers. *See* http://www.sec.gov/rules/sro/chx/2013/34-69538.pdf.

167. Notably, the Post-Only ISO eliminates the inconvenience of the Day ISO, which, while able to avoid sweeps, must execute orders. Instead, ***the Post-Only ISO is not accepted at its aggressive price unless it can post passively to capture a rebate***, a constraint exactly the opposite of the intended use of ISOs.

168. The Post-Only ISO also has the ability to discover pricing and order flow information because HFT firms receive confirmation when it would otherwise take liquidity (and do so without ever executing a trade). This pricing information is even provided in the case of hidden orders (*e.g.*, orders which investors are told by the Exchanges are undetectable unless executed). A Post-Only ISO can also queue-jump less advantaged orders ranked at the same price even though the Post-Only ISO arrived later in time.

169. In other words, the Post-Only ISO provides HFT firms with a near risk-free "jump" to the top-of-queue ahead of all other orders in the direction that they know – given the attributes of the Post-Only ISO – the market is likely headed, along with more time to act given the high speed data feeds and protection against paying taker fees instead of capturing rebates. Moreover, all of this occurs without counter parties ever knowing what has transpired.

170. A Post-Only order is an order type designed to encourage displayed liquidity by allowing users to submit orders at potentially marketable prices without having to execute those orders against booked orders *(i.e.*, limited risk). By its terms, a Post-Only order is posted on the exchange and does not route away to another exchange and will be immediately cancelled if it would lock or cross a manual or protected quotation.

171. BATS provides the following explanation of Post-Only orders:

> Post only orders allow users to make a market and specify not to remove liquidity unless adequate price improvement is accessible. Any incoming post only

> orders that cross with a resting displayed order that does not offer adequate price improvement will be rejected.[105]

172. Further building on the "Post-Only" prong of the Post-Only ISO, a Post-Only ISO order type will ***either*** be: (1) immediately cancelled without execution if it is marketable against a contra-side order; or (2) posted on the exchange at the entered limit price.

173. For example, if sell orders exist on Exchange A for ABC at $10.01 and Exchange A receives a directed Post-Only ISO to buy ABC stock at $10.01, it will cancel back the order unfilled because the order would have incurred the taker fee. If there are no such sell orders, Exchange A will display the $10.01 buy Post-Only ISO, with the understanding that if a sell order for ABC at $10.00 exists on Exchange B, the originator of the Post-Only ISO order will assume Reg NMS responsibility for taking out those offers independently.[106] Thus, Exchange A will allow the Post-Only ISO to lock away markets because it is relying on the trader who sent the Post-Only ISO to simultaneously sweep away markets at the locking price with additional ISOs pursuant to Reg NMS Rule 611(c). The inescapable regulatory violation inherent on any exchange allowing a Post-Only order to be combined with an ISO order is that if a trader uses a Post-Only ISO for every market, as Reg NMS requires for all ISOs, nothing will get swept because the Post-Only forbids the taking of liquidity.

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[105] BATS Definitions & Order Types: Order and Routing Instruction Descriptions (2013), *available at* http://www.batstrading.com/resources/features/bats_exchange_definitions.pdf.

[106] Reg NMS Rule 611:

> (c) Intermarket sweep orders. The trading center, broker, or dealer responsible for the routing of an intermarket sweep order shall take reasonable steps to establish that such order meets the requirements set forth in § 242.600(b)(30).

Reg NMS at 520.

174. Notably, for HFT firms the cancellation or rejection of a Post-Only ISO order ***is*** the objective in the case where a Post-Only ISO would otherwise have resulted in a sweep or execution consistent with Rule 611. This aversion to fulfilling the ISO sweep obligation and execution is due to the fact that HFT firms using Post-Only ISO order types are not (primarily) concerned with acquiring stocks at better values (as in the example above, the stock was posted at $10.01 per share but could be purchased at $10.00 per share). To the contrary, HFT firms seek to avoid interaction with passive liquidity while at the same time positioning themselves for rebates by advancing to the top-of-queue.

175. Regarding the "ISO" prong of the Post-Only ISO, traditional ISO attributes are virtually nonexistent in the Post-Only ISO. Indeed, as discussed above the ISO is an order type that was created by Rule 611 to allow large orders to sweep the exchanges to simultaneously access liquidity across multiple venues.

176. Contrary to a traditional ISO, the Post-Only ISO, however, cannot sweep and cannot take liquidity. This is because HFT firms employing a Post-Only ISO only seek to be a market maker so that they can receive a rebate from the Exchanges. Thus, the purpose of the Post-Only ISO is fundamentally inconsistent with Rule 611 and this is perhaps the reason why Post-Only ISO order types, though clearly authorized by the Exchanges (and not the SEC), as set forth herein, never experienced fulsome and transparent SRO rule changes by any exchange.

177. On June 5, 2014, SEC Chairwoman White announced a sweeping package of recommendations aimed at the "aggressive, destabilizing trading strategies in vulnerable market conditions."[107] As part of that announcement, White instructed the Exchanges to conduct a thorough

[107] SEC Speech, Enhancing Our Equity Market Structure (June 5, 2014), *available at* http://www.sec.gov/News/Speech/Detail/Speech/1370542004312#.VAT3Z6Pn93w.

review of the types of trading orders being facilitated and to "consider appropriate rule changes to help clarify the nature of their order types and how they interact with each other."[108]

178. Each of the Exchanges that provides facilities for trading equity securities released a document ("Clarification Document") pursuant to White's instructions and a subsequent request from the SEC's Division of Trading and Markets which memorializes the inner workings of each exchange.

179. The Clarification Documents supposedly seek to "clarify" various data feeds-related issues, including the implications for order handling and were issued by the Exchanges, offering varied levels of disclosure. Some of these appear to confirm, however, that certain order types, including the Post-Only ISOs, were previously authorized by the Exchanges for use by HFT firms but never meaningfully disclosed to the investing public or the SEC.

BATS (BYX/BZX)

1. Day ISO

180. BATS July 28, 2014 Clarification Document is conspicuous in its subtlety. Stuck onto the end of a paragraph about trade-through compliance, in what reads as afterthought, is the following sentence: "The ME [matching engine] will then display and execute non-ISO orders at the same price as the Day ISO."

181. By way of the above statement, BATS has confirmed for the first time that as a matter of practice its Day ISO can queue-jump regular orders. BATS also uses the term "execute" in the Clarification Document, indicating that orders might be handled in a way that pays taker fees to the Day ISO.

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[108] *Id.*

2. Post-Only ISO

182. BATS has not submitted regulatory filings with the SEC acknowledging its authorization of Post-Only ISO order types. Likewise, there is no explanation concerning these special order types on BATS' website and the exchange has never issued public statements regarding the use of the Post-Only ISO order type.

183. Nonetheless, the Post-Only ISO order is referenced in the order type statistics section of BATS' website, confirming Post-Only ISO order types are permitted:[109]

[109] BATS Order Type Usage Summary, *available at* http://batstrading.com/market_data/order_types/.

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Order Type Usage Summary

All BATS order types are described in our Exchanges Rules and summarized in the Features section of our website.

Year: 2013 Month: January Submit

% of Order Count

	ISO	Non-ISO	Total	Routable*
IOC (includes Market Orders)	4.21%	6.30%	10.51%	1.42%
Displayed	3.17%	22.55%	25.72%	9.10%
Displayed - Post Only	7.61%	24.62%	32.23%	-
Non-Displayed (includes Pegs)	0.00%	25.61%	25.61%	7.35%
Non-Displayed (includes Pegs) - Post Only	0.00%	5.93%	5.93%	-
Total	15.00%	85.00%	100.00%	17.88%

** subset of Total*

% of Executed Orders

	ISO	Non-ISO	Total	Routable*
IOC (includes Market Orders)	20.31%	18.34%	38.65%	4.34%
Displayed	1.70%	26.82%	28.52%	12.76%
Displayed - Post Only	9.12%	15.80%	24.91%	-
Non-Displayed (includes Pegs)	0.00%	5.28%	5.28%	1.03%
Non-Displayed (includes Pegs) - Post Only	0.00%	2.64%	2.64%	-
Total	31.13%	68.87%	100.00%	18.12%

** subset of Total*

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Direct Edge (EDGX/EDGA)

1. Day ISO

184. Direct Edge is now owned by BATS. Both BATS and Direct Edge released Clarification Documents on the same day that essentially mirror each other with respect to the language and positions discussed above.

2. Post-Only ISO

185. Direct Edge has taken the position that it does not have an obligation to report its use of the Post-Only ISO order type to regulators, because the Post-Only ISO is the result of two "order

modifiers" which are disclosed. However, BATS own order type statistics data indicates that the Post-Only ISO is an ***order type*** (not a "modifier") and identifies it as such on its website.

186. Direct Edge has never submitted regulatory filings with the SEC acknowledging the use of Post-Only ISO order types, though its most recent Clarification Document states that the Day ISO "is similar to the Post ISO order on [NSX]."[110] Likewise, there is no explanation concerning these special order types on Direct Edge's website and the exchange has never issued public statements regarding the use of the Post-Only ISO order type.

187. Despite the lack of any disclosure, regulatory or otherwise, related to the utilization of Post-Only ISO order types on any Direct Edge exchanges, according to its API specifications, Direct Edge authorizes the use of these undocumented complex order types and has done so since at least February 2011.

CHX

1. Day ISO

188. According to the CHX website, CHX Article 1, Rule 2 purports to provide "a complete list of order types, modifiers, and related terms and complete definitions" for market participants. Among other order types and modifiers, CHX Article 1, Rule 2 defines "BBO Intermarket Sweep ('BBO ISO')," "Intermarket Sweep ('ISO')" and "Price-Penetrating ISO."

189. According to the information and documentation provided in CHX Article 1, Rule 2, combined with the "Order Types and Modifiers" page on the its website, CHX ISOs function as follows:

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[110] *See* Self-Regulatory Organizations; EDGX Exchange, Inc.; Notice of Filing of Proposed Rule Change Relating to Include Additional Specificity Within Rule 1.5 and Chapter XI Regarding Current System Functionality Including the Operation of Order Types and Order Instructions at 70 n.64 (July 25, 2014), *available at* http://www.sec.gov/rules/sro/edgx/2014/34-72676.pdf.

