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FIGHTING FOR MARKET SHARE: HOW A TRADE-AT RULE CAN IMPROVE MARKET EFFICIENCY

MARIA ZYSKIND

INTRODUCTION

The opening bell rang at 9:30 AM, signaling the start of the trading day on the New York Stock Exchange (NYSE) in 1980.¹ Thousands of traders congregated on the floor, sending an unbridled energy through the air.² Equipped with pen and paper, they shouted, jostled, and gesticulated as they bargained for prices.³ They traded stock in face-to-face transactions, providing a human element to the market.⁴

Fast forward a few decades and trading floors have subdued.⁵ Computers have largely replaced boisterous crowds of floor traders and automation has decreased human interaction.⁶ Moreover, new technology has allowed market participants to trade shares of stock in milliseconds.⁷ Accordingly, computer algorithms dominate the market, entering and canceling thousands of orders per second.⁸

This transformation has taken a heavy toll on exchanges' market share. Gone are the days where exchanges served as the primary marketplaces for order execution.⁹ About eighty percent of stock trading occurred on the NYSE ten years ago, but only twenty

1. D.M. Levine, *A Day in the Quiet Life of a NYSE Floor Trader*, FORTUNE (May 29, 2013, 2:15 PM), <http://fortune.com/2013/05/29/a-day-in-the-quiet-life-of-a-nyse-floor-trader/>.

2. *Id.*

3. *Id.*

4. Edwin Batista, Note, *A Shot in the Dark: An Analysis of the SEC's Response to the Rise of Dark Pools*, 14 J. HIGH TECH. L. 83, 87 (2014).

5. Levine, *supra* note 1.

6. *Id.*

7. Summary of Senate PSI Hearing on Conflicts of Interest, Investor Loss of Confidence, and High Speed Trading in U.S. Stock Markets, SEC. INDUS. & FIN. MKTS. ASSOC. (June 17, 2014), <http://www.sifma.org/members/hearings.aspx?id=8589949563> [hereinafter *Senate PSI Hearing*].

8. AL BROOKS, TRADING PRICE ACTION TRENDS: TECHNICAL ANALYSIS OF PRICE CHARTS BAR BY BAR FOR THE SERIOUS TRADER (2d ed. 2012).

9. See Jennifer Dean, Note, *Paradigm Shifts & Unintended Consequences: The Death of the Specialist, the Rise of High Frequency Trading, & the Problem of Duty-Free Liquidity in Equity Markets*, 8 FIU L. REV. 217, 228 (2012).

percent occurred there in 2014.¹⁰ Instead of exchanges, many orders now execute on off-exchange venues, which are known as alternative trading systems (ATs). ATs function like exchanges by matching buyers and sellers to facilitate order execution, but they can offer price improvement, anonymity, faster execution, and decreased trading costs to investors.¹¹

New technology and regulatory changes have significantly increased the prevalence of off-exchange trading, which poses distinct problems to investors. About forty percent of stock trading occurred on off-exchange venues in 2014.¹² This number includes nearly all of the orders that mom and pop investors send their brokers.¹³ Most of these individuals do not know where their orders execute or whether they receive the best execution. On one hand, brokers can route orders to off-exchange trading venues that offer investors price improvement and decreased trading costs.¹⁴ On the other hand, brokers can route orders to venues that offer themselves the highest rebates.

Unlike many mom and pop investors, exchanges are painfully aware of the consequences associated with off-exchange trading. Indeed, off-exchange trading has cut into the profit and market share of exchanges. As a result, major exchanges like Intercontinental Exchange (ICE), NYSE¹⁵, and Nasdaq are pushing to overhaul the stock market and decrease off-exchange trading. All three have publicly voiced support for a trade-at rule.¹⁶ While the details of a trade-at rule vary depending on the proposal, the aim of the trade-at rule is

10. Eric Garcia, *This NYSE Plan Could Help Retail Investors*, MARKETWATCH (Dec. 24, 2013, 12:08 PM), <http://www.marketwatch.com/story/this-nyse-plan-could-help-retail-investors-2014-12-24>.

11. See Dean, *supra* note 9, at 234–35.

12. John McCrank, *Dark Markets may be More Harmful than High-Frequency Trading*, REUTERS (Apr. 7, 2014, 4:27 AM), <http://www.reuters.com/article/2014/04/07/us-markets-darkpools-analysis-idUSBREA3605M20140407>.

13. Sarah Lynch & John McCrank, *Exclusive: SEC Eyes Test that May Lead to Shift Away from 'Dark Pools'*, REUTERS (Apr. 11, 2014, 5:35 AM), <http://www.reuters.com/article/2014/04/11/us-sec-darkmarkets-idUSBREA3A0CP20140411>.

14. Dean, *supra* note 9, at 235.

15. ICE closed on its acquisition of NYSE's parent company, NYSE Euronext, in November 2013. *ICE Closes on \$11B Acquisition of NYSE Euronext*, YAHOO FIN. (Nov. 13, 2013, 11:57 AM), <http://finance.yahoo.com/news/ice-closes-11b-acquisition-nyse-135835485.html?nf=1&bypass=true>.

16. Dave Michaels, *Exchanges Get Test to Curb Dark Trading in SEC Program*, BLOOMBERG BUS. (June 24, 2014, 11:01 PM), <http://www.bloomberg.com/news/2014-06-24/exchanges-get-test-to-curb-dark-trading-in-sec-program.html>; Bradley Hope, *NYSE, Nasdaq Join to Push for Trading Rule*, WALL ST. J. (Mar. 10, 2014, 6:46 PM), <http://www.wsj.com/articles/SB10001424052702304020104579431300583920332>.

to decrease off-exchange trading.¹⁷ In practice, a trade-at rule has the potential to force brokers to send more orders to exchanges and push market share away from off-exchange venues.¹⁸

This paper analyzes the effects of off-exchange trading and the implementation of a trade-at rule as a remedy for the consequences associated with off-exchange trading. Section I analyzes the history behind the increase in off-exchange trading, focusing on the technological and regulatory changes that gave rise to the current fragmented market structure. It also evaluates the benefits and consequences of off-exchange trading by analyzing its effect on transaction costs, bid-ask spreads, liquidity, and price. Moreover, it is necessary to understand the current proposals addressing off-exchange trading and the stakeholders behind each proposal. Section II discusses proposals by the Securities and Exchange Commission (SEC), ICE, Nasdaq, and BATS Global Markets (BATS) that include a trade-at rule, decrease in access fees, block trading exemption, or elimination of the maker-taker system. As a solution to the increase of off-exchange trading, Section III argues for a program that incorporates a trade-at rule, a decreased cap on access fees, a variable access fee and rebate schedule, and a block trading exemption. Of note, empirical evidence is the best measure of success for any program. Therefore, Section IV discusses metrics to use in evaluating the success of any such initiative. This article suggests evaluating market share, bid-ask spreads, and price to determine whether the current market structure is more efficient with a trade-at rule.

I. THE RISE OF OFF-EXCHANGE TRADING

The last several decades have seen the transformation from an exchange-dominated market to a fragmented market where trading is dispersed among various locales. In determining the need for a trade-at rule, it is necessary to understand the technology and regulations that spurred off-exchange trading and the impact of off-exchange trading on the market.

17. See ROBERT P. BARTLETT & JUSTIN MCCRARY, DARK TRADING AT THE MIDPOINT: PRICING RULES, ORDER FLOW AND PRICE DISCOVERY 4 (2015); Amy Kwan, *Orchestral Manoeuvres in the Dark*, 35 AUTOMATED TRADER MAGAZINE 34, 36 (2015).

18. Michaels, *supra* note 16; Hope, *supra* note 16.

A. Technology and Changing Regulations

Before computers dominated the stock market, humans traded stock on exchange floors in face-to-face transactions.¹⁹ To trade on the floor, buyers and sellers purchased seats and become exchange members.²⁰ A market maker—a type of exchange member—served as an intermediary between an exchange and the public.²¹ Market makers executed orders for investors and profited from the difference in the price they paid for a stock and the price they charged to process investor orders.²²

The need for human intermediaries diminished as computers decreased in cost and computer-based trading increased in popularity in the 1990s.²³ Namely, electronic communications networks (ECNs) gained market share in the 1990s.²⁴ An ECN is a type of ATS that matches buyers and sellers with computer algorithms and allows firms to execute trades without intermediaries.²⁵ An ECN allows subscribers to place trades directly on its platform.²⁶ It posts orders for subscribers to view and automatically submits matching orders for execution.²⁷ ECNs can be more attractive than exchanges because they offer lower fees, faster trade execution, and rebates for providing liquidity.²⁸ As ECNs gained popularity, they chipped away at exchanges' dominance of the market.

