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HIGH-FREQUENCY TRADERS: HOW THE SEC CAN TIGHTEN REGULATION WHILE MAINTAINING THE BENEFITS OF A COMPETITIVE MARKET

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In 2010, the so-called "Flash Crash" of the U.S. stock market brought the overlooked practice of high-frequency trading into the spotlight for the first time. Initial efforts to study and curtail the practice, including a transaction fee pilot attempted by the Securities and Exchange Commission in 2018, have been unsuccessful. After outlining the substantial benefits market participants gain from the activities of high-frequency traders, this article argues that there are three potent and readily available tools for limiting the harmful excesses of those traders: (i) aggressively bring market manipulation charges under § 9(a)(2) of the Exchange Act against those who attempt to manipulate the market; (ii) to bring enforcement actions under § 78f(b)(5) of the Exchange Act against national exchanges that fail to "protect investors and the public interest" by giving special benefits to those traders; and (iii) utilize § 19 of the Exchange Act to oversee exchange colocation rules designed to benefit those traders which do not reflect fair access and transparency. With these proposals implemented, markets will continue to function at historically low costs for all investors with the aid of healthy competition between high-frequency traders.

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INTRODUCTION

High-frequency trading is the use of "extraordinarily high-speed and sophisticated computer programs for generating, routing, and executing orders" by professional traders in the financial markets.[1] Until 2010, high-frequency trading was a topic reserved for industry insiders and financial news sources. Although the practice has existed for decades, one high-profile event "took high-frequency trading from the edges of public consciousness to being front page news."[2]

At 2:41 PM on May 6, 2010, the U.S. stock market went into a sudden and sharp decline.[3] The S&P 500 lost $500 billion in market capitalization in the next four minutes.[4] The broad indices fell ten percent in just a couple of minutes.[5] Just as quickly, however, the market recovered.[6] No one seemed to know what caused the breath-taking event that would become known as the "Flash Crash."[7] Market professionals "feared the occurrence of a cataclysmic event of which they were not yet aware."[8] Yet there was no terrorist attack, natural disaster, or other event. The unparalleled event seemed inexplicable.

The next day, Nasdaq CEO Bob Greifeld and New York Stock Exchange ("NYSE") CEO Duncan Neiderauer were still unable to explain why the Flash Crash had occurred.[9] The Securities and Exchange Commission

1. Concept Release on Equity Market Structure, 75 Fed. Reg. 3,594, 3,606 (Jan. 21, 2010).

2. Charles R. Korsmo, *High-Frequency Trading: A Regulatory Strategy*, 48 U. RICH. L. REV. 523, 523 (2014).

3. *Id*. at 524.

4. *Id.*

5. *See id.; One Big, Bad Trade*, ECONOMIST (Oct. 10, 2010), http://www.economist.com/blogs/newsbook/2010/10/what_caused_flash_crash.

6. Korsmo, *supra* note 2, at 525.

7. *Id*. at 527.

8. CFTC & SEC, FINDINGS REGARDING THE MARKET EVENTS OF MAY 6, 2010 4–5 (2010) https://www.sec.gov/files/marketevents-report.pdf [hereinafter JOINT REPORT].

9. *See* SCOTT PATTERSON, DARK POOLS: THE RISE OF THE MACHINE TRADERS AND THE RIGGING OF THE US STOCK MARKET 9 (2012) [hereinafter PATTERSON, DARK

("SEC") Chairwoman Mary Schapiro called the exchange chairmen and other industry insiders to Washington, D.C. two days after the Flash Crash to discuss the events and its causes.[10] What Schapiro learned in that meeting led the SEC and Commodity Futures Trading Commission ("CFTC") to jointly investigate the activities of high-frequency traders.[11] It also spurred multiple rounds of congressional hearings, a couple of best-selling books, and countless articles about high-frequency trading.

Several best-selling authors began to investigate high-frequency trading after the Flash Crash. Michael Lewis' *Flash Boys*, released in 2014, became a New York Times #1 best-seller and sparked a mainstream debate.[12] Michael Lewis argued that the three ways in which high-frequency traders make money are "riskless, larcenous, and legal."[13] Ultimately, Lewis concluded that the U.S. stock market is "rigged" because of high-frequency traders' ability to "front run" the orders of "ordinary investors."[14] Wall Street Journal columnist Scott Patterson, also an author of New York Times best-sellers, produced a more even-handed and thoroughly-cited historical narrative, but ultimately agreed that high-frequency traders had rigged the stock market.[15]

As the Flash Crash has receded into the long history of strange market events, interest in high-frequency trading has not waned. The U.S. Treasury Department also took aim at high-frequency trading, blaming high-frequency trading for stock market volatility and launching an interagency review of market structure.[16] In 2018, the SEC moved forward with a

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POOLS].

10. *Id*. at 275.

11. *See generally* JOINT REPORT, *supra* note 8.

12. *See generally Street Signs: 'Flash Boys' Fight that Stopped NYSE Trading*, CNBC (Apr. 1, 2014), https://www.cnbc.com/video/2014/04/01/the-flash-boys-fight-that-stopped-nyse-trading.html.

13. MICHAEL LEWIS, FLASH BOYS 123 (2014) (stating that the three ways are: 1) electronic front-running; 2) rebate arbitrage; and 3) slow market arbitrage). A more complete description of these ways in which high-frequency traders make money can be found on page 172 of Lewis' book.

14. *Id*. at 104 (explaining that the practices of high-frequency traders that Michael Lewis describes are not actually within the definition of front-running as it is currently used in FINRA 5270 because the information used is obtained through public data feeds from the exchanges, not "material, non-public market information."). Misuse of a charged term like "front-running" is one reason Michael Lewis' book has been so controversial and profitable.

15. *See generally* PATTERSON, DARK POOLS, *supra* note 9.

16. *See* Saleha Mohsin et. al., *Mnuchin Blames Volcker Rule, High-Speed Trading for Volatility*, BLOOMBERG (Dec. 18, 2018), https://www.bloomberg.com/news/articles/2018-12-18/mnuchin-blames-volcker-rule-high-speed-trading-for-volatility.

transaction fee pilot program to evaluate the effects of the controversial maker-taker model that incentivizes high-frequency trading.[17] While the program was eliminated in 2020 when the D.C. Circuit ruled that the SEC did not have the authority to implement a rule "merely to secure information that might indicate to the SEC whether there is a problem worthy of regulation,"[18] the SEC continues to explore ways to gather information and provide oversight to high-frequency traders.[19] Despite over a decade of study since the Flash Crash, high-frequency trading remains a flash point for financial and regulatory experts. While there seems to be consensus that some steps should be taken to limit high-frequency trading, proposals to tax or limit the practice are generally ill-conceived. In fact, this article argues that no legislation or regulation is necessary to address the alleged abuses of high-frequency trading.

This article argues that there are three potent and readily available tools for limiting the harmful excesses of high-frequency traders. The first of these is to aggressively bring market manipulation charges under § 9(a)(2) of the Securities and Exchange Act of 1934 ("Exchange Act") against high-frequency traders who attempt to spoof the market with a rapid mix of genuine and phantom orders. The second proposal is to bring enforcement actions under § 78f(b)(5) of the Exchange Act against national exchanges that fail to "protect investors and the public interest" by allowing exotic order types that are not understood by retail investors or their representatives.[20] Finally, this paper proposes that the SEC utilize § 19 of the Exchange Act to oversee exchange colocation rules which do not reflect fair access and transparency.[21] With these proposals implemented, markets will continue to function at historically low costs for all investors with the aid of healthy competition between high-frequency traders.

Part I of this article details the rise of high-frequency trading over the past thirty years and describes high-frequency trading's current position within the U.S. financial markets. Understanding both the history and the status of

17. *See* Evelyn Chang, *SEC Approved Experiment with Stock Exchanges on Issues Raised by High-Speed Trading*, CNBC (Mar. 14, 2018, 12:43 PM), https://www.cnbc.com/2018/03/14/sec-approves-experiment-on-issues-raised-by-high-speed-trading.html.

18. Bill Flook, *Appeals Court Tosses SEC's Maker-Taker Pilot*, THOMSON REUTERS (June 17, 2020), https://tax.thomsonreuters.com/news/appeals-court-tosses-secs-maker-taker-pilot/.

19. *See* Press Release, Sec. & Exch. Comm'n, SEC Proposes Rule to Include Certain Significant Market Participants as "Dealers" or "Government Securities Dealers" (Mar. 28, 2022), https://www.sec.gov/news/press-release/2022-54.

20. 15 U.S.C. § 78f(b)(5).

21. *See generally* 15 U.S.C. § 78s.

high-frequency traders is essential to formulating the correct regulatory approach to them. Part II explores three proposals for curbing the power of high-frequency traders. While other proposals have been made and may well be adopted by the SEC, this article focuses on solutions that utilize the SEC's existing rulemaking and enforcement capabilities. Existing tools are preferable because "the SEC and other regulators are not able to create laws fast enough to keep up with how quickly things change on Wall Street."[22] In short, attempting to meet each new high-frequency trading scheme with a new law is a fool's errand. Finally, Part III of this article serves as its conclusion.

PART I: THE RISE OF HIGH-FREQUENCY TRADERS

As the regulators, academics, and journalists began investigating high-frequency traders in the aftermath of the Flash Crash, one of the key questions was how high-frequency traders had come to exist in the first place. The origin of high-frequency trading is traceable to two separate and distinct sources. The first is the rise of quantitative analysts or "quants." Quants are traders who "compose complex mathematical models to detect investment opportunities."[23] Among the first quants was the legendary Ed Thorp, who brought notoriety to the movement by writing *Beat the Market: A Scientific Stock Market System* in 1967.[24] On the heels of Thorp's publication, some of the first quants began to explore Wall Street.[25] Today, quantitative analysis is a foundational course for students studying finance at universities around the world.