> **BBO Intermarket Sweep ("BBO ISO")**: a limit order modifier that marks an order as required by SEC Rule 600(b)(30) that is to be executed against any orders at the Exchange's Best Bid and Offer (including any Reserve Size or undisplayed orders at or better than that price) as soon as the order is received by the Matching System, with any unexecuted balance of the order to be immediately cancelled, if marked IOC, or placed in the Matching System.
>
> * * *
>
> **Intermarket Sweep ("ISO")**: a limit or cross order modifier that marks an order as required by SEC Rule 600(b)(30) that is to be executed against any orders at the Exchange's BBO (including any Reserve Size or undisplayed orders at that price) as soon as the order is received by the Matching System, with any unexecuted balance of the order to be immediately cancelled.
>
> * * *
>
> **Price-Penetrating ISO**: a limit order modifier that marks an order as required by SEC Rule 600(b)(30) that is to be executed at or better than its limit price as soon as the order is received by the Matching System, with any unexecuted balance of the order to be immediately cancelled. Orders marked as Price-Penetrating ISO shall be executed against any eligible orders in the Matching System (including any Reserve Size or undisplayed orders) through multiple price points.[111]

190. The information provided by CHX to market participants fails to disclose or document the "lighting" or related queue-jumping features in CHX Day ISOs. The information provided by CHX to market participants also fails to disclose or document CHX's Day ISOs interactions and functionality in combination with other order types and order modifiers on CHX, including, but not limited to, the order type formerly identified by CHX as Post-Only ISO.

2. <u>Post-Only ISO</u>

[111] Chicago Stock Exchange, CHX Order Types and Modifiers, *available at* http://www.chx.com/trading-information/order-types/.

191. On July 6, 2009, CHX became the first and only exchange to disclose the availability of the Post-Only ISO order type. CHX submitted a proposed rule change to the SEC announcing its intention to add the Post-Only ISO order type ("CHX Proposed Rule Change").[112]

192. The CHX Proposed Rule Change explained the features and functionality of the Post-Only ISO, in part, as follows:

> The Exchange proposes to amend CHX Article 20, Rule 4 to add the Post Only and Post Only ISO order types.
>
> A Post Only Order is an order designed to encourage displayed liquidity on the Exchange. By its terms, a Post Only Order is posted on the Exchange and does not route away to another trading center. A Post Only Order will be immediately cancelled if it is marketable against a contra-side order in the Matching System when entered, or if it is at a price that would lock or cross a manual or protected quotation.
>
> A Post Only ISO Order is a type of ISO order that will be immediately cancelled without execution if it is marketable against a contra-side order in the Matching System when entered. If a Post Only ISO is not immediately cancelled, it will be posted on the Exchange at the entered limit price. By entering a Post Only ISO, a Participant represents that such Participant has simultaneously routed one or more additional limit orders marked "ISO," as necessary, to away markets to execute against the full displayed size of any protected quotation for the security with a price that is superior or equal to the limit price of the Post Only ISO entered in the Matching System. Consequently, a Post Only ISO order will be displayed by the Exchange regardless of whether it will lock or cross another market center's quote.[113]

193. The CHX Proposed Rule Change explained that the statutory basis and regulatory compliance of the Post-Only ISO as follows:

> The Exchange believes that the proposed rule change is consistent with Section 6(b) of the Act in general, and furthers the objectives of Section 6(b)(5) in particular, in that it is designed to promote just and equitable principles of trade, to foster cooperation and coordination with persons engaged in facilitating transaction in securities, to remove impediments and perfect the mechanisms of a free and open market, and, in general, to protect investors and the public interest by allowing CHX

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[112] Self-Regulatory Organizations; Notice of Filing and Immediate Effectiveness of a Proposed Rule Change by the Chicago Stock Exchange, Inc. Adding the Post Only and Post Only ISO Order Types, *available at* http://www.sec.gov/rules/sro/chx/2009/34-60243.pdf.

[113] *Id*. at 2.

> to amend its rules to add the Post Only and Post Only ISO order types based on similar rules already in effect at other exchanges. The addition of these order types will benefit Exchange customers and promote competition among market centers.[114]

194. The CHX Proposed Rule Change identified the Post-Only ISO as an "order" or "order type" at least 13 times. The terms "modify," "modifier" or "order modifier" were never used and there were no similar terms or parallel language used.

195. On May 8, 2013, nearly four years after disclosing the Post-Only ISO as an available order type, CHX unilaterally decided it no longer needed to disclose the Post-Only ISO and would "delete the [Post Only ISO] defined order term[] from the CHX rules."

196. CHX told the SEC:

> [T]he Exchange proposes to delete "Post Only ISO" from the CHX rules, because a Post Only ISO is simply a limit order marked Post Only and BBO ISO and not a distinct order modifier. As such, the Exchange submits that maintaining a separate defined order term for "Post Only ISO" is redundant and unnecessary.[115]

197. CHX did not inform the SEC that it would stop offering HFT firms all the abusive features and functionality of the order type it previously defined as "Post Only ISO" in its rules. CHX simply deleted any and all information regarding the Post-Only ISO from all publically available resources. CHX's semantic change from calling the Post-Only ISO an "order type" to "a limit order marked Post Only" left market participants, such as plaintiffs and the Class, without any means or ability to obtain information regarding the availability, features or function of the order type previously defined by CHX as a Post-Only ISO.

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[114] *Id*. at 3.

[115] Self-Regulatory Organizations; Chicago Stock Exchange, Inc.; Notice of Filing and Immediate Effectiveness of a Proposed Rule Change to Consolidate All CHX Order Types, Modifiers, and Related Terms Under One Rule and to Clarify the Basic Requirements of All Orders Sent to the Matching System, *available at* http://www.sec.gov/rules/sro/chx/2013/34-69538.pdf.

198. Thus, the order type formerly defined by CHX as Post-Only ISO is now a completely undisclosed and undocumented trading strategy which CHX makes available to only those market participants who learn about it independently or directly from CHX through non-public communications.

199. Market participants trading on CHX not privy to the availability of this trading mechanism have been and will continue to be disadvantaged and abused in ways consistent with the victims of Post-Only ISOs on other exchanges discussed herein.

NYSE / NYSE Arca ("NYSE")

1. Day ISO

200. NYSE has traditionally been an exchange which purportedly did not support Day ISO or Post-Only ISO. However, enhanced presence by one of the largest HFT firms has ushered in a new business strategy which does include Post-Only ISO.[116]

201. Indeed, on July 7, 2014, the SEC released NYSE's Notice of Filing of Proposed Rule Change Amending Rule 13 – "Equities To Make the Add Liquidity Only Modifier Available for Additional Limit Orders and Make the Day Time-In-Force Condition Available for Intermarket Sweep Orders." In this SRO filing, NYSE requested from the SEC changes that would allow the use of a Post-Only ISO:

> The Exchange proposes to amend Rule 13--Equities to make the Add Liquidity Only ("ALO'") modifier available for additional limit orders and make the day time-in-force condition available for Intermarket Sweep Orders ("ISO") . . . . Other equities exchanges do not limit their ISOs to an immediate-or-cancel time-in-force condition.

202. As of this filing, the SEC had not yet issued its decision regarding NYSE's proposed rule change. Nonetheless, on August 6, 2014, NYSE issued a "Trader Update" to NYSE's traders

[116] *See* http://www1.nyse.com/press/1372416110357.html.

regarding its ALO[117] and ISO order types. While NYSE referred to these as "***modifiers*** [that] will be made available pending SEC approval" rather than order types, they did note that they would enhance the functionality of "existing NYSE order types."

2. Post-Only ISO

203. NYSE has not submitted regulatory filings with the SEC acknowledging its authorization of the Post-Only ISO order type. However, a July 6, 2009 SRO filing by CHX states, in relevant part, that "CHX notes that order types similar to the proposed Post Only and Post Only ISO order types are already in use by [ARCA]."[118] Despite the uncertainty of how early the Post-Only ISO was supported on ARCA, NYSE disclosed the "PNP ISO ALO" order type in its technical specification in March, 2010.[119] The "PNP ISO ALO" is also evident in ARCA's order type statistics:[120]

[117] "ALO" is synonymous with "Post-Only."

[118] *See* Self-Regulatory Organizations; Notice of Filing and Immediate Effectiveness of a Proposed Rule Change by the Chicago Stock Exchange, Inc., Adding the Post Only and Post Only ISO Order Types at 3 & n.3, *available at* http://www.sec.gov/rules/sro/chx/2009/34-60243.pdf.

[119] *See* ARCA Direct API Specification, Version 4.0, *available at* https://usequities.nyx.com/sites/usequities.nyx.com/files/arcadirectspecversion4_0_11.pdf.

[120] *See* NYSE ARCA Order Type Usage, *available at* https://www.nyse.com/markets/nyse-circa/trading-info#equities-order-types.