In 1999, the SEC passed Regulation Alternative Trading Systems (Reg ATS), making the marketplace more favorable towards ATSs.²⁹ Reg ATS allowed ATSs to register as broker-dealers instead of exchanges, which are considerably more expensive to create and are subject to stricter regulation than broker-dealers.³⁰

19. Batista, *supra* note 4, at 87.

20. *Id.*

21. *Id.*

22. *Id.* at 87–88.

23. *Id.* at 88.

24. Nathan D. Brown, Note, *The Rise of High Frequency Trading: The Role Algorithms and the Lack of Regulations, Play in Today's Stock Market*, 11 APPALACHIAN J.L. 209, 211 (2012).

25. Batista, *supra* note 4, at 88–89.

26. *ECNs/Alternative Trading Systems*, U.S. SEC. & EXCH. COMM'N, <http://www.sec.gov/divisions/marketreg/mrecon.shtml> (last modified Nov. 4, 2005).

27. *Id.*

28. Ian Poirier, Note, *High-Frequency Trading and the Flash Crash: Structural Weaknesses in the Securities Markets and Proposed Regulatory Responses*, 8 HASTINGS BUS. L.J. 445, 449–50 (2012).

29. Dean, *supra* note 9, at 234.

30. *Id.* at 233–34.

Accordingly, Reg ATS was a major victory for ATSS by allowing them to carry out traditional exchange functions with less expense and regulation.³¹ Due to automation and Reg ATS, the market had an alternative to exchange-based trading and, as a result, exchanges no longer served as the most attractive execution venues.

This use of automation and computer algorithms to match orders in ATSS gradually evolved into high-frequency trading (HFT).³² HFT involves running complex computer algorithms to electronically buy and sell large amounts of securities at high speeds.³³ In 2001, the SEC moved to decimalization in the stock market, inadvertently encouraging HFT. Decimalization meant that stock exchanges had to price stocks in pennies rather than fractions. Before decimalization, the minimum price change between shares of stock was 1/8th of a dollar, so a share of stock could be priced at "\$129, \$129.125, \$129.25 and so on."³⁴

The move to decimalization narrowed bid-ask spreads, limiting the ability of market makers to compete.³⁵ Market makers continually buy and sell securities, aiming to profit off the bid-ask spread, which is the difference between the price a seller will accept and the buyer will pay. Because decimalization decreased spreads from fractions of a dollar to a penny, the minimum profit that a market maker could make off a trade decreased.³⁶ To make the same amount of money, market makers had to trade significantly more stock.³⁷ Unlike market makers, high-frequency traders rapidly executed thousands of orders with the use of high speed algorithms, reaping profits off penny spreads.³⁸ Thus, decimalization encouraged high-frequency traders at the cost of market makers.³⁹

31. *Id.*

32. Batista, *supra* note 4, at 89.

33. Matthew Philips, *High-Frequency Trading's Rise and Rise*, BLOOMBERG BUS. (Dec. 4, 2014), <http://www.bloomberg.com/bw/articles/2014-12-04/high-frequency-tradings-rise-and-rise>.

34. Kambiz Foroohar, *Trading Pennies Into \$7 Billion Drives High-Frequency's Cowboys*, BLOOMBERG BUS. (Oct. 5, 2010), <http://www.bloomberg.com/news/articles/2010-10-06/trading-pennies-into-7-billion-profit-drives-high-frequency-s-new-cowboys>.

35. Michael McGowan, Note, *The Rise of Computerized High Frequency Trading: Use and Controversy*, 2010 DUKE L. & TECH. REV. 16, ¶12 (2010).

36. *Id.*

37. *Id.*

38. Jerry Adler, *Raging Bulls: How Wall Street Got Addicted to Light-Speed Trading*, WIRED (Aug. 3, 2012, 5:53 PM), http://www.wired.com/2012/08/ff-wallstreet_trading/all/.

39. *Id.*

HFT presented problems for institutional investors, who trade large amounts of securities at a time. Namely, high-frequency traders used computer programs to detect patterns signaling a large trade.⁴⁰ Before institutional investors could complete their trades, high-frequency traders executed their own orders in front of the institutional investors' orders.⁴¹ This strategy known as front-running moved the price in favor of high-frequency traders and against institutional investors by making a buy order more expensive and a sell order less profitable for institutional investors.⁴²

In 2005, the SEC adopted Regulation National Market System (Reg NMS), which again increased the popularity of ATs and decreased institutional investors' ability to hide from high-frequency traders.⁴³ Reg NMS aimed to connect various trading venues into a linked trading network, or a national market system.⁴⁴ It required exchanges to route orders to the trading venue with the best displayed price, regardless of the venue where the order was filed.⁴⁵ Reg NMS decreased exchanges' stronghold over the market by ensuring that orders were routed to the venue with the best displayed price, which was not necessarily an exchange.⁴⁶ Before Reg NMS, the NYSE's market share was about eighty-five percent; however, after Reg NMS, the NYSE's market share plummeted to around thirty percent.⁴⁷

In addition to order-routing requirements, Reg NMS implemented certain disclosure requirements that limited institutional investors' ability to hide from HFT. Before Reg NMS, to avoid front-running by high-frequency traders, institutional investors disclosed the full scope of their trades at the last minute.⁴⁸ They engaged in block trading, arranging "secret" trades where details were revealed after order placement.⁴⁹ However, Reg NMS required exchanges "to collect and publish the quotations for the securities posted in their ven-

40. Batista, *supra* note 4, at 84 .

41. *Id.*

42. *Id.*

43. See GARY SHORTER & RENA S. MILLER, CONG. RESEARCH SERV., R43739, DARK POOLS IN EQUITY TRADING: POLICY CONCERNS AND RECENT DEVELOPMENTS 2 (2014).

44. Poirier, *supra* note 28, at 449.

45. *Id.*

46. Craig Pirrong, *Financial Exchanges: Competition and Vertical Integration in Financial Exchanges*, 7 COMPETITION POL'Y INT'L 90, 94 (2011).

47. *Id.*

48. Batista, *supra* note 4, at 90.

49. *Id.* at 90–91.

ues . . . [and] forced all trading venues to monitor stock prices constantly on an electronic ticker tape.”⁵⁰ These disclosure requirements decreased the ability of institutional investors to hide from high-frequency traders who jumped in front of their orders, effectively increasing the price of buy orders and decreasing the price of sell orders.⁵¹

As a result, institutional investors sought shelter from front-running in dark pools. A dark pool is another type of ATS that matches orders without publishing pre-trade bids and offers. Dark pools publicize price information after a trade is completed.⁵² A loophole in Reg ATS propelled dark pools to popularity in the latter half of the 2000s.⁵³ The loophole “allowed trading with hidden quotes as long as the volume of trades on a stock did not exceed five percent of the national trading volume in that stock.”⁵⁴ As a result, investors could use dark pools to trade large blocks of securities anonymously and avoid alerting high-frequency traders of their actions.⁵⁵ Thus, exchanges lost market share to ATSs, as more investors chose dark pools for order execution.⁵⁶

The combination of technological advancements, Reg ATS, decimalization, and Reg NMS led to the rise of ATSs and off-exchange trading.⁵⁷ For instance, forty percent of stock trading in the United States took place in off-exchange venues in 2014, a large increase from sixteen percent in 2008.⁵⁸ Today, when executing orders, investors can choose from several ECNs, more than forty dark pools, and thirteen exchanges.⁵⁹ The dominance of exchanges has fallen because trading is dispersed across various venues. About eighty percent of stock trading occurred on the NYSE ten years ago but only twenty percent occurred there in 2014.⁶⁰ Current-

50. *Id.* at 91.

51. GARY SHORTER & RENA S. MILLER, CONG. RESEARCH SERV., R43739, DARK POOLS IN EQUITY TRADING: POLICY CONCERNS AND RECENT DEVELOPMENTS 2 (2014).

51. Batista, *supra* note 4, at 84.

52. *Id.*

53. Batista, *supra* note 4, at 92–93.

54. *Id.* at 92.

55. SHORTER & MILLER, *supra* note 51.

56. *See id.* at 1.

57. Dean, *supra* note 9, at 235.

58. John McCrank, *Dark Markets may be More Harmful than High-Frequency Trading*, REUTERS (Apr. 7, 2014, 4:27 AM), <http://www.reuters.com/article/2014/04/07/us-markets-darkpools-analysis-idUSBREA3605M20140407>.