With the advent of electronic communication networks ("ECNs") to facilitate trading, the quants had their first opportunity to make a profit off of purely tech-based speed advantages.[26] Computers could recognize opportunities faster than the human mind and eye. Electronic signals could travel faster than any Wall Street order runner. However, quants armed with computers and algorithm-based trading software found that mandatory human involvement in all trades caused friction within their theoretically

22. David Trainer, *Protect Yourself from Wall Street Insiders*, FORBES (Aug. 20, 2013, 4:59 PM), http://www.forbes.com/sites/greatspeculations/2013/08/20/protect-yourself-from-wall-street-insiders/.

23. *Quant Stock Price*, BTCC, https://www.btcc.com/en-US/hashtag/quant%20stock%20price (last visited May 4, 2024); *see also* Michael Schmidt, *Quant Strategies – Are They For You?,* INVESTOPEDIA (Feb. 5, 2024), www.investopedia.com/articles/trading/09/quant-strategies.asp.

24. SCOTT PATTERSON, THE QUANTS: HOW A NEW BREED OF MATH WHIZZES CONQUERED WALL STREET AND NEARLY DESTROYED IT 32 (2010).

25. *Id.* at 38.

26. *See* PATTERSON, DARK POOLS, *supra* note 9*,* at 90.

perfect systems.[27] The Nasdaq market makers and NYSE specialists, the humans designated as liquidity-maintaining middle men in their respective markets, had the ability to slow trading and ignore orders from disfavored sources altogether.[28] It would take more than the emergence of quants for high-frequency trading to become a powerful force in the markets.

What ultimately allowed high-frequency traders to overcome the friction humans embedded in the marketplace was the bad behavior of those same humans. On Black Monday in 1987, Nasdaq market makers damaged their reputations as indispensable players in the market structure by selectively answering their phones or refusing to answer altogether during a then-unprecedented one-day crash.[29] Humans took a further hit in 1994 when a paper by Bill Christie and Paul Schultz indicated that Nasdaq market makers were likely colluding to create high spreads between bid and ask prices in order to generate greater profits for themselves.[30] A subsequent Department of Justice report found that millions of retail and institutional investors were victims of "anticompetitive conduct which resulted in higher trading costs."[31] The SEC Market 2000 Report ("Report") further found that abusive practices related to the then-existing one-eighth of a dollar tick was "[c]aus[ing] artificially wide spreads and hinder[ing] quote competition."[32] It was clear that "NASDAQ's market makers were siphoning billions out of the pockets of investors" by keeping spreads greater than a quarter.[33] The Clinton administration concluded that "significant changes" were in order.[34]

The most significant change implemented in response to the Report's findings was the introduction of competition to the market structure. First, new exchanges would be able to open with capital requirements of just $1 million.[35] When the rules went into effect on January 20, 1997, there were

27. *Id*. at 28–29.

28. *See* George T. Simon & Kathryn M. Trkla, *The Regulation of Specialists and Implications for the Future,* 61 BUS. LAW. 217, 220 (2005) (describing the roles of specialists and market makers within their respective exchanges).

29. *See* LEWIS, s*upra* note 13, at 100.

30. *See generally* William Christie et al., *Why Do NASDAQ Market Makers Avoid Odd-Eighth Quotes?*, 49 J. FIN. 1841, 1841 (1994).

31. Press Release, Dep't of Just., *Justice Department Charges 24 Major NASDAQ Securities Firms With Fixing Transaction Costs for Investors* (July 17, 1996), http://www.justice.gov/archive/opa/pr/1996/July96/343-at.html, [hereinafter *Reno Statement*].

32. SEC. & EXCH. COMM'N, MARKET 2000: AN EXAMINATION OF CURRENT EQUITY MARKET DEVELOPMENTS 18 (Jan. 27, 1994), https://www.sec.gov/divisions/marketreg/market2000.pdf, [hereinafter *Market 2000*].

33. PATTERSON, DARK POOLS, *supra* note 9, at 102.

34. *Id.* at 126.

35. *Id*. at 138.

four new ECNs as part of the system alongside Nasdaq and the NYSE.[36] Second, markets would be forced by the Order Handling Rules to route orders to the venues where they would get the best execution.[37] Third, trades would be decimalized and ticks would be just a penny.[38] The new market created by these rules featured lower costs, less human friction, and a greater capacity to handle high-frequency trading. From that point on, high-frequency trading grew dramatically but quietly, such that it is now believed to account for 40–50% of exchange-listed equities.[39]

In addition to growing in scale, the role of high-frequency traders within the financial markets fundamentally changed after the reforms of the late 1990s increased competition between exchanges. The exchanges, whatever their nature, could not survive by acting as venues for one institutional trader to trade against another. Such an exchange would feature large blocks waiting in silence like massive cargo ships waiting for tugboats in a harbor.[40] Exchanges need a reliable source of liquidity. It was in hopes of satisfying that need that the exchanges began to purposefully attract high-frequency traders.[41] The problem for the exchanges was that they were bargaining in an ultra-competitive space for that precious liquidity. In recognition of that dynamic, exchange operators began to partner more closely with high-frequency traders.

One of the first perks offered to high-frequency traders by the exchanges is now known as the maker-taker system.[42] As early as 1998, an ECN called

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36. *Id*.

37. *Id*. at 127.

38. *See* 17 C.F.R. § 242.612 (2024).

39. *See* Federico Musciotto et al., *High-Frequency Trading and Networked Markets*, PROCEEDINGS OF THE NAT'L ACAD. SCI., June 29, 2021, at 1, 1; SEC. & EXCH. COMM'N, EQUITY MARKET STRUCTURE LITERATURE REVIEW PART II: HIGH FREQUENCY TRADING (2021), https://www.sec.gov/marketstructure/research/hft_lit_review_march_2014.pdf; Nicholas Hirschey, *Do High-Frequency Traders Anticipate Buying and Selling Pressures?*, 67 MGMT. SCI. 3321, 3321 (2021); Jonathan Brogaard et al., *High-Frequency Trading and Price Discovery*, 27 REV. FIN. STUD. 2267, 2274 (2014); *High-Frequency Trading: An Important Conversation*, TABBFORUM (Mar. 24, 2014), https://tabbforum.com/opinions/high-frequency-trading-an-important-conversation (illustrating the percentage of high-frequency trading of U.S. equity shares traded from 2006 to 2014 in Exhibit 1).

40. *See generally* Kenneth French, *Presidential Address: The Cost of Active Investing,* 63 J. FIN. 1537 (2008) (discussing high frequency trading's effects on the market, including the need for liquidity that HFT provides).

41. PATTERSON, DARK POOLS, *supra* note 9, at 171.

42. The maker-taker system is the ultimate fact in determining whether institutional investors are lured to exchanges as prey for valued high-frequency trading clients or whether high-frequency traders are induced to the exchanges to trade with institutional clients. The fact that high-frequency traders are the ones paid to trade indicates that they

Island offered a rebate to high-frequency traders who would make liquidity on its exchange by trading against participants with outstanding limit orders.[43] At the same time, the exchange operators would charge the institutional traders who took that volume a fee slightly larger than the rebate.[44] The exchange operator would keep the difference between the rebate and the charge.[45] Exchanges made a profit, high-frequency traders made a profit, and institutional traders paid to get liquid markets for their large orders.

The maker-taker system has received a great deal of criticism.[46] However, it is also praised for creating "liquidity, competition, and efficiency" in the markets.[47] Setting aside the supposed merits of the scheme momentarily, "this 'maker-taker' system became the de facto method of trading for the vast majority of the U.S. stock market" within a decade of its introduction.[48] Even the NYSE now uses this system.[49]

High-frequency traders also moved physically closer to the exchanges in the new market. The computer experts that created high-frequency trading firms always knew that physics would dictate the speed of trading with humans removed from the system.[50] They invested heavily in learning about the networks that linked exchange locations. By 2008, those traders knew the speeds of various fiber optic routes owned by Verizon, AT&T, and others in the greater New York City area.[51] One firm actually constructed a special fiber optic route from Chicago to New York, making 400 separate land deals in the process.[52] That route would accommodate high-frequency traders hoping to use information obtained in one city's market and arbitrage it in the other.[53] Those without access to the route would lose out as their communications wasted milliseconds going around mountains and other

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are the ones lured.

43. PATTERSON, DARK POOLS, *supra* note 9, at 157.

44. Stanislav Dolgopolov, *The Maker-Taker Pricing Model and Its Impact on the Securities Market Structure: A Can of Worms for Securities Fraud*?, 8 VA. L. & BUS. REV. 231, 233 (2014).

45. *Id.*

46. *Id.*

47. Letter from Optiver to the Comm. of Eur. Sec. Reguls. (Apr. 1, 2010) (on file with author).

48. PATTERSON, DARK POOLS, *supra* note 9, at 42.

49. *Trading Information*, NYSE, https://www.nyse.com/markets/nyse/trading-info (last visited Mar. 1, 2024).

50. LEWIS, *supra* note 13, at 62.

51. *Id.* at 10.

52. *Id*. at 13.

53. *Id.*

obstacles. In the end, the firm inked five-year contracts valued at $10.6 million each.[54]

Exchange operators understood that speed was everything to the high-frequency traders. Recognizing that distance between the traders' computers and the exchange was a key element, exchanges began to offer a second perk to high-frequency traders. This appeared in the form of leases that allowed the traders to place their trading machines inside the exchanges and in close proximity to the "trading network's computer systems."[55] This scheme, called "colocation," has proven immensely popular. The NYSE took the incredible step of removing its trading activity from New York to New Jersey, at least in part, to accommodate high-frequency traders.[56] The NYSE charged $10,000 per month for colocation leases at the new, larger location.[57] Exchanges that did not already allow for colocation quickly followed suit.[58]

A third way in which exchanges catered to "the firms that filled their pools with liquidity" was to allow special order types that advantaged them.[59] At their root, orders are simply instructions to buy or sell a given quantity of a security.[60] Qualifiers are routinely added to limit the trade to certain prices and time frames.[61] High-frequency traders asked for order types that would enable them to zip in and out of the order queue as if there were no rules at all. "High-speed firms worked hand in hand with the trading networks to create exotic order types that would behave in very specific ways."[62] One employee of the Archipelago exchange would later admit, "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 trader."[63] High-frequency traders were thus able to use their valuable liquidity to literally rewrite the rules of the market.