NYSE ARCA

NYSE ARCA ORDER TYPE USAGE

ORDERTYPE	Mar-14	Apr-14	May-14	Jun-14	Jul-14
ISO PNP IOC	23.68%	24.60%	25.38%	25.24%	24.90%
Limit	15.29%	15.27%	15.58%	15.00%	15.12%
ALO PNPB	8.05%	8.35%	8.07%	8.46%	8.47%
Limit Reserve	8.41%	8.57%	8.24%	7.72%	7.74%
PNP IOC	7.19%	6.41%	5.39%	5.26%	5.89%
Limit IOC	4.02%	4.63%	5.13%	5.35%	4.98%
PNP	4.20%	4.44%	4.64%	4.84%	4.72%
ISO ALO PNP	5.00%	4.38%	4.41%	5.04%	4.69%
MOC	3.24%	2.95%	3.33%	3.13%	3.07%
InsideLimit	2.36%	2.53%	2.68%	2.76%	2.69%
PNPB	2.91%	2.84%	2.56%	2.31%	2.36%
PL	1.90%	2.13%	2.05%	2.08%	2.10%
ALO MPL	1.54%	1.53%	1.69%	1.84%	1.86%
MPL	1.07%	1.19%	1.21%	1.24%	1.30%
Limit NOW	1.11%	1.10%	1.02%	1.09%	1.22%
ISO PNP	1.64%	1.45%	1.03%	1.03%	1.19%
ALO PNP	1.75%	1.63%	1.56%	1.38%	1.17%
LOC	0.53%	0.44%	0.45%	0.77%	0.78%
PNP Reserve	0.28%	0.15%	0.14%	0.12%	0.72%
MPL IOC	0.53%	0.50%	0.58%	0.67%	0.67%
Other	4.75%	4.32%	4.30%	4.08%	4.37%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Source: NYSE Arca Trading Data and Analytics

NASDAQ/NASDAQ BX

1. Day ISO

204. The NASDAQ Clarification Document makes no reference to Day ISO ability to queue-jump regular orders. However, evidence exists that the NASDAQ Day ISO is capable of queue-jumping in a manner consistent with the BATS Clarification Document.

2. Post-Only ISO

205. NASDAQ has not submitted regulatory filings with the SEC acknowledging its authorization of the Post-Only ISO order type. However, on July 28, 2014, NASDAQ included the following reference in an SRO filing regarding data feeds:

> In general, any order that is sent to NASDAQ with an ISO flag is not re-priced and will be processed at its original price. ***There are a limited number of circumstances in which an order marked as an ISO will be determined not to be executable at its original price and will be re-priced***. These include re-pricing under the Plan to Address Extraordinary Market Volatility, re-pricing to comply with Regulation SHO, ***and the re-pricing of an order with a post-only*** condition if NASDAQ has an order at that price at the time the order is accepted.[121]

206. Despite the lack of regulatory and technical disclosure related to the utilization of Post-Only ISO order types on any NASDAQ exchanges, according to the excerpt above and order type statistics below (statistics which NASDAQ no longer makes public), NASDAQ clearly authorizes the use of Post-Only ISO order types:

[121] Self-Regulatory Organizations; The NASDAQ Stock Market LLC; Notice of Filing and Immediate Effectiveness of Proposed Rule Change to Disclose Publicly the Sources of Data Used for Exchange Functions at 6 n.9, *available at* http://www.sec.gov/rules/sro/nasdaq/2014/34-72684.pdf.

NASDAQ OMX EQUITY ORDER TYPE USAGE AUGUST 2013

	% OF ORDER COUNT			% OF EXECUTED ORDERS		
	ISO	NON-ISO	TOTAL	ISO	NON-ISO	TOTAL
IMMEDIATE OR CANCEL	1.8%	11.6%	13.40%	19.7%	19.3%	39.00%
DISPLAYED LIMIT - PRICE TO COMPLY	2.5%	17.4%	19.90%	6.7%	20.5%	27.20%
DISPLAYED LIMIT - POST ONLY	4.9%	32.2%	37.10%	4.2%	16.6%	20.80%
NON-DISPLAYED LIMIT (INCL MIDPOINT)	0.2%	24%	24.20%	0.3%	6.1%	6.40%
DISPLAYED LIMIT - ATTRIBUTABLE (FOR MKT MAKER COMPLIANCE)	0%	3.1%	3.10%	0.1%	0.4%	0.50%
OTHER (INCL MIDPOINT POST ONLY & SUPPLEMENTAL)	0.1%	2.1%	2.20%	0.3%	5.7%	6.00%
TOTAL	9.50%	90.40%	99.90%	31.30%	68.60%	99.90%

207. This wide array of complex order types marketed to HFT firms is in stark contrast to the order types known and available to typical retail and institutional investors – namely market orders which are executed immediately at the current available price, and limit orders which specify a price limit at which to buy or sale. Investors relying on brokers to act on their behalf have no practical way of taking advantage of the complex order types employed by HFT firms. The Exchanges know this, and specifically designed the complex order types for HFT firms to jump ahead of the basic sitting duck market and limit orders utilized by plaintiffs and the Class.

HFT Firms' Unlawful Trading Practices on the Exchanges Damaged Plaintiffs and the Class

208. By employing the aforementioned devices, contrivances, artifices and manipulations, the Exchanges pursued a fraudulent scheme and wrongful course of business that operated as a fraud or deceit on public investors trading stocks on the U.S. stock exchanges.

209. During the Class Period, the Exchanges engaged in wrongful and discriminatory practices, including providing co-location and enhanced low-latency direct data feed services, and creating and implementing hundreds of complex order types for HFT firms, for the purpose of, and knowing that such acts would result in further fraudulent activity such as electronic front-running, latency arbitrage, spoofing, layering and insider trading by HFT firms. The Exchanges knew that engaging in such conduct would induce HFT firms to execute trades on the Exchanges to the detriment of plaintiffs and the Class. The Exchanges also implemented a fee structure that they knew incentivized HFT firms to employ trading strategies, including rebate arbitrage, that caused plaintiffs and the Class to transact on the Exchanges' venues at worse prices. Defendants' fraudulent scheme and wrongful course of business played a central and essential role in at least the following activities, which operated as a fraud or deceit on plaintiffs and the Class.

Electronic Front-Running

210. NYSE former Rule 92, FINRA Rule 5320 Information Memo No. 80-38 ("Memo"), expressly prohibits electronic front-running or "trading ahead." The Memo provides, in part, that members and member organizations "should not trade in options or in underlying securities by taking advantage of their possession of material, non-public information concerning block transactions in these securities." This type of conduct is inconsistent with "just and equitable principles of trade" and a member who violates this rule may face disciplinary proceedings under NYSE Rule 476.[122] However, the conduct by the Exchanges alleged herein resulted in the manipulation of the market by means of these wrongful practices and violated the prohibition against trading ahead.

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[122] *See* NYSE Exchange Rule 105(h), "Prohibition Against Front-Running of Blocks."

211. The Exchanges sold HFT firms access to information concerning the proprietary non-public intent of plaintiffs and members of the Class, including their intention to purchase or sell securities, their price sensitivity, margin requirements and/or the amount of shares they intended to transact in. The Exchanges did this, first, by collecting payments from HFT firms in exchange for permitting them to install their own computers directly within or in close proximity to the Exchanges' own order matching boxes. Defendants knew these co-location arrangements were intended to and would in fact provide HFT firms with nearly instantaneous access to investor orders and bids placed on the Exchanges by brokerage firms, and did so knowing HFT firms could and would use the data to trade in front of Class members. The Exchanges also provided a low-latency edge to HFT firms by offering direct data feeds that were faster than the widely used SIP, and by allowing HFT firms to utilize complex new order types that allowed them to jump the queue and trade in front of Class members. These feeds also provide enhanced trading information to HFT firms that allows them to at a minimum track when an investor changes price on his order and how much stock the investor is buying or selling in accumulation, as well as ascertain hidden order flow.

212. The Exchanges collected billions of dollars from HFT firms for co-location rights and data feed services so that the firms could reduce their own latency *vis-a-vis* other traders. For example, when a broker placed an order to purchase 100 shares of Proctor & Gamble on the NYSE or an alternate trading venue, HFT firms got access to it within milli- or even microseconds and were able to actively look at all the other exchanges and alternate trading venues – using their high speed cable and/or radio wave signal technology – and discover where the shares to be purchased could be purchased most cheaply, or where the shares to be sold could be sold for the highest price. They then raced the investor's order to that exchange, transacted and then fulfilled the investor's order.

213. To do so however, HFT firms put out "pings" (or small orders or bids) on all of the other exchanges to locate the best price. In so doing, HFT firms necessarily increased the perceived demand for the relevant stock, often resulting in artificial price increases/decreases. HFT firms, however (through the operation of complex orders the Exchanges agreed to create just for these purposes), just as instantaneously cancel all unwanted orders and bids. Through this "pinging," HFT firms appear to increase demand for the stock (at a certain price point) and thus manipulate its price. As a result though, while the HFT firm may transact at the best quote available on a particular exchange when it eventually transacts, it has to often run up/down those prices before trading due to its own efforts to electronically front-run the investors' orders – and so it transacts for the investor at a price that damages the investor. The Exchanges are entirely complicit in and create market conditions that encourage this manipulative conduct. In fact, the HFT firms could not execute their strategies described above without the Exchanges' efforts.

Rebate Arbitrage

214. Purportedly to increase and improve liquidity on their exchanges – which draws more business into their exchanges and allows the exchanges to collect greater fees from the increased trading – the Exchanges historically began paying brokers and HFT firms to transact on their exchange to the extent they were placing a new bid or offer there. Such activity is characterized in the industry as "making" liquidity. Conversely, those who merely pay the bid or offer price quoted on an exchange are characterized in the industry as merely "taking" liquidity.

215. Early on, many of the Exchanges adopted maker/taker pricing plans.[123] Makers were paid rebates to place their orders and bids on the exchange whereas takers had to pay to fulfill their

[123] The maker/taker model is in contrast to the "customer priority" model, whereby any account identified as a "customer" goes to the head of the queue for priority of fill, without paying a transaction fee to the exchange. The exchange charges market-makers fees for transactions.

orders on the same exchange. Investors pay their brokers a commission to conduct their trades, but these maker/taker fees paid to – or not charged by – the exchanges were separate and apart from that. As such, they often incentivized brokers to be market-makers rather than takers.

216. However, with the advent of so many new stock exchanges, competition grew and strategies varied, and soon certain exchanges became incentivized to pay takers and charge makers. BATS did this on its BYX trading system to entice brokers to send their orders to BATS – where BATS knew high frequency traders were waiting – even though it did not increase liquidity in the process.