59. BLACKROCK, US EQUITY MARKET STRUCTURE: AN INVESTOR PERSPECTIVE 2 (2014).

60. Garcia, *supra* note 10.

ly, no exchange has a stronghold on the stock market.⁶¹ About twenty percent of stock trading occurs on the NYSE, Nasdaq, and BATS, respectively.⁶²

Finally, in 2010, the SEC sought comment on a trade-at rule aimed at shifting trading back to exchanges.⁶³ The proposal sparked considerable commentary among the industry and the SEC ultimately did not implement the rule.⁶⁴ However, the trade-at rule is again up for discussion as the SEC and ICE have incorporated trade-at rules into proposals for stock market reform. The SEC incorporated a trade-at rule as part of its study on trading increments.⁶⁵ Meanwhile, ICE proposed a trade-at rule in combination with decreased access fees to drive orders back to exchanges.⁶⁶ Although Bloomberg and Reuters have cited Nasdaq as a proponent of a trade-at rule, Nasdaq has its own proposal to minimize off-exchange trading.⁶⁷ Its proposal uses decreased access fees to move trading back to exchanges without a trade-at rule.⁶⁸

B. Off-Exchange Trading and Market Quality

Naturally, the market participants that a trade-at rule benefits tend to voice support in its favor. Meanwhile, those disadvantaged by a trade-at rule tend to voice opposition. Since exchanges have lost market share to off-exchange venues, it is no surprise that ICE,

61. Bradley Hope, *BATS Opposes NYSE Owner's Stock-Market Reform Plan*, WALL ST. J. (Dec. 18, 2014, 3:09 PM), <http://www.wsj.com/articles/bats-opposes-nyse-owners-stock-market-reform-plan-1418933375>.

62. *Id.*

63. *Thoughts On Trade-At Rule*, THEMIS TRADING BLOG (Apr. 19, 2010), <http://blog.themistrading.com/thoughts-on-trade-at-rule/>.

64. Nina Mehta, *Morgan Stanley Changing Dark Pool to Attract Bigger Orders*, BLOOMBERG BUS. (Sept. 21, 2011, 5:48 PM), <http://www.bloomberg.com/news/articles/2011-09-21/morgan-stanley-changing-dark-pool-rules-in-attempt-to-increase-order-sizes>.

65. U.S. SEC. & EXCH. COMM'N, PLAN TO IMPLEMENT A TICK SIZE PILOT PROGRAM SUBMITTED TO THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 608 OF REGULATION NMS UNDER THE SECURITIES EXCHANGE ACT OF 1934 15–16 (2014), <http://www.sec.gov/divisions/marketreg/tick-size-pilot-plan-final.pdf>.

66. Larry Tabb, *The Grand Bargain: A Great Start, But Don't Hold Your Breath*, TABBFORUM (Jan. 6, 2015), <http://tabbforum.com/opinions/the-grand-bargain-a-great-start-but-don't-hold-your-breath/>; Bradley Hope & Scott Patterson, *NYSE Plan Would Revamp Trading*, WALL ST. J. (Dec. 17, 2014, 8:17 PM), <http://www.wsj.com/articles/intercontinental-exchange-proposing-major-stock-market-overhaul-1418844900>.

67. Lynch & McCrank, *supra* note 13; Michaels, *supra* note 16.

68. *Here Is What You Need to Know About The Nasdaq Experimental Pricing Schedule*, THEMIS TRADING BLOG (Feb. 2, 2015), <http://blog.themistrading.com/here-is-what-you-need-to-know-about-the-nasdaq-experimental-pricing-schedule/> [hereinafter *Here Is What You Need*].

NYSE, and Nasdaq have voiced support for a trade-at rule.⁶⁹ In contrast, brokers associated with ATs are generally opposed to a trade-at rule because it forces orders away from them and cuts into profits.⁷⁰ Therefore, it is essential to understand the effect of off-exchange trading on the market to come to an objective conclusion on the utility of a trade-at rule. This section discusses the effect of off-exchange trading on transaction costs, bid-ask spreads, liquidity, and price.

1. Transaction Costs

Off-exchange trading has benefited the market by decreasing transaction costs; however, it has increased the conflicts of interest that brokers face when choosing execution venues. First, decreased transaction costs benefit investors. Transaction costs are the expenses associated with buying or selling securities.⁷¹ Examples include commissions paid to brokers or the difference between the price to buy and sell.⁷² Further, because many exchanges employ a maker-taker system, ATs can serve as less expensive execution venues for brokers.⁷³ In a maker-taker system, market participants that respond to buy or sell orders are “takers” of liquidity and pay a fee to access the liquidity on exchanges.⁷⁴ In contrast, market participants that add liquidity, or post orders that are not immediately executable, are “makers” of liquidity and receive rebates.⁷⁵ Access fees and rebates can serve as incentives for brokers to send orders to less expensive, non-exchange venues.

Accordingly, off-exchange venues serve a valuable role in decreasing the cost of trading by allowing brokers to avoid exchanges’

69. Lynch & McCrank, *supra* note 13; Michaels, *supra* note 16.

70. Matt Levine, *Levine on Wall Street: Rigging FX and Defining Insider Trading*, BLOOMBERG VIEW (Nov. 11, 2014, 7:53 AM), <http://www.bloombergtv.com/articles/2014-11-11/levine-on-wall-street-rigging-fx-and-defining-insider-trading>.

71. Anya Aratovskaya, *How Forex Traders Can Account for Unexpected Costs*, BOS. TECH. BLOG (June 12, 2013), <http://www.bostontechnologies.com/blog/How-Forex-Traders-Can-Account-For-Unexpected-Costs>.

72. JAROSLAW MORAWSKI, *INVESTMENT DECISIONS ON ILLIQUID ASSETS* 48 (1st ed. 2008).

73. Gary Stone, *The Maker-Taker Model and Access Fees: It's Time for the SEC to Correct the Prisoner's Dilemma*, BLOOMBERG: EQUITIES (Jan. 24, 2014), <http://www.bloombergtv.com/blog/maker-taker-access-fees/>.

74. *Id.*

75. *Id.*; Bob Pisani, *Wall Street Trade Group Urges New Trading Rules*, CNBC (July 14, 2014, 1:42 PM), <http://www.cnbc.com/id/101834667>.

access fees.⁷⁶ To avoid these fees, brokers can send orders to venues like ECNs or dark pools.⁷⁷ They can also fill orders from the brokerage firm's own inventory, a process called internalization.⁷⁸ Moreover, brokers can sell the orders they receive from investors to wholesale brokers in a process called payment for order flow.⁷⁹ Many wholesale brokers in turn internalize or route the orders elsewhere for execution, often to an ATS.⁸⁰

On the other hand, the execution quality of investor orders can be impaired when brokers face conflicts of interest in choosing between the multitude of off-exchange venues.⁸¹ Access fees, rebates, internalization, and payment for order flow incentivize brokers to preference their own financial interest above the customers' interest.⁸² For example, a broker may choose a specific trading venue for order execution because it offers higher rebates, even though an exchange would offer the customer better execution quality.⁸³ In terms of execution quality, the broker's choice in venue may influence execution speed and the number of shares that receive price improvement.

Although brokers have a duty of best execution to their customers, it is not strong enough to prevent conflicts of interest. The duty of best execution is a "loose, imprecise, principles-based standard that is designed to offer flexibility, with a certain degree of subjectivity for the broker."⁸⁴ In considering best execution, brokers consider factors such as price, order size, execution speed, and certainty of execution.⁸⁵ However, recent case law does not reflect these factors and, instead, revolves around obvious and continual violations of the

76. CHARTERED FIN. ANALYSTS INST., TRADE-AT RULES IN AUSTRALIA AND CANADA: A MIXED BAG FOR INVESTORS 1 (2014), https://www.cfainstitute.org/ethics/Documents/Policy%20Brief_Trade-at%20Rules.pdf.

77. Dave Michaels, *NYSE Proposes Lower Access Fees to get More Trading*, BLOOMBERG BUS. (May 13, 2013, 8:57 AM), <http://www.bloomberg.com/news/articles/2013-05-13/nyse-proposes-lower-access-fees-to-get-more-trading-on-exchanges>.

78. *Market Centers: Buying and Selling Stock*, U.S. SEC. & EXCH. COMM'N, <http://www.sec.gov/answers/market.htm> (last modified Oct. 15, 2012).

79. *Id.*

80. *Id.*

81. *Senate PSI Hearing*, *supra* note 7, at 1.

82. *Id.*

83. *Id.* at 2.

84. MICAH HAUPTMAN, CONSUMER FED'N OF AM., WHITE PAPER: TOWARD A U.S. EQUITY MARKET STRUCTURE THAT SERVES ALL INVESTORS 10 (2014), <http://www.consumerfed.org/pdfs/CFA-Market-Structure-White-Paper.pdf>.

85. *Id.*

duty of best execution.⁸⁶ Customers are hurt when brokers favor their own interest, as customer orders can experience a lower probability of being filled and an overall decrease in execution quality.⁸⁷

2. Bid-Ask Spreads

There is no consensus on the impact that off-exchange trading has on bid-ask spreads as different studies yield conflicting results. Nevertheless, investors prefer narrower bid-ask spreads, meaning the difference between the price at which the seller will sell and the buyer will buy is minimal.⁸⁸ With narrow spreads, the buyer and seller will generally agree on what the correct price of a stock should be.⁸⁹ However, where spreads are wide, costs are greater because a buyer or seller must concede more to enter or exit a trade.