In the wake of the Flash Crash, the world noticed and questioned the advantages that high-frequency traders had accumulated. This was true even though high-frequency trading "played a role in accelerating and

54. *Id*. at 15.

55. PATTERSON, DARK POOLS, *supra* note 9, at 199.

56. *Id.* at 281–282.

57. *Id.*

58. *Id.* at 282–283.

59. *Id*. at 205.

60. Jean Folger, *The Basics of Trading a Stock: Know Your Orders*, INVESTOPEDIA, http://www.investopedia.com/exam-guide/series-7/securities-transactions/types-orders.asp (last visited Mar. 30, 2024).

61. *Id.*

62. PATTERSON, DARK POOLS, *supra* note 9, at 205.

63. *Id*.

exacerbating an already volatile situation but was not the initial catalyst" of the Flash Crash.[64] The actual catalyst was a large sell program from a mutual fund.[65] Later studies further absolved high-frequency traders altogether. For example, one 2012 study showed that the majority of mini-crashes are caused by intermarket sweeps rather than high-frequency trading.[66] It was apparent, however, that "finger pointing after the crash sought to place blame on HFT" and it would be nearly impossible to alter the prevailing narrative.[67] The "suspicion of industry buzzwords" carried great weight with the memories of the 2008 financial crisis still fresh.[68]

The fact that high-frequency traders did not cause the Flash Crash and do not cause most mini flash crashes does not mean the traders should escape scrutiny. A hard look at market participants who were entrusted with a new role in the late 1990s is long overdue. As President Barack Obama's former White House Chief of Staff Rahm Emanuel said, "You never want to let a serious crisis go to waste."[69] That is never truer than in the case of securities law, where reform seems to only come on the heels of a crisis. In this case, an examination of high-frequency traders shows that they have consistently demanded additional perks within the market structure after accepting the role of liquidity makers in the 1990s. Each excess that lines the pockets of high-frequency traders is outside the bounds of the initial bargain and has the potential to harm investor returns, thereby returning us to the situation we sought to escape with their help. In each instance, the SEC has the authority to reject the request for an additional perk but has routinely failed to exercise that authority. It is not too late for the SEC to take action. By implementing the following three proposals, the SEC can curb the excesses of high-frequency traders without losing the benefits of a competitive market.

64. Edward M. Eng et al., *Finding Best Execution in the Dark: Market Fragmentation and the Rise of Dark Pools,* 12 J. INT'L BUS. & L. 39, 47 (2014).

65. *Id.*

66. Anton Golub et al., High Frequency Trading and Mini Flash Crashes 4–5 (Nov. 29, 2012) (unpublished manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2182097.

67. Eng et al., *supra* note 64, at 47.

68. *Id.*

69. Gerald F. Seib, *In Crisis, Opportunity for Obama*, WALL ST. J. (Nov. 21, 2008, 12:01 AM), http://www.wsj.com/articles/SB122721278056345271.

PART II: PROPOSALS

A. *Utilize Market Manipulation Rules*

One proposal to reign in high-frequency trading firms is to aggressively use § 9(a)(2) of the Exchange Act to punish market manipulation. Section 9(a)(2) states that it shall be unlawful for any person to make a series of transactions in a security, manipulating the market by "creating actual or apparent active trading in such security, or raising or depressing the price of such security, for the purpose of inducing the purchase or sale of such security by others."[70]

Section 9(a)(2) was originally directed at what some argue was one of the most serious abuses in the early twentieth century securities markets — investment pools.[71] Investments pools "ran up the prices of securities on an exchange by a series of well-timed transactions, effected solely for the purpose of 'manipulating' the market price of the security."[72] Once the price was pushed higher through manipulation, the traders taking part in the scheme would sell their shares at a profit.

Those looking at the activities of some high-frequency traders could see the similarities between their tactics and those of investment pools. For example, high-frequency traders sometimes employ a scheme that aims a quick burst of trades toward a particular security to move its price and capture a profit when the movement attracts additional interest. The practice, which is much older than high-frequency trading, is called "layering" or "spoofing."[73] In spoofing, the high-frequency trader places orders with no intention of having them executed. Instead, the trader places the orders "to trick others into buying or selling a stock at an artificial price driven by the orders that the trader later cancels."[74] Once increased interest has moved the price of the security higher, the high-frequency traders sell their positions at a profit. Eric Hunsader echoed the thoughts of many in saying, "We can't understand why this is allowed to continue, because at the core, it is pure

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70. 15 U.S.C. § 78i(a)(2).

71. DAVID L. RATNER & THOMAS LEE HAZEN, SECURITIES REGULATION IN A NUTSHELL 131 (7th ed. 2002); *see also* Joel Seligman, *The Historical Need for a Mandatory Corporate Disclosure System*, 9 J. CORP. L. 1, 28 (1983). *But see* Paul G. Mahoney, *The Stock Pools and the Securities Exchange Act,* 51 J. FIN. ECON. 343, 354 (1999) (questioning whether stock pools actually manipulated securities markets).

72. RATNER & HAZEN, *supra* note 71, at 131.

73. Press Release, Sec. & Exch. Comm'n, SEC Charges N.Y.— Based Brokerage Firm with Layering (Sept. 25, 2012), http://www.sec.gov/News/PressRelease/Detail/PressRelease/1365171484972#.VQCX KuF3HfY, [hereinafter *Trade Alpha*].

74. *Id.*

manipulation."[75] Soon after the Flash Crash shed light on this practice, the SEC began using anti-manipulation provisions of § 9(a)(2) to bring enforcement actions against high-frequency traders.

The SEC has had success bringing enforcement actions against high-frequency traders engaged in spoofing schemes since 2012. One early enforcement action was brought against Trade Alpha Corporate Ltd. and Demonstrate LLC in 2012.[76] In that scheme, traders placed genuine orders that were meant to be executed.[77] The same traders then immediately entered several orders on the opposite side of the market from the genuine trade.[78] This sudden explosion of activity in a security that a moment ago had no orders caught the attention of algorithm-driven trading machines deployed by other firms.[79] When those firms placed genuine orders against the initial genuine order, the spoofing firms would cancel their open orders.[80] They would then place a genuine order on the opposite side of the market and repeat the spoofing scheme to close out the position.[81] The firms' scheme was discovered and stopped by the SEC, but only after it was carried on for twenty-one months.[82]

Another instance of the SEC using § 9(a)(2) to check high-frequency traders came in 2014. On April 4, 2014, the SEC announced charges of spoofing and a settlement against a high-frequency trader, Visionary Trading LLC, and its broker, Lightspeed Trading LLC.[83] The scheme employed in that case was simpler than that employed by Trade Alpha Corporate and Demonstrate. It consisted of posting false orders to attract algorithm-based trading machines to take a position.[84] Once the trades of the algorithm-based trading machines executed and moved the market to an artificially elevated or depressed level, Visionary Trading would take the opposite position and

75. PATTERSON, DARK POOLS, *supra* note 9, at 63.

76. *Trade Alpha, supra* note 73.

77. *Id.*

78. *Id.*

79. *See id*.

80. *See id.*

81. *See id.*

82. *See id*.

83. *See* Press Release, Sec. & Exch. Comm'n, SEC Charges Owner of N.J.-Based Brokerage Firm With Manipulative Trading (Apr. 4, 2014), http://www.sec.gov/News/PressRelease/Detail/PressRelease/1370541406190#.VQCYr-F3HfY, [hereinafter *Visionary Trading*].

84. *See id.*

profit.[85] The SEC stopped the scheme but only after it was carried on unabated from May 2008 to November 2011.[86]

In 2017, the SEC brought an enforcement action against Avalon FA Ltd., a Ukrainian-based trading firm.[87] The complaint alleged that Avalon made $28 million in illicit profits by manipulating the U.S. securities market hundreds of thousands of times.[88] International law firm K&L Gates LLP found evidence in this action "that the SEC remains vigilant and aggressive when it comes to spoofing and layering in the securities market."[89] But the facts simply do not lead to that conclusion and experts have argued the SEC has not been adequately resourced for the effort.[90]

The SEC has occasionally brought similar actions against high-frequency traders, including individual day traders Nicholas Mejia Scrivener in 2020[91] and Xuepeng Xie in 2021.[92] However, it is unclear whether enforcement has been intense, consistent, and targeted enough to deter bad actors.

As the SEC has shown that it is willing to apply the old rules to new schemes, others have joined the hunt. The CFTC, CME, and Financial Conduct Authority ("FCA") have also brought actions against high-frequency traders who use spoofing to manipulate futures markets.[93] In 2014, those futures regulators brought an enforcement action in tandem with UK regulators against a U.S.-based high-frequency trader.[94] The action

85. *See id.*

86. *See id.*

87. Clifford C. Histed, *The SEC Sends a Stern Reminder that it is Serious About Punishing "Spoofing" and "Layering" Schemes in the Securities Market*, K&L GATES HUB (Apr. 24, 2017), https://www.klgates.com/The-SEC-Sends-a-Stern-Reminder-That-It-Is-Serious-About-Punishing-Spoofing-and-Layering-Schemes-in-the-Securities-Markets-04-24-2017.