217. The different pricing models being employed across the various public exchanges and alternate trading venues soon created a new arbitrage opportunity for high frequency traders. In addition to the need for speed that electronic front-running required, high frequency traders were incentivized by the Exchanges to trade on more electronic trading venues and to trade where they were paid to do so. ***This incentivized high frequency traders to hold off on fulfilling an order at the best price available on a particular exchange if the exchange offering the best price demanded payment from them to complete the order***. Instead, the HFT firms, which were way out ahead of the rest of the market by micro- if not milliseconds, were incentivized to create more interest in the stock by pinging more exchanges – even if doing so increased the market price for the stock suddenly – in order to close the trade on an exchange that would pay them the largest rebate rather than charging them a fee to transact. Again, the price increase such delays precipitated were ultimately borne by plaintiffs and members of the Class.

Payment for order flow is also paid to brokerage firms as an inducement to send their orders to a given exchange.

Latency Arbitrage

218. Latency arbitrage occurs when different people and firms receive market data at different times. These time differences, known as latencies, may be as small as a billionth of a nanosecond, but in the world of HFT, such differences can be crucial. So crucial, in fact, that HFT firms pay the Exchanges substantial sums to be located closer to the Exchanges' servers – each foot closer saving one nanosecond – and to access material trading data via enhanced low-latency data feeds. Latency arbitrage occurs when HFT algorithms make trades a split second before a competing trader, and then resell the stock seconds later for a small profit.

219. As an example, an institutional investor seeks to buy a substantial position, for example 100,000 shares of a given stock. Often brokers will try to execute the trade intermittently in small 100 share block orders, trying to get the then best price available, say $4.50 per share. This is where the "latency arbitrage" takes place. HFT firms use their internal compilations of knowledge of historical trading practices to divine who the investor is, how much it wants, what it is willing to pay and/or what its margin requirements are, and essentially buys up all the available shares at $4.50 per share an instant before the institutional investor gets them. Now the institutional investor's algorithm moves on, and looks for shares at $4.51 per share. The HFT firm then sells all the stock it just bought at $4.50 per share, earning – in a period of a second or less – a completely risk free penny a share, or $5,000. Practices like this add up to many millions of dollars each trading day, transferring annual sums of more than $1 billion to the coffers of HFT firms.

Spoofing and Layering

220. So-called "spoofing" and "layering" (collectively, "layering") are HFT strategies that use non-bona fide orders, or orders that a trader does not intend to have executed, that are designed to induce others to buy or sell the security at a price not representative of actual supply and demand.

Such practices are designed to and do manipulate the market, and the Exchanges cause and profit from such manipulations.

221. More specifically, HFT firms place bona fide buy (or sell) orders on the Exchanges' trading venues they intend to have executed, and then immediately enter numerous non-bona fide sell (or buy) orders for the sole purpose of attracting interest to their bona fide orders. The placement of these non-bona fide orders is to induce, or trick, other market participants to execute against their initial bona fide orders. Immediately after the execution against the bona fide orders, the HFT firms cancel the open non-bona fide orders. They typically then repeat this strategy on the opposite side of the market to close out the position. Using this strategy, the HFT firms induce other market participants to trade in a particular security by placing and then cancelling layers of orders in that security, creating fluctuations in the NBBO of those securities, increasing order book depth and using the non-bona fide orders to send false signals regarding the actual demand for such securities, which the other market participants misinterpret as reflecting true demand and in this way manipulate the market. HFT firms' orders, which are made possible and encouraged by the Exchanges' conduct, are intended to deceive and do deceive other market participants into buying (or selling) stocks from (or to) the HFT firms at prices that have been artificially raised (or lowered) by HFT firms.

Insider Trading and Payment for Order Flow

222. The Exchanges pay brokerage firms for the privilege of executing the brokerage firms' customers' orders and turning them into trades. This practice is called "payment for order flow." As a result of this process and the conduct described herein, HFT firms obtain proprietary non-public information about the brokerage customers' trading intentions, including intended trade size, price sensitivity and/or margin requirements.

223. HFT firms pay Defendants and alternate trading venues for access to this non-public trade data, and the Exchanges and alternate trading venues in turn pay brokerage firms to have the brokerage firms place their orders on a specific trading venue. Brokerage firms like Charles Schwab Corporation ("Schwab"), TD Ameritrade and E*TRADE all directly or indirectly receive tens of millions of dollars a year in kickback payments from Exchanges and alternate trading venue operators for brokerage firms' client trade data, ***the totality of which is concealed from those clients, including plaintiffs and the Class***. For instance, Schwab, in just 2012 and 2013, pocketed tens of millions of dollars in payments for directing its customers' trades to specific trading venues for which Schwab received payments, even though the payments were concealed from those customers whose trades were ultimately being sold:

> Other revenue – net decreased by $20 million, or 8%, in 2013 compared to 2012 primarily due to a non-recurring gain of $70 million relating to a confidential resolution of a vendor dispute in the second quarter of 2012 and realized gains of $35 million from the sales of securities available for sale in 2012, ***partially offset by an increase in order flow revenue that Schwab began receiving in November 2012***.
>
> Other revenue – net increased by $96 million, or 60%, in 2012 compared to 2011 primarily due to a non-recurring gain of $70 million relating to a confidential resolution of a vendor dispute mentioned above. ***In November 2012, the Company began receiving additional order flow rebates from market venues to which client orders are routed for execution. Order flow revenue increased by $23 million due to this revenue and the inclusion of a full year of optionsXpress' order flow revenue***.[124]

224. The following chart, published by *Traders Magazine* on August 20, 2014, shows the amounts per share paid for order flow by 12 exchanges and/or market participants with dark pools, to five large retail brokers:

[124] Schwab 2013 Annual Report (Form 10-K) at 25 (Feb. 24, 2014), *available at* http://www.aboutschwab.com/investor-relations/annual-report.

	E*Trade	Fidelity	Schwab	Scottrade	TD Ameritrade
Citadel Securities LLC	$0.0011	$0.0005	$0.0009	$0.0010	$0.0022
KCG Americas	$0.0013	$0.0008	$0.0012	$0.0031	$0.0021
UBS Securities		$0.0004	$0.0010		$0.0018
G1X	$0.0014			$0.0005	
Citigroup Global Markets			$0.0010	$0.0010	$0.0018
Two Sigma Securities LLC		$0.0005			$0.0022
Goldman Sachs & Co		$0.0004	$0.0010	`	
Direct Edge Exchange	$0.0034	$0.0030/($0.0025)		$0.0026	$0.0035/($0.0029)
National Financial Services					
NYSE Arca		$0.0021/($0.0026)			
LavaFlow ECN	$0.0032				$0.0035/($0.0030)
NASDAQ OMX	$0.0034			$0.0031	

CNN Money reported on June 17, 2014 (in an article by Matt Egan entitled "'Flash Boys' in the Hot Seat at Hearing") that TD Ameritrade had disclosed the previous week that it had received a total of $236 million in payments for order flow in 2013 (without disclosing the sources of the payments).

225. The combined effect is that HFT firms pay the Exchanges hundreds of millions of dollars annually for early access to material non-public information detailing the investment plans of plaintiffs and members of the Class – information brokerage firms essentially sell to the Exchanges by placing their customers' trades on public exchanges and alternate trading venues and receiving rebates on the backend of those transactions. The Exchanges also pay HFT firms and brokerage

firms to transact on their exchanges in order to increase the trading on each of their exchanges and to increase their portion of the take from the unlawful practices detailed herein.

226. In so doing, and in combination with the other advantages provided to HFT firms by the Exchanges, the Exchanges provide HFT firms the opportunity to purchase and sell securities while in possession of material non-public information in contravention of the federal securities laws, SEC rules and the regulations of the Exchanges.

227. By virtue of this misconduct, the Exchanges have violated §10(b) of the Exchange Act and Rule 10b-5 promulgated thereunder.

Similar to the Exchanges, HFT Firms Also Participated in Dark Pools

228. The fragmentation of financial trading venues and electronic trading that Reg NMS sought to remedy allowed for the creation of alternate trading venues (also known as "dark pools"), which are normally accessed through crossing networks or directly between market participants. Dark pool is trading volume that is not openly available to the public. Historically, dark pools were created so that financial institutions could execute large block trades anonymously and away from public exchanges. In theory, such anonymity prevented adverse price movement that might otherwise occur if the broader market knew that a large investor was seeking to execute a large trade. Most of the nation's largest financial services firms now all have divisions within them that operate alternate trading venues.

229. Given the supposed "dark" nature of alternative venue trading, theoretically neither the size of the trade nor the identity of the market participant is revealed until the trade is filled. This allows, for example, institutional investors wishing to buy or sell large blocks of securities to do so without showing their hand and thus avoid any negative price impact. It also means, however, that institutional investors making large trades in these alternative venues must place an even greater

reliance upon the honesty and integrity of their brokers who operate these venues to act in the institutional investors' best interest.

230. Alternative trading venues are of various types and can execute trades in multiple ways, including throughout the day or at scheduled times. Traders affiliated with the financial institution operating a particular dark pool can also trade in that venue and many of these dark pool operators permit outsiders to gain entry into their venue by selling access or charging commissions to HFT firms.

231. The rise of dark pools has added pressure on the Exchanges to come up with ways to try to minimize lost market share and incentivized them to create products and services for HFT firms that attract order flow and fees. These include (as discussed at length herein) products and services such as co-location, enhanced data feeds and the use of complex order types.

232. Significantly, the use of these products and services by HFT firms is not limited to trading activity on the Exchanges. Indeed, as dark pools increasingly gained market share – there are now as many as 45 different dark pools, and as much as 40% of all equity trades now take place in dark pools[125] – HFT activity has proliferated in these venues.[126]

233. Most all of the major Wall Street banks either run their own dark pool or do so jointly with other market participants. Barclays is no exception.

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[125] *See, e.g.*, Sam Mamudi, *Dark Pools Take Larger Share of Trades Amid SEC Scrutiny* (June 12, 2014), *available at* http://www.bloomberg.com/news/2014-06-12/off-exchange-stock-trading-reaches-two-year-high-in-u-s-.html.

[126] Bradley Hope & Scott Patterson, *Dark Pools Shed Light on Their Operations* (June 4, 2014), *available at* http://online.wsj.com/articles/big-banks-top-share-data-in-new-finra-dark-pool-data-disclosures-1401715882 (noting that "[s]ome have also questioned the role played by high-frequency firms . . . in dark pools").