Certain empirical evidence shows a correlation between dark trading and wider bid-ask spreads. A 2011 study by Rutgers University Professor Daniel Weaver examined trading in over 4,000 stocks and found a correlation between trading in dark pools and wider bid-ask spreads.⁹⁰ Weaver conducted another study in 2014 examining trade data from dark pools, ECNs, and broker-dealer internalizers.⁹¹ The study similarly found that off-exchange trading is associated with wider spreads.⁹²

On the other hand, in 2012, a CFA Institute study concluded that varying amounts of dark trading, based on market capitalization, can narrow bid-ask spreads.⁹³ Although there is a point at which trading in dark venues widens bid-ask spreads,⁹⁴ SEC Chair Mary Jo White publicly stated that “spreads between bid and ask prices for the broader market . . . are as narrow as they have ever been.”⁹⁵

86. *Id.*

87. *Senate PSI Hearing, supra* note 7, at 2.

88. *See Morningstar Investing Glossary: Bid-Ask Spread*, MORNINGSTAR, <http://www.morningstar.com/InvGlossary/bid-ask-spread.aspx> (last visited Mar. 1, 2015).

89. *Id.*

90. STAFF OF THE DIV. OF TRADING & MKTS., U.S. SEC. & EXCH. COMM’N, EQUITY MARKET STRUCTURE LITERATURE REVIEW PART I: MARKET FRAGMENTATION 11 (2013).

91. HAUPTMAN, *supra* note 84.

92. *Id.*

93. *Id.*

94. *Id.*

95. Mary Jo White, Chairwoman, Sec. & Exch. Comm’n, Remarks at the Sandler O’Neill & Partners, L.P. Global Exchange and Brokerage Conference, Enhancing Our Equity Market Structure (June 5, 2014) (on file at http://www.sec.gov/News/Speech/Detail/Speech/1370542004312#.VHDMQYvF_4A).

Thus, whether off-exchange trading has negatively impacted bid-ask spreads remains an open question.

3. Liquidity

By taking displayed liquidity away from exchanges, off-exchange trading has the potential to impair the price discovery process and even cause inaccurate stock prices. The price discovery process is a method of determining stock prices based on supply and demand.⁹⁶ Publicly posted bids and offers contribute to price discovery because they express the market's interest in a stock. Accordingly, when significant amounts of trading occur on dark trading venues that do not publicize pre-trade information, publicly posted prices may not be an accurate measure of the market's interest.⁹⁷ Investors, thus, may not receive the best price possible.⁹⁸ Further, instead of aiding in the price discovery process, dark markets copy the prices set by exchanges; however, these prices may not be an accurate measure of supply and demand.⁹⁹

4. Price

Off-exchange trading venues can benefit investors by offering better prices and providing a haven from high-frequency traders. Although ATs can offer improved prices, such price improvement may not be large.¹⁰⁰ For instance, if the best price listed on an exchange is \$20, an ATs can offer \$20.0001, an improvement of \$0.0001.¹⁰¹ Such a price improvement results in minimal savings to investors. Nevertheless, ATs argue that any price improvement, no matter how small, benefits investors.¹⁰²

Dark pools also provide institutional investors an escape from high-frequency traders, who can move stock prices against institu-

96. BLACKROCK, ETFs HELP IMPROVE MARKET STABILITY: A CLOSER LOOK AT FIXED INCOME ETF BEHAVIOR DURING RECENT BOND MARKET MOVEMENT 4 (2014), <https://www.blackrock.com/corporate/en-us/literature/whitepaper/etfs-help-improve-market-stability-october-2014.pdf>.

97. ANA AVRAMOVIC, CREDIT SUISSE, WHO'S AFRAID OF THE DARK? TRADING OFF-EXCHANGE 1 (2012).

98. Lynch & McCrank, *supra* note 13.

99. Laura Nyantung Beny, *U.S. Secondary Stock Markets: A Survey of Current Regulatory and Structural Issues and a Reform Proposal to Enhance Competition*, 2002 COLUM. BUS. L. REV. 399, 419 (2002).

100. Hope, *supra* note 16.

101. *Id.*

102. *Id.*

tional investors by front-running their orders. By publicizing price information after the completion of a trade, dark pools minimize information leakage, hindering the ability of high-frequency traders to detect large orders right before their submission.¹⁰³ However, high-frequency traders frequent some dark pools, front-running orders and increasing the cost of trading for investors.¹⁰⁴

II. TRADE-AT RULE

Regulators and exchanges have proposed different programs to address the increase in off-exchange trading. The SEC's Tick Size Pilot Program subjects a group of securities to the trade-at rule.¹⁰⁵ ICE's "grand bargain" proposes a combination of a trade-at rule with a decrease in access fees.¹⁰⁶ Nasdaq's proposal, on the other hand, tests a decrease in access fees without a trade-at rule.¹⁰⁷ To evaluate the merits, it is important to understand the stakeholders that support and oppose each program. Therefore, this section discusses the SEC's Tick Size Pilot Program, ICE's "grand bargain," and Nasdaq's program. This section also contemplates the current market structure without a trade-at rule. Finally, this section evaluates the impact of the trade-at rule in Canada and Australia's markets.

A. Tick Size Pilot Program

On June 24, 2014, the SEC ordered a group of exchanges¹⁰⁸ and the Financial Industry Regulatory Authority, Inc. (FINRA) to de-

103. *Market Structure: Ensuring Orderly, Efficient, Innovative and Competitive Markets for Issuers and Investors: Hearing Before the Subcomm. on Capital Markets and Government Sponsored Enterprises, of the H. Comm. on Fin. Serv.*, 112th Cong. 15 (2012) (statement of Duncan Niederauer, Chief Exec. Officer, NYSE Euronext).

104. Jim Edwards, *How Knowledge of Credit Suisse's Dark Pool for High-Frequency Trading Leaked Out on LinkedIn*, BUS. INSIDER (Apr. 23, 2014, 1:11 PM), <http://www.businessinsider.com/credit-suisse-dark-pool-for-high-frequency-trading-leaked-on-linkedin-2014-4>.

105. Supriya Kurane, *SEC Asks Exchanges, FINRA to Submit "Tick Size" Pilot Plan*, REUTERS (June 25, 2014, 3:51 AM), <http://www.reuters.com/article/2014/06/25/sec-pilotprogram-trading-idUSL4N0P61HV20140625>.

106. Tabb, *supra* note 66; Hope & Patterson, *supra* note 66.

107. Angela Chen, *Nasdaq Launches Lower Access Fee Program*, WALL ST. J. (Feb. 2, 2015, 9:03 AM), <http://www.wsj.com/articles/nasdaq-launches-lower-access-fee-program-1422884966>.

108. The exchanges named are the BATS Exchange, Inc., BATS Y-Exchange, Inc., Chicago Stock Exchange, Inc., EDGA Exchange, Inc., EDGX Exchange, Inc., The Nasdaq Stock Market LLC, Nasdaq OMX BX, Nasdaq OMX Phlx, National Stock Exchange, Inc., New York Stock Exchange LLC, NYSE Arca, Inc., and NYSE MKT LLC. Order Directing the Exchanges

velop and file with the SEC “a national market system plan to implement a pilot program that, among other things, would widen the quoting and trading increments for certain small capitalization stocks.”¹⁰⁹ Known as the Tick Size Pilot Plan, this pilot analyzes the impact of wider tick sizes, or wider minimum quoting increments, for stocks of some smaller companies.¹¹⁰ Namely, it tests the effects of trading stocks in five-cent increments instead of current one-cent increments.¹¹¹ On August 25, 2014, the exchanges and FINRA filed with the SEC a proposed one-year plan to implement the pilot, which was published for comment in the Federal Register on November 7, 2014.¹¹² The SEC modified several provisions of the plan, taking into account input from commenters, and approved an updated version on May 6, 2015.¹¹³ The pilot is scheduled to start by May 6, 2016 and will run for two years instead of one.¹¹⁴

The pilot divides stocks into a control group and three test groups, subjecting one test group to a trade-at rule.¹¹⁵ The trade-at rule in the initial version proposed by the exchanges and FINRA required ATSS to execute orders with significant price improvement, meaning either five cents greater than the current best bid and ask or at the midpoint of the best bid and ask.¹¹⁶

The trade-at rule in the finalized version prevents price matching by a trading venue that is not quoting at the protected bid or of-

and the Financial Industry Regulatory Authority to Submit a Tick Size Pilot Plan, 79 Fed. Reg. 36840, 36848 (June 30, 2014).