88. *Id.*

89. *Id.*

90. *See High Frequency Trading's Impact on the Economy*, *Subcomm. on Sec. Ins. & Inv. & the Comm. On Banking, Hous., & Urb. Affs.*, 113th Cong. 28 (2014) (statement of Hal S. Scott, Nomura Professor and Director, Program on International Financial Systems, Harvard Law School).

91. *See* SEC Charges California Day Trader for Manipulative Trading, No. 3-19908 (Aug. 10, 2020) https://www.sec.gov/enforce/34-89517-s.

92. *See* SEC Charges North Carolina Day Trader for Manipulative Trading, No. 3-20599 (Sept. 27, 2021), https://www.sec.gov/enforce/33-10989-s.

93. *See* Gregory Scopino, *The (Questionable) Legality of High-Speed "Pinging" and "Front Running" in the Futures Markets*, 47 CONN. L. REV. 607, 607 (2015) (arguing that several HFT practices violate anti-manipulation rules within the Commodities Exchange Act).

94. Alex Lincoln-Antoniou & Mauro Wolfe, *HFT Spoof That Wasn't Funny*, DUANE MORRIS: COMPLIANCE MONITOR, Sept. 2013, at 1, http://www.duanemorris.com/articles/static/wolfe_compliancemonitor_0913.pdf.

brought a 2£ million fine, but also announced that regulators were willing to go to great lengths to track down even the savviest of high-frequency traders.[95] In a show of force indicating regulators have caught up to the spoofing programs, the regulators painstakingly described the intricacies of the algorithm employed in the spoofing scheme.[96]

The SEC has enjoyed increased success in bringing enforcement actions against high-frequency traders under § 9(a)(2) after a slow start. At the beginning, shortly after the Flash Crash, then-SEC Chairwoman Mary Schapiro told Congress that her agency's "tools for collecting data and surveilling our markets are wholly inadequate."[97] However, it seems that the SEC is beginning to catch up to the high-frequency traders. Now, the SEC is able to break down in detail the algorithms and trading strategies employed by the high-frequency traders it charges. This may be, in part, because of the new tools created to help the agency dissect market activity, such as the Consolidated Audit Trail, which began to require reporting in 2020 but is still in the process of being implemented.[98]

The SEC's reliance on old principles to prosecute modern misdeeds is precisely what Congress intended when it wrote the Exchange Act's broad prohibitions against market manipulation. It is a credit to the SEC that it has recognized its tools and publicly dedicated itself to their use. Then-Chief of the SEC Enforcement Division's Market Abuse Unit, Daniel M. Hawke, stated, "The fairness principle that underlies the foundation of our markets demands that prices of securities accurately reflect a genuine supply of and demand for those securities."[99] Robert Khuzami, then-Director of the SEC's Division of Enforcement, said in 2012 that "[m]anipulation, whether executed by e-mail, instant message, or multiple phantom orders, is still manipulation."[100]

The SEC should continue to rein in the excesses of high-frequency traders who use technological advantages to manipulate the markets. However, changes to the SEC's approach to spoofing are necessary. The SEC should

95. *Id.*

96. *See id*. at 3.

97. PATTERSON, DARK POOLS, *supra* note 9, at 63.

98. *See* Press Release, Sec. & Exch. Comm'n, SEC Approves New Rule Requiring Consolidated Audit Trail to Monitor and Analyze Trading Activity (July 11, 2012), http://www.sec.gov/News/PressRelease/Detail/PressRelease/1365171483188#.VNPO_S53HfY; s*ee also* Douglas Craig, *Consolidated Audit Trail: Preparing for the Next Phase of Regulation*, ION MARKETS (Sept. 20, 2023), https://iongroup.com/blog/markets/consolidated-audit-trail-preparing-for-the-next-phase-of-regulation/.

99. *Trade Alpha*, *supra* note 73.

100. *Id.*

punish high-frequency traders who manipulate the market through spoofing with greater severity. A review of spoofing enforcement actions shows that punishments have been quite lenient. Executives who orchestrated spoofing scheme at Trade Alpha for at least a year after receiving warnings from the Financial Industry Regulatory Authority ("FINRA") were suspended for only two to three years as part of the settlement with the SEC.[101] Executives at Visionary Trading agreed to similar suspensions as part of their own settlement with the SEC.[102] Lower-level brokers within the organizations were not mentioned in the actions, let alone punished by the SEC.[103]

More severe punishments for high-frequency traders who have engaged in spoofing schemes are warranted because spoofing is against each of the three mandates of the SEC. The manipulation of securities prices through spoofing undermines market integrity, harms investors who make honest investments in the securities markets by subjecting their holdings to manipulated values, and stifles capital formation by undermining confidence in the markets.[104] This all adds to the perception that the stock market is "rigged."[105] Given the serious consequences of spoofing, those who engage in spoofing should face severe punishments, including lifetime bans from the securities industry.[106] A lifetime ban from the securities industry has been used before in circumstances where common schemes shake public confidence in the securities markets.[107] The punishment seems appropriate for high-frequency traders who engage in spoofing in this era.[108] Former SEC Chairwoman Mary Jo White promised a more aggressive approach to

101. *See id.*

102. *Visionary Trading*, *supra* note 83.

103. *See id.*

104. *See Mission*, Sec. & Exch. Comm'n http://www.sec.gov/about/whatwedo.shtml#.VNJTmi53HfY (Dec. 29, 2023), [hereinafter *SEC Mandates*].

105. *See* LEWIS, *supra* note 13, at 104.

106. *See generally* Joel Schectman, Opinion, *SEC Commissioners Push Lifetime Bans on Executives*, WALL ST. J. (Feb. 26, 2015, 12:52 PM), http://blogs.wsj.com/riskandcompliance/2015/02/26/sec-commissioners-push-lifetime-bans-on-executives/.

107. *Securities Ban for Milken,* N.Y. TIMES (Mar. 19, 1991), http://www.nytimes.com/1991/03/19/business/securities-ban-for-milken.html (describing Milken's lifetime ban for being "party of Wall Street's biggest scandal" during the junk bond era).

108. *See* Schectman, *supra* note 106.

prosecuting market manipulation[109] and her successors, Jay Clayton[110] and Gary Gensler,[111] have routinely spoken about the SEC's dedication to protecting retail investors and restoring confidence in the securities market. Future spoofing enforcement action would be a terrific place for the SEC to show the securities market what that means.

B. Limit Order Types

A second proposal for curbing the power of high-frequency traders is to reduce or eliminate the special orders that are available to them. As early as the mid-1990s, the high-frequency trading firm Datek used an algorithm to take advantage of exchange order rules.[112] As high-frequency traders have become necessary liquidity-makers for the exchanges, they have used their new-found bargaining power to directly influence exchange order rules.[113] The exchanges realized that if they were going to survive in an ultra-competitive industry "they had to cater to . . . the firms that filled their pools with liquidity."[114] High-frequency traders asked for special order types and "worked hand in hand with the trading networks to create exotic order types that would behave in very specific ways" that benefit them.[115]

The order types created by exchanges in response to high-frequency trader demands are so numerous and complex that a special team of puzzle-solvers was hired by RBS to work through them.[116] The RBS team estimated that there were around 150 order types available to high-frequency traders.[117] However, the number of order types that have been created for HFTs has not yet been accurately counted and likely has grown since RBS completed its review. This is because high-frequency traders often combine trade types,

109. *See* Mary Jo White, Chairman, SEC, Deploying the Full Enforcement Arsenal (Sept. 26, 2013), http://www.sec.gov/News/Speech/Detail/Speech/1370539841202#.VQCd1eF3HfY.

110. *See generally* Jay Clayton, *Protecting Main Street Investors: Regulation Best Interest and the Investment Adviser Fiduciary Duty*, HARV. L. SCH. F. CORP. GOVERNANCE (July 9, 2019), https://corpgov.law.harvard.edu/2019/07/09/protecting-main-street-investors-regulation-best-interest-and-the-investment-adviser-fiduciary-duty/.

111. *See generally* Gary Gensler, Chairman, Sec. & Exch. Comm'n, Remarks Before the 2022 NASAA Spring Meeting & Public Policy Symposium Investor Protection in a Digital Age (May 17, 2022), https://www.sec.gov/news/speech/gensler-remarks-nasaa-spring-meeting-051722.

112. PATTERSON, DARK POOLS, *supra* note 9, at 94.

113. *See id.* at 41.

114. *Id.* at 205.

115. *Id.*

116. LEWIS, *supra* note 13, at 169.

117. *See id.*

meaning there are thousands of possible combinations.[118] And the number is growing. Despite the attention given to the issue, "[o]rder types are being created to attract predatory traders" today.[119] In 2023, Nasdaq received SEC approval for an artificial intelligence-driven order type,[120] which could very well be the first of many as the use of artificial intelligence grows.

Not only are the order types too numerous to accurately count, but exchange employees also admit that they are "fiendishly complex."[121] Each order type is a detailed command. For example, exchange operator Direct Edge allowed for an order that would fill only at the limit price *and* only if the trade would collect the rebate for making liquidity for the exchange.[122] Alternatively, the "hide-not-slide" order would tuck into an existing queue to make liquidity for the exchange, but only in the event that the supply of offered shares were exhausted.[123] It will hide, unseen by other market participants, until the conditions are exactly as expressed in the order.[124] Those who have waited in the queue visible to the public are shocked when the shares are snapped up by a previously hidden investor.

The practice of creating specialized order types for high-frequency traders is widespread. A 2014 report for Congress prepared by economists Gary Shorter and Rena Miller noted that the NYSE, Nasdaq, BATS, and Direct Edge are all "reportedly involved in customizing order types to fit the needs of their HFT firm clients."[125] Exchanges have responded to the claim by asserting that whatever order types they create are available to all clients.[126] However, traders have been upfront about the advantage they receive from the proliferation of order types. One high-frequency trader said, "What's really essential is to jump to the head of the queue . . . You pay for it, but you jump to the lead."[127] This violates the basic rule of stock exchanges that "the

118. *See generally id.*

119. PATTERSON, DARK POOLS, *supra* note 9, at 318.

120. *See* Laura Matthews, *NASDAQ Gets SEC Nod for First Exchange AI-Driven Order Type*, REUTERS (Sept. 8, 2023, 12:17 PM), https://www.reuters.com/technology/nasdaq-gets-sec-nod-first-exchange-ai-driven-order-type-2023-09-08/.