234. Barclays is a broker/dealer as defined by FINRA and operates a dark pool. It also owns and operates its own algorithmic or HFT desk, which effectively operates like the HFT firms, thereby providing it with the knowledge, motive and opportunity to engage in the manipulative acts and practices as described herein, in both lit markets and dark pools, including its own dark pool. Barclays also permitted HFT firms to gain information and dark pool access to their own customer's "anonymous" orders, but they did so knowing that the HFT firms would engage in many of the same manipulative practices described herein, including "front running," "latency arbitrage" and "trading ahead" among others.

The Regulatory Framework Governing Barclays' Dark Pool

235. Introduced in 1998, Regulation ATS ("Reg ATS") was established to allow ATS, including dark pools,[127] ECNs and broker-dealers, to register as either national securities exchanges, or as broker-dealers and comply with certain additional requirements under Reg ATS. Because trading venues subject to Reg ATS are not required to meet the specifications of an exchange, they are not bound by the market surveillance and other self-regulatory responsibilities of securities exchanges. However, under Reg ATS alternative trading venues such as dark pools must register with the SEC as broker-dealers and must adhere to the business conduct rules applicable to broker-dealers established by FINRA. These obligations are in addition to the requirement that all dark pools "must comply with the antifraud, antimanipulation, and other applicable provisions of the federal securities laws."[128]

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[127] FINRA has defined a dark pool as "an ATS that does not display quotations or subscribers' orders to any person or entity, either internally within an ATS dark pool or externally beyond an ATS dark pool (other than to employees of the ATS)." Order Approving Proposed Rule Change Relating to Publication of Certain Aggregate Daily Trading Volume Data (Mar. 5, 2010), SEC Release No. 34-61658 (Fed. Reg. Vol. 75, No. 48).

[128] Reg ATS, Preliminary Notes.

236. Most notably, Rule 301(b)(10) of Reg ATS requires ATS operators to implement safeguards and procedures for protecting their users' confidential trading information, including "limiting access to the confidential trading information of subscribers" to certain employees of the ATS. Reg ATS also requires, under Rule 301(b)(2), trading venues such as dark pools to disclose certain information about the nature of their operations on Form ATS, and to amend its Form ATS before implementing material changes to its operation or when the Form ATS becomes inaccurate. Two recent SEC enforcement actions under Rule 301(b)(10) and (2) highlight the importance of the requirement that dark pool operators maintain the confidentiality of their customers' trading information.

237. In *In the Matter of Pipeline Trading Systems*, the SEC fined Pipeline Trading Systems ("Pipeline") $1 million and two of its top executives $100,000 each in October 2011 for willful violations of §17(a)(2) of the Securities Act of 1933 and Rules 301(b)(2) and 301(b)(10) of Reg ATS for describing its dark pool to investors as a crossing network that protected institutional investors from predatory trading when in reality the majority of the orders placed on Pipeline's dark pool were filled by Pipeline's parent company. In doing so, ***the SEC stressed that regardless of where a trade takes place, "'one principle remains fundamental – investors are entitled to accurate information as to how their trades are executed***.'"[129] It also emphasized "'***the importance of full disclosure by those who operate alternative trading systems about their operations and the execution services they provide***.'"[130]

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[129] Press Release, *Alternative Trading System Agrees to Settle Chargers That It Failed to Disclose Trading by an Affiliate* (Oct. 24, 2011), *available at* http://www.sec.gov/news/press/2011/2011-220.htm.

[130] *Id*.

238. A year later, in *In the Matter of eBX*, the SEC fined eBX, LLC (a joint venture formed by Credit Suisse, Citi, Merrill Lynch, Lehman Brothers and Fidelity), which operates the alternative trading venue LeveL ATS, $800,000 to resolve findings that it willfully violated Reg ATS Rules 301(b)(10) and (2) by failing to protect customers' confidential trading information and failing to disclose that it allowed an outside entity that built the LeveL ATS dark pool – Lava Trading (a unit of Citigroup) – to make use of that confidential trading information.

239. Dark pools must also comply with the rules applicable to broker-dealers established by FINRA, including Rule 5270, which prohibits front running of block transactions. Subsections (a) and (b) of Rule 5270 of FINRA provide:

> (a) No member or person associated with a member shall cause to be executed an order to buy or sell a security or a related financial instrument when such member or person associated with a member causing such order to be executed has material, non-public market information concerning an imminent block transaction in that security, a related financial instrument or a security underlying the related financial instrument prior to the time information concerning the block transaction has been made publicly available or has otherwise become stale or obsolete.
>
> (b) This Rule applies to orders caused to be executed for any account in which such member or person associated with the member has an interest, any account with respect to which such member or person associated with a member exercises investment discretion, or for accounts of customers or affiliates of the member when the customer or affiliate has been provided such material, non-public market information by the member or any person associated with the member.

Similarly, Rule 5320 of FINRA, adopted September 12, 2011, consolidated previous customer order protection rules and replaced the then-existing FINRA customer limit and market order protection rules, NYSE Rule 92, and other similar exchange rules. Rule 5320 generally prohibits a member firm that accepts and holds a customer order from trading a security on the same side of the market for its own account at a price that would satisfy the customer order, unless it immediately executes the customer order up to the size of and at an equal or better price than it traded for its own account.

240. Institutions that operate dark pools such as Barclays market them to investors as trading venues where investors can trade securities safe from the predations of HFT firms and other predatory investors. Similar to the Exchanges, however, in order to receive the benefit of the enormous trading volume HFT firms generate, Barclays invited HFT firms to trade in its dark pool and gave them incentives to do so – one of those incentives being the presence of investors who would serve as the victims of the HFT firms' predatory trading activities. In other words, while assuring investors that its dark pool had special safeguards to protect them from predatory trading practices, Barclays in fact offered the investors up to the predators as prey, for the operators' own financial benefit.

Barclays' Dark Pool (Barclays LX)

241. Barclays operates its own dark pool called "Barclays LX." Barclays planned and intended to establish its Barclays LX dark pool as the largest private trading venue in the world. In order to do so, it misrepresented Barclays LX as a safe haven to investors – particularly institutional investors such as State-Boston and the other plaintiffs – while enticing predatory traders with monetary and informational incentives and the presence of investors for them to prey on.

242. Eric Schneiderman, NY AG, has conducted an investigation of Barclays and its dark pool, and as a result of his investigation has initiated an action against Barclays in the Supreme Court of the State of New York in the County of New York, *The People of the State of New York v. Barclays Capital, Inc.*, Index No. 451391/2014.

243. As recounted in his complaint against Barclays, among the matters uncovered by Attorney General Schneiderman's investigation was evidence of Barclays' intention to expand its dark pool into the largest in the world. The evidence uncovered by Attorney General Schneiderman can be summarized as follows:

(a) In the years following the creation of Barclays LX, Barclays own marketing materials reflect that, as of late 2011, Barclays LX was essentially in the middle of the pack of the several dark pools operating in the U.S., measured by average daily volume of share traded.

(b) "Growing its dark pool to become the largest dark pool in the United States was a principal goal of Barclays' Equities Electronic Trading division [the division that houses the dark pool], and was central to driving profits for the division. Speaking in 2013, the Head of Barclays' Equities Electronic Trading division . . . recalled that '[w]e laid out a plan two years ago to overhaul our offering end to end, gain market share and provide clients with the best electronic trading tools in the market.'"

(c) In an internal document found by Attorney General Schneiderman, "Barclays instructed its employees that '[a]ggregating [order] flow into Barclays LX has strategic and economic value for the entire Equities business,' including the savings Barclays would realize by not having to pay commissions to execute trades on other venues; fees gained from firms paying to trade in the dark pool; and the 'internal trading P&L [profit and loss] opportunities' available to internal Barclays trading desks that trade in the dark pool against brokerage client order flow. Barclays also identified the 'market share value of attracting more [order] flow' into its dark pool." Internal Barclays documents valued this growth opportunity at between $37 and $50 million per year.

(d) A former senior Director in Barclays' Equities Electronic Trading recalled to Attorney General Schneiderman's investigators that, "'[a]t every sales meeting or product meeting, the main goal they were talking about was to grow the size of [Barclays' dark pool] to become the largest pool. All the product team's goals, which would also include their compensation[,] were tied to making the pool bigger. [Barclays had] great incentive at all costs to make the pool bigger.'"

244. In order for Barclays' dark pool to expand in accordance with Barclays' plan, Barclays would have to increase the number of trades it executed in the dark pool acting as a broker. This would require Barclays to direct a larger number of its brokerage customers' orders into the dark pool. In order to create liquidity in the dark pool sufficient to insure that these orders could be filled, Barclays also sought to attract HFT firms into its dark pool.

Barclays Misrepresented the Way It Operated Its Dark Pool to Lure in Investors – Particularly Institutional Investors

245. In order to encourage its brokerage customers to trade in its dark pool, Barclays made a series of misrepresentations meant to convince them that the dark pool was safe place for them to trade, insulated from the kinds of aggressive or predatory HFT practices that are associated with other trading venues, including particularly the public exchanges.

246. Barclays' efforts to convince clients, potential clients and other market participants of the safety of trading in its dark pool relied, in large part, on a service Barclays calls "Liquidity Profiling." This Liquidity Profiling service purportedly allowed Barclays to monitor the "toxicity" of the trading behavior taking place in its dark pool and, as Barclays claimed, "hold [traders] accountable" if their trading was "aggressive," "predatory" or "toxic." First marketed in 2011, Liquidity Profiling has been represented by Barclays to work by grouping the traders in its dark pool into six categories based on their trading behavior, ranked 0 to 5. In the "0" and "1" categories are those traders conducting the most aggressive, predatory trading activity; in the "4" and "5" categories are those traders conducting the safest, most passive, long-term investor-like trading activity. Participants in Barclays' dark pool were told that they could disable their orders from interacting with traders falling into any of the various categories – in particular, clients could opt-out of trading with traders that were identified by the Liquidity Profiling service as engaging in

potentially harmful HFT strategies. "Barclays represented Liquidity Profiling as a 'sophisticated surveillance framework, helping to protect you from predatory trading . . . our team proactively monitors the behavior of individual participants and quickly responds with corrective action when adverse behavior is detected.' Liquidity Profiling, according to Barclays, 'improve[s] the overall quality of [Barclays' dark pool because] High-alpha takers [*i.e.*, high frequency traders] can be held accountable . . . transparency means that aggressive flows will be quickly identified by the Barclays ATS team.'"