109. Joint Industry Plans; Order Approving the National Market System Plan To Implement a Tick Size Pilot Program by BATS Exchange, Inc., BATS YExchange, Inc., Chicago Stock Exchange, Inc., EDGA Exchange, Inc., EDGX Exchange, Inc., Financial Industry Regulatory Authority, Inc., NASDAQ OMX BX, Inc., NASDAQ OMX PHLX LLC, The Nasdaq Stock Market LLC, New York Stock Exchange LLC, NYSE MKT LLC, and NYSE Arca, Inc., as Modified by the Commission, for a Two-Year Period, 80 Fed. Reg. 27513, 27515 (May 13, 2015) [hereinafter Tick Size Pilot Program].

110. Grant Vingo et al., *SEC Approves Tick Size Pilot to Assess Impact on Smaller Companies*, NORTON ROSE FULBRIGHT: BLOG NETWORK (May 7, 2015), <http://www.regulationtomorrow.com/us/sec-approves-tick-size-pilot-to-assess-impact-on-smaller-companies/>.

111. Kurane, *supra* note 105.

112. Tick Size Pilot Program, *supra* note 109, at 27514.

113. *Id.*

114. Press Release, U.S. Sec. & Exch. Comm'n, SEC Approves Pilot to Assess Tick Size Impact for Smaller Companies (May 6, 2015) (on file at <http://www.sec.gov/news/pressrelease/2015-82.html>).

115. Tick Size Pilot Program, *supra* note 109, at 27517.

116. Ed Beeson, *Wall Street Assails Tick-Size Study's Dark Pool Treatment*, LAW360 (Dec. 23, 2014, 6:42 PM), <http://www.law360.com/articles/607471/wall-street-assails-tick-size-study-s-dark-pool-treatment>; Kwan, *supra* note 17, at 36; Tick Size Pilot Program, *supra* note 109, at 27538.

fer.¹¹⁷ Price matching refers to the practice of firms who internalize customer orders and execute them at the best publicly available bid or offer price regardless of their own quotations.¹¹⁸ A protected bid or offer is defined in Rule 611 of Reg NMS as a quotation that is “immediately and automatically accessible and be the best bid or best offer of a national securities exchange or national securities association.”¹¹⁹ Thus, a trading venue cannot execute from its own reserves without first routing to venues with displayed quotations and taking out the shares at the displayed quotation.¹²⁰ However, where a trading venue displays a protected bid or offer, it can price match up to the number of shares displayed at the protected price.¹²¹ Exceptions to the trade-at rule in the pilot include retail orders with price improvement and block trades.¹²² Namely, retail orders must have a price improvement of \$0.005 more than the best protected bid or ask.¹²³ Block trades are defined as orders with at least 5,000 shares or with at least \$100,000 in market value.¹²⁴

Although the approved pilot incorporates a trade-at rule, Stephen Luparello, the SEC’s Director of Trading and Markets, has publicly stated that the pilot is not a test for the trade-at rule; instead, it includes a trade-at rule to provide “a more complete picture of the market.”¹²⁵ In support, he further stated, “If we were trying to figure out trade-at, the illiquid end of the market would not be where we want to play.”¹²⁶ Luparello’s statements, however, have not prevented proponents and critics from voicing their opinions on the trade-at

117. Vingoe et al., *supra* note 110.

118. *Special Study: Payment for Order Flow and Internalization in the Options Markets*, U.S. SEC. & EXCH. COMM’N (Dec. 2009), <http://www.sec.gov/news/studies/ordpay.htm#PAYMENT>.

119. *Responses to Frequently Asked Questions Concerning Rule 611 and Rule 610 of Regulation NMS*, U.S. SEC. & EXCH. COMM’N, <https://www.sec.gov/divisions/marketreg/nmsfaq610-11.htm> (last updated June 8, 2007).

120. Kevin Foley, *10 Words that Could Subvert the Tick Pilot*, TABB FORUM (Aug. 28, 2014), http://tabbforum.com/opinions/10wordsthatcouldsinkthetickpilot?print_preview=true&single=true.

121. Vingoe et al., *supra* note 110.

122. *Id.*

123. *Id.*

124. *Id.*

125. Rob Tricchinelli, *Gallagher Warns of Bond ‘Liquidity Cliff,’ Regulators Talk Trade-At, Algo Registration*, BLOOMBERG BNA: SEC. REG. & L. REP. (Oct. 6, 2014); David Michaels & Sam Mamudi, *Brokers Attack SEC’s Plan as Trojan Horse*, BLOOMBERG BNA (Nov. 10, 2014, 6:44 PM), <http://www.bloomberg.com/news/articles/2014-11-11/brokers-attack-sec-s-plan-as-trojan-horse-designed-to-hurt-them>.

126. Tricchinelli, *supra* note 125.

rule as some fear this rule might be proposed for the entire market if it proves successful in the pilot. In effect, the pilot has launched a debate over market structure. ICE, NYSE, and Nasdaq have voiced their support for a trade-at rule.¹²⁷ In contrast, large brokers whose business benefits from off-exchange trading tend to voice opposition to the trade-at rule.¹²⁸

The collaboration between NYSE and Nasdaq is uncommon since exchanges normally compete for market share.¹²⁹ The increase in off-exchange trading, however, has given them a common goal in the form of a trade-at rule, which would draw orders back to them.¹³⁰ In support of a trade-at rule, exchange officials contend that ATSS take market share from exchanges by executing trades with minimal price improvement, often in fractions of a penny.¹³¹ Moreover, since dark venues do not publicize pre-trade information, they do not contribute to the price discovery process; thus, at a certain point, publicly posted prices may not be an accurate measure of the market's interest.¹³² Accordingly, the trade-at rule in the pilot preferences displayed liquidity over non-displayed liquidity, pushing some orders to exchanges where they could aid in the price discovery process.¹³³ Additionally, it encourages aggressive quoting, or quoting at higher buy prices or lower sell prices, rather than passive price matching.¹³⁴ Aggressive quoting can promote price competition and narrow spreads, ultimately lowering investors' costs.¹³⁵

In contrast, large brokers tend to oppose the trade-at rule because it would prevent them from internalizing certain orders or routing them to off-exchange venues.¹³⁶ A trade-at rule would subject brokers to access fees by forcing them to route orders to exchanges.¹³⁷ It would also prevent them from price matching unless they

127. Michaels, *supra* note 16; Tricchinelli, *supra* note 125; Hope, *supra* note 16.

128. See Hope, *supra* note 16.

129. *Id.*

130. *Id.*

131. *Id.*

132. ANA AVRAMOVIC, CREDIT SUISSE, WHO'S AFRAID OF THE DARK? TRADING OFF-EXCHANGE 1 (2012).

133. See Michaels, *supra* note 16.

134. Letter from Micah Hauptman, Fin. Serv. Couns., Consumer Fed'n of Am., to Brent Fields, Sec'y, U.S. Sec. & Exch. Comm'n (Dec. 22, 2014).

135. *Id.*

136. Hope, *supra* note 16.

137. *Id.*

display the best bid or offer.¹³⁸ Such a requirement is particularly burdensome for dark pools, who do not reveal quotes.¹³⁹ Moreover, a trade-at rule could limit the ability of ATs to compete for trades, and, as a result, increase trading costs that would be passed down to investors.¹⁴⁰

B. The “Grand Bargain”

In late 2014, Jeff Sprecher, the Chief Executive of ICE, publicly presented a proposal for a “grand bargain” between exchanges and Wall Street banks.¹⁴¹ Under the proposal, exchanges lower access fees from thirty cents per 100 shares to five cents per 100 shares, and, in exchange, banks accept the trade-at rule.¹⁴² The proposal encourages banks to trade on exchanges by making it less expensive to do so. For instance, with lower access fees, a broker has less incentive to avoid routing orders to exchanges.¹⁴³

Another key feature of the grand bargain is to eliminate maker-taker pricing.¹⁴⁴ As mentioned above, in a maker-taker system, market participants that respond to buy or sell orders “take” liquidity and pay a fee for access.¹⁴⁵ Market participants that post orders that are not immediately executable “provide” liquidity and receive rebates.¹⁴⁶ Thus, eliminating the maker-taker model means prohibiting trading venues from having different fees and rebates for “takers” and “makers” of liquidity.¹⁴⁷

Although no tests are scheduled for this program yet, it has gained support from several industry participants.¹⁴⁸ Again, ICE,

138. Letter from James P. Selway III, Managing Dir. and Head of Electronic Brokerage, ITG Inc., to Brent Fields, Sec’y, U.S. Sec. & Exch. Comm’n (Jan. 5, 2015) (on file at <https://www.sec.gov/comments/4-657/4657-91.pdf>).

139. *Id.*

140. Ed Beeson, *Wall Street Assails Tick-Size Study’s Dark Pool Treatment*, LAW360 (Dec. 23, 2014, 6:42 PM), <http://www.law360.com/articles/607471/wall-street-assails-tick-size-study-s-dark-pool-treatment>.