121. PATTERSON, DARK POOLS, *supra* note 9, at 50.

122. *See* LEWIS, *supra* note 13, at 169.

123. *See id*. at 170.

124. *See, e.g*., Scott Patterson & Jenny Strasburg, *How 'Hide-not-Slide' Orders Work*, WALL ST. J. (Sept. 18, 2012, 10:40 PM), http://www.wsj.com/articles/SB10000872396390444812704577605840263150860.

125. GARY SHORTER & RENA MILLER, CONG. RSCH. SERV., R43608, HIGH FREQUENCY TRADING: BACKGROUND, CONCERNS, AND REGULATORY DEVELOPMENTS 22 (2014).

126. *Id.*

127. Laurie Carver, *Exchange Order Types Prompt Fears of HFT Conspiracy,* RISK

first investor to place an order at the best current price generally should be the one whose order is filled first."[128]

The ultimate problem caused by these exotic orders is that they allow high-frequency traders to have a unique advantage in understanding order management rules. Some of the rulemaking proposals filed with the SEC when exchanges sought to create new order types were twenty pages in length.[129] What's more, the complex order types are created directly by or in partnership with the high-frequency traders who are going to use them. So, high-frequency traders understand the language of the rules better than anyone else possibly could. This knowledge creates an informational advantage for high-frequency traders. Anytime an informational advantage appears to be systemic rather than ad hoc, a hard look should be given to whether it should be limited or prohibited by regulatory action. This is particularly true where there is a conflict of interest between the party or parties with the informational advantage and the exchanges. This is because a systemic informational advantage is counter to all three SEC mandates.[130] The systemic informational advantage exposes investors to systematic losses, harms the image of a fair market, gives pause to those who consider investing in the capital markets, and ultimately hinders capital formation.

The informational advantage that high-frequency traders possess would be stifled, at least in part, if all professionals understood the newly created orders. Then, investors could depend on their brokers to educate and protect them. However, it is clear that few people inside the securities industry understand the order types. This is apparent from the difference between the number of order types available and the number of those taught to brokers. The NYSE, for example, offers 34 order types to traders.[131] By contrast, FINRA, the self-regulatory organization for broker-dealers, only tests brokers on three order types and a handful of basic qualifiers as part of Series 7 licensing.[132] The SEC itself only lists nine order types and qualifiers on its website[133] and provides some resources discussing even fewer order types.[134]

MAGAZINE (April 23, 2013), http://www.risk.net/risk-magazine/feature/2261626/exchange-order-types-prompt-fears-of-hft-conspiracy.

128. Patterson & Strasburg, *supra* note 124.

129. LEWIS, *supra* note 13, at 170.

130. *SEC Mandates*, *supra* note 104.

131. SHORTER & MILLER, *supra* note 125, at 23.

132. *See, e.g.*, Folger, *supra* note 60 (defining the three types of trades on the Series 7 exam).

133. *Investor Bulletin: Understanding Order Types*, Sec. & Exch. Comm'n (July 12, 2017), https://www.sec.gov/oiea/investor-alerts-and-bulletins/ib_ordertypes.

134. Sec. & Exch. Comm'n, *Types of Orders*, INVESTOR.GOV https://www.investor.gov/introduction-investing/investing-basics/how-stock-markets-

As a result, brokers and their retail clients only use those commonly understood order types when placing trades.[135] The disparity between what retail investors and their brokers are taught and what the exchanges allow leaves retail investors wholly unprotected even when they partner with financial professionals.

The argument that exotic order types harm retail investors and the markets in which they trade is admittedly a difficult one to make. This is true not because it is a weak argument but rather, because it entails an explanation of many complex market orders that are really strings of logical if/then commands. It is difficult to comprehend how the individual orders work, let alone how they work in relation to other market participants. It is perhaps better to explain the effect of these order types on retail investors through analogizing to a more common and human experience.

Suppose you decide to attend a major theme park such as Disneyland with your family. You know that the queue to enter the park will be long, but enjoying this special day with your family is important, so you ask about entrance procedures in advance. You are told that there are three lines into the park. Each line accommodates a different type of attendee. One is for large groups. It goes through the back gate of the park. The second is for those that purchased passes in advance. It goes through the front gate and moves quickly as gatekeepers wave attendees displaying their passes through. The third line is for those that have not purchased passes in advance. It typically moves at a slower and unpredictable speed. Each line is monitored by the park's uniformed staff.

You choose to buy a pass in advance so that you can breeze through the front gate in the second line. When you join the line, it appears short. You congratulate yourself for planning so thoroughly. Then, three people are greeted and directed by the staff to the front of the line. You ask the staff member standing nearby to explain what just happened. He shrugs. A few minutes later, ten people suddenly appear in line just behind the first person. You are moving back in line, not forward!

You do not even remember seeing those ten people move past you. You ask the staff member if they just cut in line. He ignores your question. But things look up when eight of the people that just joined the line leave to go to purchase drinks from a nearby vendor. You advance in the line, but, just as you approach the gate, the eight people return from the drink vendor and go back in front of you in line.

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work/types-orders (last visited Jan. 9, 2024) (including market, limit, stop, and buy stop orders)

135. *See, e.g.*, *Order Types and How They Work*, THE VANGUARD GROUP, https://personal.vanguard.com/us/insights/saving-investing/useful-brokerage-terms (last visited Jan. 9, 2024).

As the people slip in front of you, you see a small gold badge on each person's chest. You think this badge is the key to understanding the rules of the line . . . and your current misery. You ask a different staff member what the badge means. She tells you that it is a badge one can get for free, but only in-person from the park manager. The badge lets one slip in and out of line as he or she pleases. There's a silver badge too. The owners of silver badges can only use them on weeknights after 5 PM. He begins to tell you about a platinum badge, but you stop listening as the line inches forward.

You watch as people with an array of brightly colored badges zip in and out of the line. You think that even the park manager who issues these badges cannot possibly understand all the rules. As you finally walk through the open gate, an hour after arriving, your spouse says, "Well, we know for next time." Shocked, you reply, "What makes you think I'm doing this again!?" That, in a nutshell, is the experience of traders in a stock market filled with exotic order types and why we should worry about how they perceive the experience.

Despite the obvious effect of tilting the playing field in favor of select market participants, there has been only a limited effort to curb the creation of new order types for the benefit of high-frequency traders. Former high-frequency trader Haim Bodek observed in 2014 that exchanges "have been cleaning up their act, tweaking order [type] combinations to remove problems."[136] The limited effort has also been slow. Bodek expected the SEC and the exchange to eliminate all complex orders by the end of 2014, but many are still in use today.[137]

The SEC continues to review the process by which "order types are developed, approved, and monitored."[138] As the effort to reform order types move forward, there is justifiable concern that the case-by-case evaluation of exotic order types will lead to a new breed of even more vexatious special orders.[139] Economist Stephen Dubner has observed that, "any time you change a system, people will always change their behavior to maximize the benefit to themselves."[140] Joe Saluzzi, co-head of equity trading for Themis

136. SHORTER & MILLER, *supra* note 125, at 22.

137. *Id.*

138. *Id.*

139. *See* Nina Mehta, *SEC Second Guesses Trading Crusade as Market Makers Disappear*, BLOOMBERG (Sept. 13, 2010, 7:01 PM), http://www.bloomberg.com/apps/news?pid=newsarchive&sid=amUfMuMGP9XM.

140. Ronald D. Orol, *Schumer: SEC to Ban Flash Trading*, MARKETWATCH (Aug. 4, 2009), https://www.marketwatch.com/amp/story/schumer-sec-to-ban-flash-trading-2009-08-04; Stephen J. Dubner, *How Prevalent Is Insider Trading? And What's to Be Done About It? A Freakonomics Quorum*, FREAKONOMICS (Apr. 26, 2011), https://freakonomics.com/2011/04/how-prevalent-is-insider-trading-and-whats-to-be-

Trading in New Jersey, believes that high-frequency traders will "threaten to leave one exchange for another if they do not get special advantages for their volume of transactions."[141] High-frequency traders clearly have the leverage on exchanges. Saluzzi estimates that "high-frequency traders represent 70% of the volume of trading on most days, which exchanges rely on heavily for their fee generation."[142] Dubner warns that "[f]ailing to figure out how people will react nearly always results in unintended, negative consequences."[143] Therefore, the SEC runs a tremendous risk of creating a race to bottom if it takes a case-by-case approach to the problem.

The more certain solution is to take away the entire field of order types as a space in which high-frequency traders can gain an advantage in the market. All order types that are not taught to brokers through FINRA licensing should be eliminated as quickly as possible.[144] By limiting the available order types to those FINRA-licensed brokers know, there will be no room for high-frequency traders to use special order types to outmaneuver retail investors and their representatives. Whether FINRA-licensed brokers should be required to understand some additional order types should be simultaneously considered.

The SEC could use a rulemaking procedure to limit order types.[145] However, it might take months or years to finalize a formal legislative rule under the Administrative Procedure Act ("APA").[146] Instead, the fastest way to bring about the necessary change may be to bring a successful enforcement action against an exchange. This is a legitimate way for the SEC to bring about the change so long as the SEC brings the action under an existing statute.[147] A provision of the Exchange Act, codified at 15 U.S.C. § 78f(b)(5), may provide a firm basis for that action by requiring national securities exchanges to establish rules that "protect investors and the public

done-about-it-a-freakonomics-quorum/.