247. Barclays has represented in various industry publications, including, among others, *Traders Magazine, Markets Media*, and *Hedge Week*, that "'Liquidity Profiling analyzes each interaction in the dark pool, allowing us to monitor the behavior of individual participants . . . providing clients with transparency about the nature of counterparties in the dark pool and how the control framework works.' 'By identifying aggressive behavior, we can take corrective action with clients who exhibit opportunistic behavior in the pool.' Barclays stated that it would 'refuse a client access' to the dark pool if they engaged in aggressive or 'toxic' high frequency trading strategies."

248. As one part of its marketing effort, Barclays created and disseminated analyses of the landscape of trading in its dark pool, purporting to show how clients were protected from aggressive HFT activity and underscoring Barclays' commitment to transparency. One such analysis was contained in a widely-disseminated document intended for institutional clients titled *Liquidity Profiling – Protecting You in the Dark*. That document included an analysis purporting to represent the "liquidity landscape" of Barclays' dark pool. The analysis showed that very little of the trading in Barclays' dark pool is "aggressive." As represented by the analysis, most of the trading in the dark pool is "passive" – even most of the trading activity of HFT firms (denominated "electronic liquidity

providers" in Barclays' analysis). In its entirety, the analysis represented that Barclays' dark pool is a safe venue with few aggressive traders.

249. As part of its effort to convince clients that it protected them from aggressive HFT, Barclays issued marketing material that included representations purporting to show the amount of aggressive trading activity in its dark pool. In marketing materials released in early 2013, Barclays claimed that the trading in its dark pool was "48% passive," "43% neutral" and "9% aggressive." In March 2014, Barclays issued revised marketing materials that were even more favorable for Barclays, asserting that its dark pool was comprised of 36% passive activity, 58% neutral activity and 6% aggressive activity. This marketing material was in use until at least April 2014.

250. One of the services offered by Barclays as a broker is to direct, or route, its clients' orders for securities to the various exchanges on which those securities trade. Barclays markets its order routing capability as an essential part of its electronic trading business. Barclays operates its electronic order routing within the Equities Electronic Trading division, the same division in which Barclays' dark pool is operated. "In marketing materials, Barclays represented that its routing system 'uses unique market intelligence, predictive liquidity models, and high-performance technology to maximize fill rates while reducing information leakage.' According to Barclays, it 'synthesizes historical and real-time data and executions to predict liquidity,' using '[p]robability of fill models for both aggressive and passive trading.' Barclays represented to investors that, when routing client orders to the various trading venues in the United States, Barclays ranks trading venues 'dynamically,' using 'parallel routing to all venues based on probability of fill.' Barclays claimed that it '[t]reat[s] all venues the same based on execution quality.' In short, Barclays claimed that it routed client orders in a manner that was not biased in favor of any particular trading venue."

251. "In April 2014, in response to media coverage about the prevalence of high frequency trading in the U.S. markets, Barclays distributed a special communication to clients seeking to assuage worries about Barclays' order routing and dark pool practices. That communication stated, in relevant part, that Barclays 'handle[s] orders in the best interests of our clients. Order routing decisions are primarily based on the probability of fill; venue ranking is data-driven and our router dynamically learns with experience.'"

252. In February 2014, Barclays' dark pool was named the "Best Dark Pool" by *Markets Media*, an industry publication. "In commenting on the award in marketing material labeled 'for institutional investors only,' Barclays' Head of Equities Electronic Trading attributed [Barclays LX's] growth to Barclays' commitment to being transparent with its institutional investor clients regarding how Barclays operates, how Barclays routes client orders, and the kinds of counterparties traders can expect to deal with when trading in the dark pool. Transparency was 'the one issue that we really took a stance on . . . . We always come back to transparency as the key driver – letting [clients] know how we're interacting with their flow and what type of flow they're interacting with.' 'Transparency on multiple levels is a selling point for our entire equities franchise.'"

Barclays Actually Operated Its Dark Pool for Its Own Benefit and that of HFT Firms at the Expense of Investors

253. Having misrepresented to investors that its dark pool was operated in a fair and transparent manner, with special safeguards in place to protect investors against predatory trading practices rife on public exchanges, Barclays in fact operated its dark pool for the benefit of HFT firms, in order to enjoy the benefits of the enormous volume of trading their participation in the dark pool would generate.

254. Whereas Barclays, as described above, induced investors to trade in its dark pool by telling them there was very little (about 6%) "aggressive" trading activity there, Attorney General Schneiderman's investigation disclosed that in March 2014, Barclays was engaged in discussions with a prominent HFT firm wherein Barclays itself categorized approximately 25% percent of the orders taking liquidity in its dark pool as aggressive. In an internal document collecting the information received from Barclays, that firm summarized the data provided to it by Barclays, and concluded that the trading activity in Barclays' dark pool was "50% good, 50% aggressive."

Barclays' "Liquidity Profiling" Does Not Protect Investors from Predatory HFT Trading Tactics

255. Attorney General Schneiderman's investigation disclosed that Barclays does not perform its highly touted "Liquidity Profiling," described above, in a manner that protects investors from predatory trading tactics employed by HFT:

(a) Despite Barclays' claim that it uses Liquidity Profiling to police its dark pool, and will "refuse a client access" if that trader's activity becomes toxic, Barclays has in fact never prohibited a single firm from participating in its dark pool, no matter how toxic or predatory its activity was determined to be. Indeed, Barclays has known about the high levels of toxic activity occurring in its dark pool – including latency arbitrage – and has been aware of which firms are responsible, yet Barclays has refused to stop it.

(b) Barclays has not regularly updated the ratings of traders monitored by the Liquidity Profiling service, so that traders have often been categorized in ways that did not reflect their aggressive trading activity in Barclays' dark pool. Failing to properly rate traders gives Barclays' clients a false understanding of their exposure to predatory HFT activity.

(c) Barclays has applied "overrides" to a number of traders in the dark pool, assigning safe Liquidity Profiling ratings to certain traders that should have been rated as toxic.

Even worse, these overrides are often provided to Barclays' own internal trading desks (including HFT-like high-speed high-order desks) and to HFT firms for whom Barclays acts as broker.

(d) Although not disclosed in Barclays' marketing materials, Barclays' Liquidity Profiling service is not applied to a significant portion of the trading activity in Barclays' dark pool. It is not applied to client orders that are routed to the dark pool via Barclays' proprietary algorithms (*see* below). Worse, Liquidity Profiling only protects traders when they ***provide*** liquidity (*i.e.*, post an order to the dark pool), but not when they ***take*** liquidity (*i.e.*, accept a posted order). As described in detail above, HFT tactics tend to put HFT firms on the "make" rather than the "take" side of transactions – such that "Liquidity Profiling" was frequently not applied for the benefit of the side of the transaction it was purporting to protect.

Barclays' Routing System Favors Barclays' Dark Pool Over Other Trading Venues

256. While, as described above, Barclays induced investors to use its brokerage services by representing that it "'treat[s] all venues the same based on execution quality,'" Attorney General Schneiderman's investigation found that:

(a) Barclays essentially routed all client orders to Barclays' dark pool first, regardless of the probability that a given trade would execute there, would execute at a favorable price or would cause information leakage.

(b) After having been routed to Barclays' dark pool, unfilled orders were then routed disproportionately to other trading venues based on where Barclays had been most profitable over the previous 20 days.

(c) While Barclays lied about its routing practices to investors, Barclays revealed its true order routing preferences to a select group of HFT firms in order to induce them to trade in Barclays' dark pool. "In March 2014, Barclays told one such firm that, apart from minor exceptions,

'everything goes to [Barclays' own dark pool] first.' Barclays told another high frequency trading firm that approximately 90% of all orders 'are first directed into the dark pool.'"

Rather than Protecting Investors from HFT Firms in Its Dark Pool, Barclays Actively Courted HFT Firms

257. While, as described above, Barclays told investors it excluded predatory "aggressive" traders such as HFT firms from its dark pool, Attorney General Schneiderman's investigation disclosed that Barclays in actuality actively courted HFT firms for the dark pool, in order to increase trading activity therein:

(a) On numerous occasions since 2011, Barclays disclosed detailed, sensitive information to major HFT firms in order to encourage those firms to increase their activity in Barclays' dark pool. That information, which was not generally supplied to other clients, included data that helped those firms maximize the effectiveness of their aggressive trading strategies in the dark pool, such as:

(i) The routing logic of Barclays' order router, including the percentage of Barclays' internal order flow that was first directed into its own dark pool;

(ii) A breakdown of trades executed in the dark pool by participant type (*e.g.*, percentage of orders from institutional investors, high frequency traders, etc.); and

(iii) A breakdown of trades executed in the dark pool by "toxicity" level.

(b) Barclays has taken a number of additional actions to invite high frequency traders to trade, and trade aggressively, in its dark pool:

(i) Barclays charges HFT firms little or nothing to trade in its dark pool. For example, since at least 2011, the two largest participants in Barclays' dark pool – both of which are HFT firms – were charged nothing per share when posting orders, and between $0.0002 and $0.0005 per share when taking available orders;

(ii) Barclays allows high frequency traders to "cross-connect" to its servers. Several dozen of the most well-known and sophisticated high HFT firms in the world are or recently have been cross-connected with Barclays, allowing them to take advantage of Barclays' non-HFT clients, by getting a speed advantage over those slower-moving counterparties; and

(iii) While Barclays has represented that it used ultra-fast "direct data feeds" to process market price and trade data in order to deter latency arbitrage by high frequency traders in its dark pool, Barclays in fact processed that market data so slowly as to ***allow*** latency arbitrage. Internal analyses conducted by Barclays confirmed that Barclays' slow processing of market data allowed high frequency traders to engage in such predatory activity.