141. Tabb, *supra* note 66; Hope & Patterson, *supra* note 66.

142. Hope & Patterson, *supra* note 66.

143. Tabb, *supra* note 66.

144. *ICE’s Six Recommendations for Reforming Markets*, WALL ST. J.: MONEYBEAT (Dec. 18, 2014, 5:11 PM), <http://blogs.wsj.com/moneybeat/2014/12/18/ices-six-recommendations-for-reforming-markets/> [hereinafter *ICE’s Six Recommendations*].

145. *Id.*

146. *Id.*; Bob Pisani, *Wall Street Trade Group Urges New Trading Rules*, CNBC (July 14, 2014, 1:42 PM), <http://www.cnbc.com/id/101834667>.

147. *ICE’s Six Recommendations*, *supra* note 144.

148. Tabb, *supra* note 66.

NYSE, and Nasdaq have publicly voiced support for the grand bargain.¹⁴⁹ Naturally, exchanges support a program that aims to bring order flow to them. This program, however, has the potential to cut into the revenue of exchanges through decreased access fees. Decreased rebates can also disincentivize market participants from posting orders on exchanges. Nevertheless, the grand bargain argues that reduced access fees in combination with a trade-at rule provide sufficient incentive to draw order flow to exchanges.¹⁵⁰

In addition to exchanges, various industry participants support ICE's grand bargain. First, the grand bargain decreases access fees and makes routing to exchanges less expensive, which wins support from many broker-dealers who want to avoid access fees.¹⁵¹ Moreover, it exempts block trades from the trade-at requirement; therefore, industry participants whose business focuses on block trades face less impact. Indeed, the head of market structure of Liquidnet Holdings LLC, a dark-pool operator whose focus is block trades, voiced support for the proposal.¹⁵² Further, the grand bargain can benefit those on the buy-side of the industry by diminishing conflicts of interest through the elimination of the maker-taker model. Banning maker-taker means there is less incentive to route to ATSS over exchanges, which diminishes conflicts of interest in the routing process.¹⁵³

Interestingly, Credit Suisse, which operates the largest dark pool, supports this proposal.¹⁵⁴ Credit Suisse's motivation for supporting the grand bargain is unclear, although it may signify that the regulatory scrutiny and expense of operating a dark pool are becoming too costly. Nevertheless, Credit Suisse's support bolsters ICE's proposal and may encourage support from other industry participants.

In contrast, other market participants voice opposition to the grand bargain, fearing it will harm investors. BATS' former CEO, Joseph Ratterman, stated the plan was "highly problematic" and

149. Matt Levine, *NYSE's Grand Bargain Just Might Work: Matt Levine*, TRADERS MAG. (Dec. 23, 2014), http://repubhub.icopyright.net/freePost.act?tag=3.8154?icx_id=113276.

150. *ICE's Six Recommendations*, *supra* note 144.

151. *Deconstructing the 'Grand Bargain'*, MARKETS MEDIA (Feb. 6, 2015), <http://marketsmedia.com/deconstructing-grand-bargain/>.

152. Bradley Hope, *ICE Has Unlikely Ally on Trading Proposal*, WALL ST. J. (Dec. 21, 2014, 7:40 PM), <http://www.wsj.com/articles/ice-has-unlikely-ally-on-trading-proposal-1419208856>.

153. *See ICE's Six Recommendations*, *supra* note 144.

154. *Id.*

would ‘hurt’ investors by increasing costs and reducing options for trading.”¹⁵⁵ The fear is that such a proposal will make trading more expensive by driving order flow to exchanges and forcing brokers to forego less expensive internalizations. Further, wholesalers represent a group that potentially stands to lose from the grand bargain.¹⁵⁶ Most of the orders that wholesalers execute are matched from within their inventory; therefore, wholesalers may be impacted by a trade-at rule that preferences trading on exchanges.¹⁵⁷ In fact, KCG Holdings Inc., which has a wholesale business, stated that “forcing more trading onto exchanges was an ‘elephant-gun approach motivated by commercial interests of a handful of market participants.’”¹⁵⁸

C. Nasdaq’s Decreased Access Fee Program

Instead of using a trade-at rule to reduce off-exchange trading, some market participants argue that reducing access fees is an effective means of driving order flow to exchanges. In February 2015, Nasdaq began a program testing the effects of decreased access fees on off-exchange stock trading.¹⁵⁹ Although various news sources have cited Nasdaq as a proponent of the trade-at rule, its program lacks a trade-at requirement.¹⁶⁰ The program is set to run for a minimum of four months, and it lowers the cap on access fees from the current thirty cents per 100 shares to five cents per 100 shares for fourteen stocks.¹⁶¹ Nasdaq also lowers rebates to less than five cents per 100 shares for these fourteen stocks.¹⁶² Nasdaq chose stocks that tend to trade in off-exchange venues at a higher-than-average rate.¹⁶³ Through this program, Nasdaq plans to evaluate the effect of decreasing access fees on off-exchange trading, price discovery, trading costs, and liquidity.¹⁶⁴

155. Hope, *supra* note 61.

156. Hope, *supra* note 152.

157. *Id.*

158. *Id.*

159. Chen, *supra* note 107.

160. *Id.*

161. *Id.*

162. *Here Is What You Need*, *supra* note 68.

163. *Id.*

164. *Id.*

Nasdaq is acting without the support of other exchanges in implementing this program.¹⁶⁵ However, the Securities Industry and Financial Markets Association (SIFMA), the largest securities industry trade group that represents asset managers and brokerage firms, has voiced support for a decrease in access fees.¹⁶⁶ Similar to Nasdaq, SIFMA supports a reduction of the cap on access fees from thirty cents to five cents per 100 shares.¹⁶⁷ It contends that such a reduction will make trading on exchanges less expensive and drive more orders to exchanges.¹⁶⁸ Although this proposal may not be in the best interest of SIFMA members who own dark pools, most SIFMA members are not dark pool owners.¹⁶⁹

While not directly responding to Nasdaq's pilot, Citigroup, a large global bank with broker-dealer subsidiaries, submitted a comment to the SEC in support of a reduction in access fees without a trade-at rule.¹⁷⁰ Citigroup called the trade-at rule a "sledgehammer approach," arguing that a reduction in access fees would naturally draw more orders to exchanges.¹⁷¹ Citigroup suggested different access fees based on different variables such as the price, volume, or market capitalization of a security.¹⁷²

Others market participants, however, contend that decreased access are not enough to naturally shift order flow to exchanges. Instead, there is a fear that lowering the cap on access fees will decrease liquidity on exchanges.¹⁷³ Because decreased access fees translate into decreased rebates, liquidity providers may leave exchanges for venues with higher rebates.¹⁷⁴

Moreover, although SIFMA supports the idea behind Nasdaq's proposal to decrease access fees, it questions the validity of the

165. *Id.*

166. Pisani, *supra* note 75; Jed Horowitz, *Trade Group SIFMA Names Ex-Senator Gregg as CEO*, REUTERS (May 20, 2013), <http://www.reuters.com/article/2013/05/20/us-sifma-gregg-idUSBRE94J0TX20130520>.

167. Pisani, *supra* note 75.

168. *Id.*

169. *Id.*

170. Letter from Daniel Keegan, Managing Dir., Head of Equities for the Americas, to Elizabeth M. Murphy, Sec'y, U.S. Sec. & Exch. Comm'n (Aug. 7, 2014).

171. *Id.*

172. *Id.*

173. Stone, *supra* note 73.

174. *Id.*

data derived from the program.¹⁷⁵ Namely, because the decrease in access fees only applies to transactions on Nasdaq, SIFMA does not view the program as an accurate indicator of the effects of decreased access fees on the entire market.¹⁷⁶ SIFMA also argues that it is impossible to separate access fees from other variables that encourage market participants to post or remove liquidity for the subject fourteen stocks.¹⁷⁷

D. BATS Exclusive Listings Proposal

BATS filed the “BATS Exclusive Listings Proposal” on May 5, 2015 with the SEC, aiming to improve trading in thinly-traded securities.¹⁷⁸ Thinly-traded stocks are illiquid and thus tend to have low trading volumes, limited numbers of interested buyers and sellers, wider bid-ask spreads, and higher transaction costs.¹⁷⁹ In contrast, liquid stocks tend to have high trading volumes, larger numbers of interested buyers and sellers, narrower bid-ask spreads, and lower transaction costs.¹⁸⁰ BATS’ proposal aims to focus displayed liquidity in thinly-traded stocks at one venue to “enable market participants to more efficiently form prices” and to enable that venue to “be better able to innovate [its] markets specifically for thinly-traded stocks.”¹⁸¹ Accordingly, BATS would not offer trading in thinly-traded stocks; instead, these stocks would trade on the exchange where they are primarily listed.¹⁸² BATS’ proposal applies to stocks whose average daily trading volume (ADV) is lower than 2,500 shares, which means the proposal would include about 700 stocks.¹⁸³

BATS is not a proponent of the trade-at rule, deeming it disruptive to U.S. market structure; however, it refers to this Exclusive List-

175. Letter from Theodore R. Lazo, Managing Dir. and Assoc. Gen. Couns., Sec. Indus. & Fin. Mkts. Assoc., to Brent J. Fields, Sec’y, U.S. Sec. & Exch. Comm’n (Jan. 30, 2015) (<https://www.sec.gov/comments/sr-nasdaq-2014-128/nasdaq2014128-1.pdf>).