141. Ronald D. Orol, *Schumer: SEC to Ban Flash Trading*, MARKETWATCH (Aug. 4, 2009, 4:58 PM), https://www.marketwatch.com/amp/story/schumer-sec-to-ban-flash-trading-2009-08-04.

142. *Id.*

143. Dubner, *supra* note 140.

144. *See generally* Folger, *supra* note 60.

145. *See generally* 15 U.S.C. § 3411(b) ("The Commission . . . is authorized to . . . prescribe, issue, amend, and rescind such rules and orders as it may find necessary or appropriate to carry out its functions under this chapter.").

146. *See generally* 5 U.S.C. §§ 554, 556–57.

147. *See* NLRB v. Bell Aerospace Div. of Textron, Inc., 416 U.S. 267, 291–94 (1974) (holding that the decision of whether to act by litigation or rulemaking lies in the first instance with the agency empowered by the enabling statute).

interest" and "are not designed to permit unfair discrimination between customers, issuers, brokers, or dealers."[148]

This oft-overlooked section has been used in the past by the SEC in limited ways.[149] However, it may be time for the SEC to consider the section's use as a basis for serious enforcement actions against national exchanges that allow high-frequency traders to write their own rules. The section stands for the proposition that recognition as a national exchange is a privilege held by few. In return, those exchanges are held to basic administrative and fairness standards. If those recognized exchanges choose to assist in the systematic abuse of ordinary investors and their representatives, then the SEC is within the letter and spirit of the section to bring an action.[150] In the age of increased competition between exchanges, there is no need for hesitancy on the SEC's part. Once the Commission indicates its seriousness with one or two well-selected actions and guidance, the exchanges should be responsive and self-regulate.

C. Regulate Colocation

A third proposal for reducing the advantages enjoyed by high-frequency traders is to tighten the regulation of colocation to improve transparency and fairness. Colocation "refers to the practice of setting up your trading computers in the same physical building as the exchange's computers, to get a time advantage over your competitors."[151] In recent years, "exchanges and other market centers have opened new data centers or expanded existing ones to offer colocation services."[152] In fact, since 2007 the NYSE has done most of its trading from Weehawken, New Jersey to accommodate colocation

148. 15 U.S.C. § 78f(b)(5).

149. *See* Merrill Lynch, Pierce, Fenner & Smith, Inc. v. Ware, 414 U.S. 117, 128–29 (1973) (describing the requiring of a national securities exchange and the SEC's role in enforcing those requirements).

150. WILLIAM DOUGLAS, DEMOCRACY AND FINANCE 82 (J. Allen ed., 1940) (For the "spirit" of the federal securities laws, refer to the works of former SEC Chairman and U.S. Supreme Court Chief Justice Douglas. Justice Douglas wrote that the idea of federal securities laws was that, "Government would keep the shotgun, so to speak, behind the door, loaded, well oiled, cleaned, ready for use but with the hope it would never have to be used.").

151. *Dark Pools, Flash Orders, High-Frequency Trading, and Other Market Structure Issues: Hearing Before the S. Subcomm. on Sec., Ins., and Inv. of the S. Comm. on Banking, Hous., and Urb. Aff.*, 111th Cong. 67 (2009) (statement of Daniel Mathisson).

152. Ivy Schmerken, *High-Frequency Trading Shops Play the Colocation Game,* WALL ST. & TECH.: ADVANCED TRADING (Oct. 5, 2009), http://www.wallstreetandtech.com/trading-technology/high-frequency-trading-shops-play-the-colocation-game/d/d-id/1262506.

equipment.[153] Despite the fact that it has been integrated into the market structure for years, colocation struck many as inherently unfair in the aftermath of the Flash Crash.[154]

The reason that high-frequency traders want colocation is to get the ultimate speed advantage. For high-frequency traders, there are just three variables in the time it takes to execute an order: server box computing power, the speed of the algorithm employed by the trading software, and the length of lines used to connect the server box to the exchange.[155] As differences in server box computing power and algorithms diminished, the determinant variable became the length of the line from server boxes to the exchange.[156] Milliseconds became the difference between winning and losing fortunes. In response, exchanges began leasing special locations within their buildings.[157] From that time forward, colocation was generally unregulated.[158]

After the Flash Crash, the SEC took a much harder look at colocation and how it should be regulated. Of primary concern was whether colocation created unfair opportunities for a select group of firms who obtained special information under private agreements with the exchanges. If so, the question became whether the practice should be regulated or flatly prohibited by the SEC. Consensus has emerged in regard to both concerns. Somewhat surprisingly, there is broad agreement that colocation does not create an unfair advantage for a select few. There has also been broad agreement that regulation, not prohibition, is the appropriate response to colocation.

Industry insiders explained their views on colocation in a pivotal Senate hearing in 2009. Frank Hatheway of Nasdaq argued at that hearing that "you cannot stop people from striving for proximity, to be close to the exchange."[159] Daniel Matthisson agreed, reminding Senators of the

153. PATTERSON, DARK POOLS, *supra* note 9, at 281–82.

154. *See e.g.,* Press Release, Office of Sen. John McCain, *Opening Statement By Senator John McCain at the PSI Hearing on High-Frequency Trading,* Comm. on Homeland Sec. & Gov'tl Aff., (Apr. 1, 2014) https://www.hsgac.senate.gov/wp-content/uploads/imo/media/doc/OPENING%20-%20John%20McCain%20(April%201%202014).pdf [hereinafter *McCain Statement*].

155. LEWIS, *supra* note 13, at 61.

156. *Id.*

157. PATTERSON, DARK POOLS, *supra* note 9, at 200.

158. *Dark Pools, Flash Orders, High-Frequency Trading, and Other Market Structure Issues: Hearing Before the S. Subcomm. on Sec., Ins., and Inv. of the S. Comm. on Banking, Hous., and Urb. Aff.,* 111th Cong. 65 (2009) (statement of Christopher Nagy).

159. *Id.* at 61 (statement of Frank Hatheway).

similarity between colocation and buying property adjacent to the NYSE.[160] Instead of being just across the street and using teenage "runners" to speed orders from brokerage house to the exchange floor, high-frequency traders are renting spaces inside the exchange and using wires.[161] "The closer a broker's office was to the exchange, the faster they could execute an order, which was a major selling point for brokers."[162] In other words, an advantage in speed due to location has always been part of the market dynamics. Colocation is simply the latest method seeking that advantage.

Some argue that colocation is not just inevitable market evolution, but it offers real advantages for all investors. NYSE Group Executive Vice President and Head of U.S. Execution and Global Technology, Larry Leibowitz, testified that retail investors "benefit from utilization of colocation through tighter spreads, lower volatility, and deeper liquidity."[163] Investors also benefit from lower operational costs for broker-dealers. A striking example is a comparison between owning a seat on the old NYSE floor and leasing a colocation space inside the new NYSE. A seat on the NYSE sold for $3.25 million in 2005.[164] A decade later, in the age of colocation, exchanges are leasing space for server boxes for as little as $2,000 per month.[165] Not only are costs lower for the firms that have space at the exchange, but more firms can enjoy the advantages of proximity. Given the tight price competition between brokers, retail investors can collect these benefits by simply "selecting a technology savvy broker-dealer to transact on their behalf."[166]

Having established some consensus around the inevitability and general desirability of colocation, the question turns to whether features of colocation are in need of greater regulatory oversight. Hatheway of Nasdaq assured the Senators that, "there are no issues" in relation to colocation.[167] The firms, he said, "tend to be happy with what they have, the resources that

160. *Id.* at 14 (statement of Daniel Mathisson).

161. *Id.* at 70.

162. *Id.*

163. *Id.* at 97 (statement of Larry Leibowitz).

164. *New York Stock Exchange*, NEW WORLD ENCYCLOPEDIA, http://www.newworldencyclopedia.org/entry/New_York_Stock_Exchange (last visited Jan. 9, 2024).

165. Notice of Filing and Immediate Effectiveness of Proposed Rule Change Relating to Fees for Certain Co-location Services, 78 Fed. Reg. 3945, 3946 (proposed Jan. 11, 2013) [hereinafter *Colocation Rule*].

166. *Hearing on Dark Pools, Flash Orders, High-Frequency Trading, and Other Market Structure Issues, Before the Subcomm. on Sec., Ins., and Inv. of the S. Comm. on Banking, Hous., and Urb. Affs.*, 111th Cong. 71 (2009) (statement of Daniel Mathisson).

167. *Id.* at 41 (statement of Dr. Hatheway).

[Nasdaq] makes available to them."[168] Further, "there is a space available if more people want to come into the data center."[169] Other industry insiders similarly assured the Senators that "there is nothing unfair in colocation as long as the access is provided to all who desire it at a reasonable cost."[170]

Not everyone agrees with Nasdaq's conclusion that "there are no issues" simply because collocating clients tend to be satisfied with the service. Christopher Nagy, Managing Director of Order Routing Strategy at TD Ameritrade, testified in a Senate hearing that, "while colocation improves speed of execution for all parties including individual investors, oversight on how the process is administered is non-existent."[171] Robert Gasser of the Investment Technology Group opined before the Senate that the SEC did not have market-monitoring capabilities to effectively monitor the colocation traders it needed to police.[172] Whether this was true or not, it was clear that the SEC was not diligent in monitoring the practice.[173]

In light of the SEC's inattentiveness, some believe unregulated colocation has created an unbeatable advantage. In 2010, Jefferies Company commissioned a report investigating "the advantages high-frequency traders gain by collocating their computer servers next to exchanges and subscribing directly to market data feeds."[174] The report concluded the 100 to 200 millisecond advantage obtained by high-frequency traders through colocation allowed for "almost risk-free arbitrage opportunities."[175] Senator Kaufman of Delaware claimed that this sort of advantage created a "two-tiered market" in which high-frequency traders always had the winning hand.[176]

These cries of inequity, however, are unsubstantiated. The costs of colocation are quite reasonable, as space is leased for just a few thousand dollars per month.[177] The exchanges have also ensured that space is plentiful

168. *Id.*

169. *Id.*

170. *Id.* at 19 (statement of Peter Driscoll, Chairman, Sec. Traders Ass'n).