Defendants' Scheme and Fraudulent Course of Business Has Led to Governmental Investigations and Penalties

258. On March 31, 2014 the *Wall Street Journal* reported that the FBI is investigating HFT-related practices, including whether HFT firms are using non-public information to front run orders placed by other investors or are placing groups of orders and then cancelling them to create the false appearance of market activity. A few days later, on April 4, 2014, U.S. Attorney General Eric Holder confirmed that the DOJ was investigating whether HFT practices violate insider trading laws. SEC Enforcement Director Andrew Ceresney further stated that "'the Enforcement Division [of the SEC] has a number of ongoing investigations into HFT and automated trading to ferret out possible abuses such as market manipulation, spoofing and related issues.'"[131] The acting chairman of the CFTC similarly indicated that the agency is reviewing HFT practices to see if they constitute

[131] Joseph De Simone, et al., *Expect Increasing Scrutiny Of High-Frequency Trading* (June 4, 2014), *available at* http://www.law360.com/securities/articles/544458/expect-increasing-scrutiny-of-high-frequency-trading.

"spoofing" or other manipulative conduct that could violate the Commodities Exchange Act or CFTC rules.

259. Prior to the regulators' recent focus on HFT practices, they had been investigating the Exchanges' related practices of providing co-location, data feeds and complex order types to HFT firms for years. In many instances, regulators instituted enforcement actions and/or issued significant fines and penalties in connection with their investigations.

260. For example, following an investigation by the SEC Enforcement Division's Market Abuse Unit, in September 2012, the SEC found that defendant NYSE and its parent NYSE Euronext violated Reg NMS over an extended period of time beginning in 2008 by sending data through two of its proprietary feeds before sending data to the consolidated feeds. NYSE and NYSE Euronext agreed to a $5 million penalty and significant undertakings to settle the charges. This marked the first-ever financial penalty by the SEC against an exchange.

261. Less than two years later, there would be a total of six. One such subsequent penalty came on May 1, 2014, when the SEC imposed penalties on NYSE for numerous violations, including the manner in which it offered co-location services. Specifically, according to the SEC, NYSE provided co-location services "'without an exchange rule in effect that permitted and governed the provision of such services on a fair and equitable basis.'"[132] Defendant ARCA, NYSE MKT and defendant NYSE's affiliated routing broker Archipelago Securities agreed to pay a $4.5 million penalty.

262. In August 2013, defendant CHX agreed to pay $300,000 to settle regulatory claims that it failed to comply with rules designed to ensure that brokers secure the best possible prices

[132] Sam Mamudi, *SEC Fires First Shots Since 'Flash Boys' With NYSE Fine* (May 2, 2014), *available at* http://www.bloomberg.com/news/2014-05-01/sec-says-nyse-rules-were-shoddy-as-exchange-fined-4-5-million.html.

when trading securities on its exchange on behalf of investors. The commonwealth of Massachusetts also sent a survey to over 1,000 investment specialists about HFT practices, including the use of co-location and direct data feed services provided by exchanges.

263. Additionally, revelations regarding the Exchanges' complex order types have spawned a "sweeping SEC inquiry into the activities of the sophisticated trading firms and stock-exchange operators – including Nasdaq OMX Group Inc. [the parent company of defendants NASDAQ and BX], NYSE Euronext [which operates defendant NYSE], Direct Edge Holdings LLC and BATS Global Markets."[133] The SEC announced in 2013 that it is investigating "how order types are proposed, implemented, and monitored post-implementation."[134] Most recently, in conjunction with its proposal to address certain aspects of HFT, the SEC revealed that it was working with the exchanges to revamp their complex order types. In related comments, Chair of the SEC White stated:

> Another source of broker conflicts is the large number of complex order types offered by the exchanges, which have been a recent focus of the SEC's examination program. The majority of these order types are designed to deal with the maker-taker fee model and the SEC's rule against locking quotations.
>
> I am asking the exchanges to conduct a comprehensive review of their order types and how they operate in practice. As part of this review, I expect that the exchanges will consider appropriate rule changes to help clarify the nature of their order types and how they interact with each other, and how they support fair, orderly, and efficient markets.[135]

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[133] Scott Patterson & Jenny Strasburg, *For Superfast Stock Traders, a Way To Jump Ahead in Line* (Sept. 19, 2012), *available at* http://online.wsj.com/news/articles/SB10000872396390443989 20457-7599243693561670.

[134] National Exam Program, SEC, Examination Priorities for 2013 at 9 (Feb. 21, 2013), *available at* http://www.sec.gov/about/offices/ocie/national-examination-program-priorities-2013.pdf.

[135] SEC Speech, Enhancing Our Equity Market Structure (June 5, 2014), *available at* http://www.sec.gov/News/Speech/Detail/Speech/1370542004312#.VAXwmaPn93w.

264. Chair White's comments were made in connection with the SEC's announcement of a set of initiatives to address HFT, exchange practices and dark pools. As part of the initiatives, the agency "will look into concerns about the resiliency and fairness of market data feeds . . . will work with stock exchanges to minimize speed differences between the public data feed and high-speed direct feeds typically used by high-frequency firms . . . [and] will examine whether exchanges can de-emphasize speed as a key to successful trading."[136]

265. Also in early August 2014, it was reported that BATS was in advanced talks with the SEC to settle allegations that it and Direct Edge gave unfair advantages to high-speed traders, including offering order types that gave HFT firms an edge over investors in their markets. The expected settlement is reportedly the major reason BATS recently forced out its former president O'Brien, who joined BATS from Direct Edge as part of the companies' merger earlier this year.

266. On June 17, 2014, the Senate's Permanent Subcommittee on Investigations held a hearing to investigate HFT, including the possible conflicts between rebates paid by exchanges to brokers and brokers' obligations to honor their clients' trades. At the hearing, representatives of defendants NYSE and BATS admitted that "rebate fees and payments to brokers for orders should face greater regulatory scrutiny."[137] Thomas Farley, president of NYSE Group, stated that "'[w]e are seeking support for the elimination of maker-taker pricing and the use of rebates . . . . Broad adoption of this policy would reduce the conflicts inherent in such pricing.'"[138] Similarly, ICE CEO

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[136] Scott Patterson, *SEC Chairman Targets Dark Pools, High-Speed Trading* (June 6, 2014), *available at* http://online.wsj.com/articles/sec-chairman-unveils-sweeping-proposals-to-improve-markets-1401986097.

[137] Silla Brush & Cheyenne Hopkins, *High-Frequency Trading Rebates Under Scrutiny in Senate* (June 17, 2014), *available at* http://www.bloomberg.com/news/2014-06-17/high-speed-trading-fees-under-scrutiny-by-u-s-senators.html.

[138] *Id.*

Jeffrey Sprecher agreed that the maker-taker model creates conflicts of interests for brokers seeking rebates instead of putting their clients' needs first.

267. Dark pools have also come under regulatory scrutiny recently. On May 2, 2014 it was reported that the NY AG was expected to issue subpoenas to exchanges and alternative trading platforms to gather data on the manner in which high frequency proprietary trading firms obtain information. And on June 9, 2014, the SEC announced that it is investigating a number of large dark pools, for, among other things, whether the trading systems are properly disclosing to clients how they operate, treating all investors fairly and protecting confidential client information. Then on June 25, 2014, as alleged above, NY AG Eric Schneiderman announced a lawsuit against the international bank Barclays, arising from the operation of Barclays' dark pool, Barclays LX, and other aspects of its electronic trading division.

268. Following the Barclays complaint, regulators have announced investigations into the conduct of other dark pool operators and in at least one instance have issued a fine, and some operators have themselves disclosed they are subject to investigation. For example, UBS disclosed at the end of July that it is:

> UBS is responding to inquiries concerning the operation of UBS's alternative trading system (ATS) (also referred to as a dark pool) and its securities order routing and execution practices from various authorities, including the SEC, the New York Attorney General and Finra, who reportedly are pursuing similar investigations industry-wide.
>
> These inquiries include an SEC investigation that began in early 2012 concerning features of UBS's ATS, including certain order types and disclosure practices that were discontinued two years ago. UBS is co-operating in these matters.[139]

[139] FastFT, *UBS says 'responding to inquiries' on dark pools* (July 29, 2014), *available at* http://www.ft.com/intl/cms/s/0/304d0ff4-16e6-11e4-8617-00144feabdc0.html#axzz3BjRaMM3I.

At the same time, Deutsche Bank and Credit Suisse disclosed that they are the targets of regulatory investigations into their HFT and dark pool trading venues. Morgan Stanley and Goldman Sachs are also facing scrutiny for the operation of their dark pools, MS Pool and Sigma X, respectively, including a probe by Attorney General Schneiderman. Goldman Sachs disclosed that it "was being investigated for its U.S. alternative trading system and for the potential misuse and circulation of non-public information related to its corporate developments."[140]

The Exchanges' Conduct Is Not Shielded by SRO Immunity

269. Historically, national securities exchanges operated as not-for-profit entities. Defendants have more recently converted to or, in the case of the newer exchanges, have always been for-profit entities. The incentives and functions of the member-owned cooperative exchange of 1934 bear little resemblance to those of the for-profit exchanges of today. With the shift in status to for-profit companies that answer to shareholder desires for profits, the Exchanges developed a business model to capitalize on their control over market data and trading information. This shift in focus has resulted in quarterly earnings targets and revenues earned from co-location and direct data feed services, and from increased trading volume generated by catering to the needs of HFT and brokerage firms, including offering hundreds of new complex order types and rebates for order flow. These activities do no not function to protect investors. They cater to a select group of traders who utilize sensitive trading information at faster speeds to prey on investors. As such, they create asymmetrics and operate for Defendants' corporate benefit.