176. *Id.*

177. *Id.*

178. BATS EXCH., BATS FILES EXCLUSIVE LISTINGS PROPOSAL (2015), http://cdn.batstrading.com/resources/press_releases/BATS-Exclusive-Listings-FINAL.pdf.

179. See *Illiquid Definition*, NASDAQ, <http://www.nasdaq.com/investing/glossary/i/illiquid> (last visited July 7, 2015).

180. See *Liquidity Definition*, NASDAQ, <http://www.nasdaq.com/investing/glossary/l/liquidity> (last visited July 3, 2015).

181. BATS EXCH., *supra* note 178.

182. Nicole Bullock, *Bats Wants to Remove Illiquid Stocks from its Exchanges*, FIN. TIMES (Apr. 9, 2015, 11:44 PM), <http://www.ft.com/intl/cms/s/0/66d037fc-df06-11e4-b9ec-00144feab7de.html#axzz3eqCvR7R4>.

183. BATS EXCH., *supra* note 178.

ings Proposal as a “non-disruptive modification to U.S. equity market structure that BATS, other exchanges and the industry at large can implement with very little technical impact to the industry and its many participants.”¹⁸⁴ Those in favor of BATS’ proposal praise it as an “incremental change” that will not significantly disrupt market structure.¹⁸⁵ They argue that concentrating liquidity, instead of dispersing it among various venues in a fragmented market, will increase price discovery and decrease transaction costs.¹⁸⁶

However, critics argue that without the other exchanges or dark pools partaking in this proposal, unilateral action by BATS will be ineffective.¹⁸⁷ Although BATS hopes that other venues will follow, an SEC rule is necessary to force other venues to comply.¹⁸⁸ In addition, because the proposal does not discuss internalization and lacks a trade-at rule, internalizing market makers, or trading firms that fill investors’ orders from their own inventories rather than route them to exchanges, could still trade the illiquid stocks in BATS’ proposal.¹⁸⁹ Namely, internalizing market makers could offer minimal price improvement, as low as fractions of a penny, and jump ahead of displayed liquidity.¹⁹⁰ For instance, the bid and offer of an illiquid stock stands at \$10.00 and \$10.20, respectively, and an investor posts an order to buy 500 shares at a price of \$10.05 or better.¹⁹¹ The bid and offer, respectively, are now at \$10.05 and \$10.20, and an investor places an order to sell 500 shares immediately at the best price available; an internalizing market maker can still jump ahead of the \$10.05 displayed bid and buy the stock for \$10.05001.¹⁹² Here, the individual who narrowed the spread by moving the bid from \$10.00 to \$10.05 and contributed to the price discovery process was disadvantaged by the internalizing market

184. *Id.*; Bullock, *supra* note 182.

185. *BATS’ Exclusive Listing Proposal a Reasonable and Cautious Step*, TABB FORUM (Apr. 17, 2015), <http://tabbforum.com/opinions/bats'-exclusive-listing-proposal-a-reasonable-and-cautious-step>.

186. *Id.*

187. *Some Questions About the BATs Exclusive Listing Proposal*, THEMIS TRADING BLOG (Apr. 15, 2015), <http://blog.themistrading.com/2015/04/some-questions-about-the-bats-exclusive-listing-proposal/> [hereinafter *Some Questions*].

188. *Id.*

189. *Id.*; Matt Levine, *Who Cares What Apple’s Stock Price Is?*, BLOOMBERG VIEW (Apr. 25, 2014, 1:49 PM), <http://www.bloombergview.com/articles/2014-04-25/who-cares-what-apple-s-stock-price-is>.

190. *Some Questions*, *supra* note 188.

191. *Id.*

192. *Id.*

maker who jumped ahead of his order.¹⁹³ This internalization issue questions the effectiveness of BATS' proposal.

E. No Trade-at Rule

Finally, certain market participants oppose the trade-at rule and argue that off-exchange trading has not reached a point where it is harmful to investors and overall market quality. Managing director Justin Schack of Rosenblatt Securities Inc., an institutional broker that buys and sells stock for institutional investors, argues that research has not proven that increased off-exchange trading is "measurably harming market quality" and that "[t]here is no guarantee we wind up in a better place" with a trade-at rule.¹⁹⁴ Additionally, Larry Harris, a former chief economist at the SEC who now sits on the board of a brokerage firm, made a similar point.¹⁹⁵ He contends that there is insufficient evidence showing that the amount of dark trading harms market quality.¹⁹⁶ In support, he states that transaction costs have decreased since 2004.¹⁹⁷ According to Harris, "exchanges are hurting in the sense that their market share is dropping off, but the overall quality of the prices has not dramatically fallen off."¹⁹⁸

Moreover, other participants argue a trade-at rule will harm investors by forcing order flow to exchanges. Executives from Morgan Stanley called the trade-at rule an "over-reaction," arguing that it takes away valuable options for customers looking to execute orders at off-exchange venues.¹⁹⁹ The founder and CEO of TABB Group, a research firm, argues that the trade-at rule will "benefit few and harm many."²⁰⁰ He maintains that it has the potential to harm investors by forcing transactions out of dark pools and onto exchanges.²⁰¹ Such

193. *Id.*

194. David Michaels, *Stock Exchanges Seek Curbs on Dark Pools to Fight Exodus*, BLOOMBERG BUS. (June 3, 2013, 11:00 PM), <http://www.bloomberg.com/news/articles/2013-06-04/stock-exchanges-seek-curbs-on-dark-pools-to-fight-exodus>.

195. *Id.*

196. *Id.*

197. *Id.*

198. *Id.*

199. *Id.*

200. *Market Structure Expert, TABB Group CEO Larry Tabb Focuses on the "Trade-At Rule" and "Tick Size Pilot" in Continuing Series of Commentaries on SEC Issues*, BUS. WIRE (Dec. 9, 2014, 8:05 AM), http://www.businesswire.com/news/home/20141209005347/en/Market-Structure-Expert-TABB-Group-CEO-Larry#.VNLnYp3F8_Y.

201. *Id.*

a scenario can be detrimental to investors by enabling high-frequency traders to detect sizeable orders and front-run them. He also argues that a trade-at rule can increase trading costs by forcing brokers to give up less expensive internal executions.²⁰² Another industry participant, KCG Holdings, argues that the trade-at rule is “motivated by commercial interests of a handful of market participants.”²⁰³

F. Canada and Australia’s Trade-At Rules

Both Canada and Australia have recently implemented trade-at rules, which have led to increased costs and minimal benefits. Canada implemented a trade-at rule in October 2012. At the time of enactment, Canada’s market already had a similar price-improvement rule in place that prohibited internalization without price improvement.²⁰⁴ The 2012 trade-at rule expanded the prior rule to cover dark pools and mandated that they provide meaningful price improvement.²⁰⁵

Canada’s trade-at rule was successful in decreasing the amount of trading in dark pools; however, it failed to decrease trading costs and increase order posting in lit markets. For instance, the market experienced a decline of twenty percent in dark trading volume.²⁰⁶ However, investors were not more likely to post orders in lit markets, like exchanges, under the new trade-at regime.²⁰⁷ Additionally, bid-ask spreads widened after the trade-at rule’s adoption, which signals increased trading costs.²⁰⁸

Similarly, in May 2013, Australia introduced a trade-at rule to its dark markets, forcing dark venues to provide price improvement or send orders elsewhere.²⁰⁹ The effects of the trade-at rule in Australia were similar to those in Canada. After the rule was adopted, Australian markets experienced a decrease in dark volume.²¹⁰ However, spreads widened, indicating more expensive trading costs.²¹¹ Again,

202. *Id.*

203. Hope, *supra* note 152.

204. CHARTERED FIN. ANALYSTS INST., *supra* note 76, at 2.

205. *Id.*

206. *Id.*

207. *Id.*

208. *Id.*

209. *Id.* at 3.