171. *Id.* at 67 (statement of Christopher Nagy, Managing Dir. Ord. Routing Strategy, TD Ameritrade).

172. *See id.* at 73 (statement of Robert Gasser, President and CEO., Inv. Tech. Grp.) (hoping the SEC will provide clarity on how they will deal with in their regulatory framework).

173. *See id.* at 87 (statement of Peter Driscoll) (stating the SEC must update its resources to adequately surveil modern complex markets).

174. 156 CONG. REC. S922 (daily ed. Mar. 2, 2010) (statement of Sen. Edward Kaufman).

175. *Id.*

176. PATTERSON, DARK POOLS, *supra* note 9, at 255.

177. *Colocation Rule*, *supra* note 165, at 3946.

by obtaining or building new facilities.[178] Finally, any investor can do business with a collocated firm.[179] The only true concern raised is whether the oversight of colocation is likely to remain fair and transparent as high-frequency traders continue to push for every possible advantage.

The efforts to regulate colocation are a great example of the financial industry's unique regulatory structure. The key to regulation of high-frequency trading is that "[m]any of the high-frequency firms are broker-dealers."[180] Broker-dealers must also follow exchange rules to do business on their physical or electronic floors. The exchanges, under § 19 of the Exchange Act, are self-regulatory bodies that report to the SEC.[181] Exchange rules are presented to the SEC and are subject to the same normal public notice and comment rulemaking procedures.[182] Traditionally, the SEC allows exchanges to "police themselves with respect to ensuring that trading takes place fairly and honestly."[183] When the pressures of competition entices exchanges to shirk their self-regulatory responsibilities, however, the SEC can use its power as the regulator of the exchanges to oversee rulemaking or bring enforcement actions when the exchanges violate rules.[184]

In the case of colocation, the SEC elected to start investigating the behavior of the exchanges that permit the practice. The SEC's early actions indicated that the regulation of colocation "should start from a productive vantage point that, when well-regulated, high-frequency trading and technology are generally healthy and positive."[185] Further, their actions

178. *See* PATTERSON, DARK POOLS, *supra* note 9, at 281–82 (discussing exchanges worldwide expanding their trading data centers to provide more colocation space).

179. *Dark Pools, Flash Orders, High-Frequency Trading, and Other Market Structure Issues: Hearing Before the Subcomm. on Sec., Ins., and Inv. of the S. Comm. on Banking, Hous., and Urb. Affs.*, 111th Cong. 70 (2009) (statement of Daniel Mathisson, Managing Dir. and Head of Advanced Execution Servs., Credit Suisse) [hereinafter *Market Structure Issues Hearing*].

180. *Id.* at 73 (statement of Robert Gasser, President and Chief Exec. Officer, Inv. Tech. Grp.).

181. 15 U.S.C. § 78s(g).

182. 5 U.S.C. § 553.

183. Jonathan R. Macey & Maureen O'Hara, *From Markets to Venues: Securities Regulation in an Evolving World,* 58 STAN. L. REV. 563, 585 (2005).

184. *See* NLRB. v. Bell Aerospace Co., 416 U.S. 267, 294 (1974) (holding that the decision of whether to act by litigation or rulemaking lies in the first instance with the agency empowered by the enabling statute).

185. *Dark Pools, Flash Orders, High-Frequency Trading, and Other Market Structure Issues: Hearing Before the Subcomm. on Sec., Ins., and Inv. of the S. Comm. on Banking, Hous., and Urb. Affs.*, 111th Cong. 11 (2009) (statement of William O'Brien, Chief Exec. Officer, Direct Edge).

suggested that "the principles of fair access and transparency must be applied" to the issue.[186] Having announced their intentions to "focus on ensuring that colocation services are offered consistent with the SEC's long-standing 'fair-access' requirements," the exchanges signaled early cooperation with the SEC.[187]

Just before a Senate hearing related to high-frequency trading in October of 2009, "two major trading venues voluntarily accepted Commission oversight of their colocation plans."[188] Multiple exchanges thereafter engaged in public rulemaking with the SEC through the notice and comment process.[189] Since then, the exchanges and the SEC have an ongoing partnership that improve rules related to colocation. In fact, as of the writing of this article, additional rulemaking is currently before the public.[190] However, when the exchanges have not been substantially cooperative, the SEC has found an enforcement tool to compel exchanges to write and follow colocation rules.

The SEC brought an enforcement action against the NYSE and two affiliated exchanges in May of 2014. The SEC asserted that the exchanges had violated § 19(b) and § 19(g) of the Exchange Act.[191] The SEC found that the "NYSE provided co-location services to customers on disparate contractual terms without an exchange rule in effect that permitted and governed the provision of such services on a fair and equitable basis."[192] Thompson Reuters reported that, "[a]mong the more serious problems flagged by the SEC was the NYSE's failure to obtain approval to offer

186. *Id.* at 73 (statement of Robert Gasser, President and Chief Exec. Officer, Inv. Tech. Grp.).

187. *SEC Issues Concept Release on Equity Market Structure*, DAVIS POLK (Jan. 19, 2010), https://www.davispolk.com/sites/default/files/files/Publication/25c52235-b916-4389-a1f0-0f4f2ec5f9d9/Preview/PublicationAttachment/0938f0fc-c94c-48a4-aa3b-10df609df066/011910_EMS.pdf [hereinafter DAVIS POLK].

188. *Dark Pools, Flash Orders, High-Frequency Trading, and Other Market Structure Issues: Hearing Before the Subcomm. on Sec., Ins., and Inv. of the S. Comm. on Banking, Hous., and Urb. Affs.*, 111th Cong. 87 (2009) (statement of Peter Driscoll, Chairman, Sec. Traders Ass'n).

189. *See Colocation Rules, supra* note 165, at 3945 (publishing notice of SEC's rulemaking for proposed changes to NASDAQ fees for colocation services).

190. NASDAQ Stock Market LLC; Notice of Filing and Immediate Effectiveness of Proposed Rule Change Regarding the Extranet Access Fee, 80 Fed. Reg. 3683 (proposed Jan. 23, 2015).

191. Press Release, Sec. & Exch. Comm'n, SEC Charges NYSE, NYSE ARCA, and NYSE MKT for Repeated Failures to Operate in Accordance with Exchange Rules (May 1, 2014), http://www.sec.gov/News/PressRelease/Detail/PressRelease/1370541706507#.VNldqC53HfY.

192. *Id.*

colocation services and its disparate pricing, which permitted some trading firms to pay less money that others to place their computer servers inside the exchange's data centers."[193] The exchanges settled the charges for $4.5 million.[194] While the settlement seems relatively small, it sent "a message that the SEC will pursue all kinds of market structure violations."[195] It also told investors that another possible source of unfair advantages for high-frequency traders was being eliminated.

The practice of colocation came under heavy fire after the Flash Crash. Some of the prominent members of the U.S. Senate called for its outright prohibition.[196] However, evidence showed that the practice was both normal and helpful to investors. Exchanges, whose colocation practices were previously unregulated, have voluntarily engaged the SEC in rulemaking. Where engagement was not adequate, the SEC brought an enforcement action against the oldest and most well-known exchange.[197] However, in light of this progress, the calls to closely monitor colocation has not ceased.[198] Nor should they. The pressure of competition is such that exchanges are invited to shirk their self-regulatory responsibilities. When they do so, the SEC should act quickly and aggressively.

PART III: CONCLUSION

In 1994, Attorney General Janet Reno led a Department of Justice investigation into the misdeeds of Nasdaq market makers.[199] After describing the ways in which market makers had abused their privileged positions to fleece investors, the SEC announced "that significant changes . . . are warranted."[200] The changes wrought by this decision are

193. Sarah N. Lynch, *New York Stock Exchange to pay $4.5 Million to Settle SEC Charges,* REUTERS (MAY 2, 2014, 2:13 AM), http://www.reuters.com/article/2014/05/01/us-nyse-sec-enforcement-idUSBREA400LA20140501.

194. *Id.*

195. *Id.*

196. *McCain Statement*, *supra* note 154. *Opening Statement by Senator John McCain at PSI Hearing on Basket Options,* COMM. ON HOMELAND SEC. & GOV'T AFFS. (July 22, 2014), https://www.hsgac.senate.gov/subcommittees/investigations/library/files/null-172/.

197. Lynch, *supra* note 193.

198. *See* Linette Lopez, *A Radical Proposal to Change the Stock Market Could Completely Kill High-Frequency Trading,* BUS. INSIDER (Mar. 31, 2014), http://www.businessinsider.com/michael-lewis-high-frequency-trading-and-frequent-batch-auctions-2014-3 (listing different politicians, advocates, and scientists who are against the high-frequency trading in its current form).

199. *Reno Statement*, *supra* note 31.

200. PATTERSON, DARK POOLS, *supra* note 9, at 126.

likely of a different magnitude than the Attorney General or President Clinton imagined. Nearly two decades later, the Senior Vice President of Nasdaq testified that the decision "greatly democratized the markets, ultimately taking control of price setting away from market makers and specialist[s] and giving it to everyone who is interested in participating in the market."[201]

The Order Handling Rules created a financial market in which practically anyone could build an Electronic Computer Network, which serves as the functional equivalent of a stock exchange.[202] Once the new Electronic Computer Networks were established, it was a frenzy to attract people to take on role of market makers and specialists. Competition from high-frequency traders lowered spreads and "made the profitability of market makers an impossibility."[203] Just like that, the displacement completely removed the specialists and market makers who had served vital roles in the markets for over a hundred years. Into the role of liquidity makers "stepped the speed traders . . . the new market makers of the digital age."[204]

As high-frequency traders have assumed the functional role of market makers and specialists, they have done immense good by lowering the cost of trading for all investors.[205] Most curiously, they did so to the advantage of the same traders they thought they were abusing. High-frequency traders would sometimes claim that "a fund manager at Fidelity or Legg Mason was about the dumbest money on the planet."[206] They assumed that the entity they made money trading with must be the big loser. The reality is very different.