270. The Exchanges traditionally marketed and sold access to their markets to customers on a non-discriminatory basis. With the rise of co-location and direct data feeds, the Exchanges

[140] Tanya Agrawal, *Regulators Are Reportedly Looking Into Goldman Sachs' Dark Pools* (Aug. 7, 2014), *available at* http://www.businessinsider.com/r-goldman-sachs-says-alternative-trading-system-being-investigated-2014-07.

have sold access to their data to sophisticated HFT firms who pay significant sums of money for an advanced look at trading data. The Exchanges' sale of advanced access to market data has nothing to do with their former roles as market regulators and everything to do with their private business interests, such as efforts to increase trading volume and profits. Moreover, the Exchanges' offering of complex order types to HFT firms amounts to selective disclosure of information that creates trading advantages for a select group. As the Securities Industry and Financial Markets Association recently acknowledged, exchanges have focused their efforts on the "part of their business that earns profits to maximize the returns for their shareholders, and, in some cases, minimized their actual performance of regulatory functions."[141]

271. As recognized by United States District Judge Robert W. Sweet in a recent opinion in *In re Facebook, Inc., IPO & Sec. & Derivative Litig.*, 986 F. Supp. 2d 428, 453 (S.D.N.Y. 2013), "[a]s exchanges have evolved into for-profit enterprises, an irreconcilable conflict has arisen, rendering independence unattainable in the context of an exchange regulating its own, for-profit business conduct."[142] Allowing Defendants to be immune from activities designed to increase order flow and trading volume from HFT firms would allow unrestrained motives for profit to go unchecked.

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[141] Comment Letter from the Securities Industry and Financial Markets Association to SEC Chair Mary Jo White at 4 (July 31, 2013), *available at* http://www.sifma.org/comment-letters/2013/sifma-submits-comments-to-the-sec-requesting-a-review-of-the-self-regulatory-structure-of-securities-markets/.

[142] And NASDAQ has admitted as much in its own public filings. *See* ¶81 *supra*.

COUNT I

Violation of §10(b) of the Exchange Act and Rule 10b-5 Against All Defendants

272. Plaintiffs repeat and reallege each and every allegation contained in the above paragraphs as if fully set forth herein.

273. During the Class Period, Defendants engaged in illegal acts and practices, including contrivances and manipulations, and participated in a fraudulent scheme and wrongful course of business, which was intended to and did operate as a fraud or deceit on the investing public, including plaintiffs and other members of the Class. Defendants' unlawful conduct caused plaintiffs and Class members to purchase and sell shares at distorted and manipulated prices, and in doing so damaged plaintiffs and the Class.

274. Defendants: (i) employed devices, schemes and artifices to defraud; and (ii) engaged in acts, practices and a course of business which operated as a fraud and deceit upon the purchasers and sellers of shares on the Exchanges and in Barclays' dark pool, including plaintiffs and Class members. In an effort to enrich themselves through these manipulative tactics and illicit kickback payments, Defendants wrongfully disclosed to other market participants material non-public information about plaintiffs' and the Class's further intentions to trade (both as to amount and price); and engaged in various fraudulent conduct and/or participated in such conduct by others as detailed herein, including electronic front running, latency arbitrage, rebate arbitrage, spoofing, layering and insider trading; and otherwise distorted and manipulated the pricing of plaintiffs' and the Class's securities in violation of §10(b) of the Exchange Act and Rule 10b-5. All Defendants are sued as primary participants in the wrongful and illegal conduct and scheme charged herein, as each engaged in the manipulative acts and deceptive practices detailed herein.

275. Defendants had actual knowledge of the illegal practices and insider trading set forth herein. Defendants' scheme was designed to and did defraud plaintiffs and the Class by distorting the prices they paid for shares of stock in the markets.

276. As a result of Defendants' misconduct, the trading prices of the securities purchased or sold on the Exchanges and in Barclays' dark pool by public investors were artificially manipulated and distorted during the Class Period. In ignorance of the true facts and the illegal practices of Defendants during the Class Period, plaintiffs and other Class members purchased and/or sold shares at artificially distorted and manipulated prices and were damaged thereby.

277. Had plaintiffs and other Class members known of the truth concerning Defendants' illegal practices, they would not have purchased or sold stock on these exchanges and in Barclays' dark pool at the artificially distorted and manipulated prices which they paid. Plaintiffs and members of the Class that traded during the Class Period relied on the integrity of the market in the securities listed and traded on the public exchanges.

278. By virtue of the foregoing, Defendants have violated §10(b) of the Exchange Act and Rule 10b-5. As a direct and proximate result of the wrongful conduct by Defendants, plaintiffs and members of the Class suffered damages in connection with their purchases and/or sales of stock during the Class Period.

COUNT II

Violation of §6(b) of the Exchange Act
Against the Exchanges

279. Plaintiffs repeat and reallege each and every allegation contained in the above paragraphs as if fully set forth herein.

280. Section 6(a) and (b) of the Exchange Act, 15 U.S.C. §78f(a)-(b), entitled "National securities exchanges," states:

(a) . . . An exchange may be registered as a national securities exchange under the terms and conditions hereinafter provided in this section . . . by filing with the Commission an application for registration in such form as the Commission, by rule, may prescribe containing the rules of the exchange and such other information and documents as the Commission, by rule, may prescribe as necessary or appropriate in the public interest or for the protection of investors.

(b) . . . An exchange shall not be registered as a national securities exchange unless the Commission determines that –

(1) Such exchange is so organized and has the capacity to be able to carry out the purposes of this title . . . and to comply, and . . . to enforce compliance by its members and persons associated with its members, with the provisions of this title . . . , the rules and regulations thereunder, and the rules of the exchange.

* * *

(4) The rules of the exchange provide for the equitable allocation of reasonable dues, fees, and other charges among its members and issuers and other persons using its facilities.

(5) The rules of the exchange are designed to prevent fraudulent and manipulative acts and practices, to promote just and equitable principles of trade, to foster cooperation and coordination with persons engaged in regulating, clearing, settling, processing information with respect to, and facilitating transactions in securities, to remove impediments to and perfect the mechanism of a free and open market and a national market system, and, in general, to protect investors and the public interest . . . .

(6) The rules of the exchange provide that . . . its members and persons associated with its members shall be appropriately disciplined for violation of the provisions of this title . . . , the rules or regulations thereunder, or the rules of the exchange, by expulsion, suspension, limitation of activities, functions, and operations, fine, censure, being suspended or barred from being associated with a member, or any other fitting sanction.

281. The Exchanges are national securities exchanges registered with the SEC under Section 6 of the Exchange Act. The Exchanges are obligated to operate their securities exchanges in the public interest and for the protection of investors, assuring that the exchange is operated in a fair and equitable manner. Acting deliberately, fraudulently and in bad faith, the Exchanges, both before and during the Class Period, failed to discharge these obligations (and violated them) as set forth in this Complaint.

282. The conduct of the Exchanges complained of results not from ordinary or even gross negligence but rather from their knowing and active furtherance and participation in the scheme and wrongful course of business alleged herein, which conduct was undertaken for the Exchanges' own economic gain.

283. Section 6 of the Exchange Act and Defendants' own rules and procedures adopted pursuant thereto were specifically enacted and promulgated to protect public investors who trade on these public exchanges. Such individuals and institutions – the members of the Class – are the direct intended beneficiaries of the prohibitory and protective rules embodied in §6 of the Exchange Act and the rules and regulations promulgated thereunder by the SEC and various stock exchanges. The volume of trading on these public exchanges reflects the collective reliance of the members of the Class on the existence of the Exchange Act, its prohibitory and protective provisions and the rules and regulations of the Exchanges pursuant thereto. The trading volume on these exchanges reflects the misplaced reliance of public investors on the integrity of trading in the markets maintained by the Exchanges and their false assurances that their markets were fair and un-manipulated by HFT firms.

284. As a direct and proximate result of the Exchanges' deliberate and bad faith violations of §6 of the Exchange Act, the members of the Class have been damaged, while the Defendants have improperly profited and been enriched.

PRAYER FOR RELIEF

WHEREFORE, plaintiffs pray for relief and judgment, as follows:

A. Determining that this action is a proper class action, appointing Lead Plaintiffs as Class Representatives and approving plaintiffs' selection of Robbins Geller Rudman & Dowd LLP, Motley Rice LLC and Labaton Sucharow LLP as class counsel, under Rule 23 of the Federal Rules of Civil Procedure;

B. Awarding compensatory damages, including interest, in favor of plaintiffs and the other members of the Class against 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 equitable restitution of investors' monies of which they were defrauded and disgorgement and/or the imposition of a constructive trust on Defendants' ill-gotten gains;

D. Awarding forfeiture in favor of the Class against Defendants for all illicit fees, commissions and any other compensation paid by plaintiffs and Class members;

E. Awarding equitable and/or injunctive relief in favor of the Class against Defendants and their counsel, agents and all persons acting under, in concert with, or for them, including: (i) an accounting of and the imposition of a constructive trust and/or an asset freeze on Defendants' illicit profits from the conduct detailed herein; (ii) prohibiting Defendants from structuring their venues to encourage, and permitting high frequency traders to engage in electronic front-running, rebate arbitrage, latency arbitrage, spamming, spoofing, quote spamming and/or contemporaneous trading; (iii) directing Defendants to ensure that customer bid and offer prices are provided to all investors and trading entities at the same time; (iv) prohibiting Defendants from providing a financial incentive in the form of rebates or otherwise to HFT and brokerage firms for placing orders and bids on those exchanges; and/or (v) prohibiting Defendants from providing an informational advantage to any HFT firm via paid-for reduced latency services.

F. Awarding plaintiffs and the Class their reasonable costs and expenses incurred in this action, including counsel fees and expert fees; and

G. Such other and further relief as the Court may deem just and proper.

JURY DEMAND

Plaintiffs hereby demand a trial by jury.

DATED: September 2, 2014

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CERTIFICATE OF SERVICE

I hereby certify that on September 2, 2014, I authorized the electronic filing of the foregoing with the Clerk of the Court using the CM/ECF system which will send notification of such filing to the e-mail addresses denoted on the attached Electronic Mail Notice List, and I hereby certify that I caused to be mailed the foregoing document or paper via the United States Postal Service to the non-CM/ECF participants indicated on the attached Manual Notice List.

I certify under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. Executed on September 2, 2014.

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