What must be remembered in any discussion about high-frequency traders is the system as it was without them. Christie and Schultz demonstrated that spreads were kept at even eighths or $0.125 per share by Nasdaq market makers.[207] Today, the "fast traders make money by picking up pennies and nickels on thousands of trades a day."[208] What happened to that twenty-four cent spread is perhaps the most important consideration for those regulating

201. *Market Structure Issues Hearing*, *supra* note 179, at 9 (statement of Frank Hatheway, Senior Vice President and Chief Economist, Nasdaq OMX).

202. PATTERSON, DARK POOLS, *supra* note 9, at 137.

203. *Id.* at 195.

204. *Id.*

205. *See High Frequency Trading's Impact on the Economy: Hearing Before the Subcomm. on Sec., Ins., and Inv. of the Comm. on Banking, Housi., and Urban Affrs*, 113th Cong. 7 (2014) (statement of Jeffrey Solomon, Chief Executive Officer, Cowen and Company, LLC).

206. PATTERSON, DARK POOLS, *supra* note 9, at 185.

207. *Id.* at 102.

208. *Id.* at 35.

high-frequency traders. If high-frequency traders have kept it for themselves, then today's markets are no better than those of 1997. Wholesale changes would again be in order. If investors are keeping even some of the twenty-four cents, then the system is as desired, albeit with excesses to eliminate. Studies indicate that the lion's share of the twenty-four cents per share is staying in the pocket of the so-called "dumb money."[209] Although the maker-taker system does move some additional funds from "dumb money" to high-frequency traders, high-frequency trader profits are derived from one penny spreads.[210] Circumstantial evidence agrees with the empirical studies on the positive effects of high-frequency traders.

No one is more attuned to the cost implications of high-frequency traders than the institutional traders for whom "trading costs are a critical determinant of performance."[211] The rise of high-frequency trading has been such a boon for retail investors that The Vanguard Group, which eschews costs while representing millions of retail investors, told the SEC that, "regulatory changes and efficiencies produced by high-frequency firms reduced costs for long-term investors by about 0.5% points over the last decade."[212] When you multiply that by the $3 trillion that Vanguard alone manages, the savings are $15 billion. The savings to shorter-term investors are greater. A mutual fund returning nine percent annually with a turnover of one hundred percent would otherwise see its gains cut to eight percent.[213] Mark Gorton of Tower Research estimates that "[b]oth large and small investors are saving billions of dollars every year due to the new electronic market structure and high-frequency trading."[214]

What has been forgotten, or perhaps never learned, by the high-frequency traders is at whose urging they were given their current roles. It was institutional investors who wanted them as intermediaries. In fact, the savings to be realized by retail investors and the institutions that represent them were a driving force behind inserting competition into the markets.[215]

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209. *See id.* at 185.

210. *See* Albert J. Menkveld, *High Frequency Trading and the New Market Makers,* 16 J. FIN. MKTS. 712, 732 (2013).

211. Lin Tong, *A Blessing or a Curse? The Impact of High Frequency Trading on Institutional Investors* 1 (Oct. 5, 2015) (unpublished manuscript) (on file with the European Finance Association Annual Meetings 2014 Paper Series).

212. Mehta, *supra* note 139.

213. *Id.*

214. Phil Albinus, *The HFT Believer: Mark Gorton of Tower Research*, TRADERS MAG. (Feb. 25, 2015), https://www.tradersmagazine.com/departments/people/the-hft-believer-mark-gorton-of-tower-research/.

215. *The Common Cents Stock Pricing Act of 1997: Hearing on H.R. 1053 Before the*

The only representative to testify in a hearing about the effects of decimalization of quotes and increased competition in the market making function voiced "strong support" for the measures. If any doubt could remain about his understanding of the issues, Harold Bradley said, "A move to decimals alone will be an empty gesture to investors if exchange . . . preserve inefficient intermediaries and perpetuate high cost access for investors."[216] It was as clear twenty years ago as it is now — high-frequency traders competing against one another for penny spreads serve the interests of institutional traders and their retail clients. Michael Lewis' concern that ordinary investors are losing a couple of billion dollars a year to high-frequency traders is laughably short-sighted.[217] As Jeffrey M. Solomon, then-CEO of Cohen and Company, LLC, testified before the Senate regarding the regulatory changes that elevated high-frequency traders, "each of these changes was well-intended and has had positive effects on market participants."[218]

Recognizing that high-frequency traders are useful tools within the financial markets, who are generally oblivious to the role they play and the benefits they have brought, is important. This is not the extent of the discussion, however. The Flash Crash has indeed cast a light on these previously unacknowledged players in the financial markets. Although the current system is still delivering value for investors, it is healthy to check certain practices for excess. This article has taken a hard look at three particular practices of high-frequency traders that have been scrutinized after the Flash Crash: manipulation through spoofing, using specialized order types, and colocation.

In the case of spoofing, the SEC has determined that high-frequency traders have abused their technological advantage role as liquidity makers in the market to manipulate equity prices. In response, the SEC has utilized the long-standing anti-manipulation rule in § 9(a)(2) of the Exchange Act to bring enforcement actions against high-frequency traders. Through these enforcement actions, the SEC has fined several traders and suspend others from the securities industry.[219] Recent efforts demonstrate that the SEC, armed with the Consolidated Audit Trail that was approved in 2016 and

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Subcomm. on Fin. and Hazardous Materials of the Comm. on Com. H.R., 105th Cong. 39 (1997) (statement of Harold Bradley, Vice President, Director of Trading, American Century Investment Management).

216. *Id*. at 42.

217. LEWIS, *supra* note 13, at 228–29.

218. *High Frequency Trading's Impact on the Economy: Hearing Before Subcomm. on Sec., Ins., and Invs. of the Comm. on Banking, Hous., and Urb. Affs.*, 113th Cong. 36 (2014) (statement of Jeffrey Solomon, CEO Cowan and Company, LLC).

219. *Trade Alpha*, *supra* note 73.

operating in place of the Order Audit Trail System in 2020, may be catching up to the high-frequency traders they regulate.[220]

The SEC has been less successful in curbing the use of specialized order types. These order types, which are not understood by many professionals or their retail clients, pose a hazard for investors. They can no longer be certain of the rules of the road. As it stands today, the attention that has been given to the issue is slowing the production of order types.[221] However, growth continues where a reduction is essential.[222] It would be wise for the SEC to propose rules now for simple, standardized orders across platforms in-line with the SEC's mandate. If it finds cooperation is slow, the SEC has incredible power to end discriminatory and manipulative practices by the exchanges under § 6(b)(5) of the Exchange Act.

Finally, the SEC has been asked to examine the practice of colocation by high-frequency trading firms. The agency has found broad consensus that colocation, although it can be cast in the worst of lights, is the latest evolutionary chain in an age-old practice. Convinced that colocation is a neutral or positive effect on the market, the SEC has focused on fair access and transparency. So far, its efforts have been met with cooperation by the major exchanges.[223] Only once has the SEC felt forced to bring an enforcement action against an exchange.[224] The SEC should remain vigilant in its pursuit of transparency and fairness in colocation, bringing enforcement actions whenever necessary.[225]

Currently, investors enjoy "the most leveled playing field ever" in the securities market.[226] This is, in part, due to the competition that has been fostered between high-frequency traders who deliver low-cost trading and high liquidity.[227] As the role of high-frequency traders in the market structure continues to evolve, a close watch must be kept over their practices.

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220. 17 C.F.R. § 242.613 (2012).

221. Carver, *supra* note 127.

222. *See* PATTERSON, DARK POOLS, *supra* note 9, at 318.

223. *See* DAVIS POLK, *supra* note 187, at 1 (describing the litany of questions the SEC engaged exchanges and other market participants in, in order to receive buy-in).

224. Press Release, Sec. & Exch. Comm'n, SEC Charges NYSE, NYSE ARCA, and NYSE MKT for Repeated Failures to Operate in Accordance With Exchange Rules (May 1, 2014), http://www.sec.gov/News/PressRelease/Detail/PressRelease/1370541706507#.VNIdqC53HfY.

225. *See* Charles R. Korsmo, *High-Frequency Trading: A Regulatory Strategy,* 48 U. RICH. L. REV. 523, 529 (2014) (arguing that any regulatory scheme should be carefully designed to maintain the benefits that high-frequency traders create for investors and the markets generally).

226. Albinus, *supra* note 214.

227. *Id.*

High-frequency traders, like the market makers and specialists they replaced, must be regulated because they are key players in a well-organized market.[228] This entails constantly reassessing the bargain that was made in 1997. While the bargain struck gave high-frequency traders the ability to capture the new, narrower spreads, there is evidence that the distributions of benefits has shifted in favor of high-frequency traders in recent years.[229] Wherever high-frequency traders take excessive benefits from their position within the markets, the SEC should act forcefully. It can begin by implementing the three proposals set forth in this paper.

228. *See generally* George T. Simon & Kathryn M. Trkla, *The Regulation of Specialists and Implications for the Future*, 61 BUS. LAW 217 (2005) (describing the regular monitoring of market makers and specialists since the 1930s).

229. *See* Tong, *supra* note 211, at 2–3 (describing attempts by high-frequency traders to capture profits on price through order anticipation as well as bid-ask spreads).