210. *Id.*

211. *Id.* at 4.

the trade-at rule did not encourage the posting of liquidity in lit markets.²¹² Thus, the trade-at rules implemented in Canada and Australia led to a decrease in off-exchange trading with minimal improvement to market quality.²¹³

While the effects on Australia and Canada's markets are noteworthy, it is important to consider that these markets differ significantly from the U.S. market. The U.S. has the largest stock market in the world.²¹⁴ Canada and Australia are not close behind. As of 2014, the NYSE had a market capitalization of about \$21 trillion and Nasdaq had a market capitalization of about \$7 trillion.²¹⁵ In contrast, Canada's TMX group had a market capitalization slightly over \$2 trillion in 2014.²¹⁶ Meanwhile, the Australian Securities Exchange (ASX) had a market capitalization of \$1.5 trillion.²¹⁷ Thus, there is no direct comparison between the U.S. and Canada or Australia's market.

Nevertheless, the effects of the trade-at rule in Canada and Australia provide valuable guidance for the U.S. in deciding whether to implement a trade-at rule. Specifically, if a trade-at rule makes trading more expensive by widening bid-ask spreads and fails to draw more liquidity to exchanges, market structure is likely better without such a rule.

III. THE MOST PROMISING PROPOSAL

While it can be easy to find fault with the market, it is worth noting that market quality has improved. Research shows that investors fare better in today's fragmented stock market dominated by computer algorithms.²¹⁸ For example, despite the prevalence of HFT, institutional investors enjoyed ten percent lower execution costs in 2013 than in 2006.²¹⁹ Transaction costs have fallen significantly

212. *Id.*

213. *Id.*

214. *China Overtakes Japan as World's Second-Biggest Stock Market*, BLOOMBERG BUS. (Nov. 27, 2014, 7:31 PM), <http://www.bloomberg.com/news/articles/2014-11-27/china-surpasses-japan-as-world-s-second-biggest-equity-market>.

215. Andy Kiersz, *The NYSE Makes Stock Exchanges Around the World Look Tiny*, BUS. INSIDER (Nov. 18, 2014, 11:02 AM), <http://www.businessinsider.com/global-stock-market-capitalization-chart-2014-11>.

216. *Id.*

217. *ASX Corporate Overview*, ASX, <http://www.asx.com.au/about/corporate-overview.htm> (last visited Mar. 1, 2015).

218. White, *supra* note 95.

219. *Id.*

since 2004.²²⁰ Bid-ask spreads are also as narrow as ever for the market as a whole.²²¹ These statistics show that today's market structure is not failing investors but allowing them to earn more from their trades as a whole.

Nonetheless, problems including conflicts of interest associated with maker-taker and lack of price discovery persist in today's market. Trading costs may have decreased for investors overall but there is potential for some market participants to benefit at the expense of others. For instance, brokers may benefit from off-exchange trading by internalizing or routing orders based on fees and rebates and copying publicly-available prices without contributing to price discovery.

Thus, a combination of factors taken from the proposals above has the most potential to remedy issues associated with off-exchange trading. This article advocates for a combination of a trade-at rule, decreased cap on access fees, a variable access fee and rebate schedule, and a block trading exemption. Such a proposal is most promising because it reduces the conflicts of interest that brokers face, assuages the concern that brokers are subject to unnecessary access fees, reduces information leakage, and promotes the price discovery process.

First, the trade-at rule in the finalized Tick Size Pilot has the potential to preference displayed liquidity.²²² Under this requirement, a trading venue cannot execute from its own reserves without first routing to venues with displayed quotations and taking out the shares at the displayed quotation.²²³ Accordingly, such a version of the trade-at rule preferences displayed liquidity over non-displayed liquidity, pushing orders to displayed market centers—such as exchanges—where they can aid in the price discovery process.²²⁴ Additionally, it encourages aggressive quoting over passive price matching, which can promote price competition and narrow spreads.²²⁵ Moreover, a trading venue displaying a protected quote

220. Michaels, *supra* note 195.

221. White, *supra* note 95.

222. Vingoe et al., *supra* note 110.

223. Kevin Foley, *10 Words that Could Subvert the Tick Pilot*, TABB FORUM (Aug. 28, 2014), http://tabbforum.com/opinions/10wordsthatcouldsinkthetickpilot?print_preview=true&single=true.

224. See Michaels, *supra* note 16.

225. Letter from Micah Hauptman to Brent Fields, *supra* note 134.

can price match up to the number of shares displayed at the protected price.²²⁶ Thus, ATs can avoid trade-at routing obligations by posting displayed, protected quotes and contributing to price discovery.

Second, the combination of the aforementioned trade-at rule with decreased access fees ensures that a trade-at rule does not subject brokers to costly fees while encouraging order flow to exchanges. Although a trade-at rule forces brokers to avoid certain internal executions or off-exchange venues, it allows them to access exchange liquidity at a lower cost. Thus, reduced access fees encourage brokers to execute on exchanges while ensuring that the cost of foregone internalization or off-exchange execution is less burdensome. Additionally, although decreased rebates could shift orders away from exchanges, a trade-at rule in conjunction with decreased rebates is likely to shift order flow back to exchanges.

Indeed, implementing a combination of a trade-at rule and decreased cap on access fees is more efficient than implementing each measure alone. Decreased access fees alone may not draw trades to exchanges. Although brokers have less incentive to avoid exchanges with reduced access fees, reduced access fees alone may not stop participants from sending orders to off-exchange venues with even lower fees or higher rebates. Alternatively, a trade-at rule without decreased access fees could increase trading costs by forcing brokers to avoid less expensive execution venues. Brokers are also likely to pass on such costs to investors.

Third, a reduction in access fees and rebates reduces conflicts of interest for brokers. If access fees or rebates motivate a broker's choice in order execution venues, a broker may not act in the client's best interest.²²⁷ In cases where brokers favor their own interest over the customers', customers face decreased execution quality.²²⁸ Decreasing access fees and rebates would decrease conflicts of interest by giving brokers less incentive to avoid exchanges and to preference internalization or ATs. Although prohibiting the maker-taker system would further remove such conflicts of interest, this proposal advises lowering fees and rebates to study the impact on the market before eliminating maker-taker.

226. Vingoe et al., *supra* note 110.

227. *Senate PSI Hearing, supra* note 7, at 1.

228. *Id.* at 2.

Fourth, imposing a variable access fee and rebate schedule on different securities ensures that access fees and rebates drive orders to exchanges. Given the number of variables at play in the market, it is likely that trading in certain stocks is not motivated by access fees or rebates. In such cases, altering access fees and rebates will have little influence on a broker's decision to send orders to an exchange. However, access fees and rebates may play more of a pivotal role in trading less liquid stocks.²²⁹ Thus, a variable access fee and rebate schedule, which depends on the characteristics of specific securities, is likely to have more success in moving order flow to exchanges.

Fifth, an exception to the trade-at rule for block trading in dark pools benefits institutional investors that seek to avoid front-running by high-frequency traders. Dark pools are valuable to institutional investors because they allow institutional investors to avoid alerting high-frequency traders of their orders.²³⁰ Thus, an exception for block trading allows institutional investors to take advantage of the benefits of dark pools. Moreover, forcing some block trades out of dark pools and onto public exchanges places them at risk of information leakage, meaning that high-frequency traders can more easily detect a large order and front-run it. Thus, an exception for block trading would allow institutional investors to avoid information leakage and enjoy the benefits of dark pools.

Moreover, this exception balances the need for anonymity with the need for price discovery. Dark pools do not contribute to price discovery because they do not publicize pre-trade information.²³¹ So, publicly posted prices may not be an accurate measure of the market's interest if a significant amount of trading takes places in dark pools.²³² Exempting block trades rather than all dark trading can aid the price discovery process by forcing more orders to exchanges without harming institutional investors.

Although BATS' proposal is less costly and complex than the trade-at rule, it concentrates on thinly traded stocks and does not deal with internalizing market makers. While the issues surrounding price discovery, transaction costs, bid-ask spreads, and liquidity may be amplified for thinly traded stocks, they are not unique to them. A

229. Keegan, *supra* note 170.

230. SHORTER & MILLER, *supra* note 51.

231. AVRAMOVIC, *supra* note 97, at 1.

232. Lynch & McCrank, *supra* note 13.

trade-at rule aims to tackle these issues across liquid and illiquid stocks. Further, without a trade-at rule, internalizing market makers can still trade illiquid stocks and, therefore, jeopardize the effectiveness of BATS' proposal.²³³ Internalizing market makers that jump ahead of displayed liquidity and offer minimal price improvement disadvantage investors who contribute to price discovery.²³⁴ As aforementioned, an internalizing market maker can jump ahead of a displayed \$10.05 bid to buy a stock for \$10.05001, offering minimal price improvement, while disadvantaging the investor that contributed to price discovery.²³⁵ Given that as of March 2013, internalization has made up about sixty percent of off-exchange trading, BATS' proposal has the potential to exclude a significant amount of trading.²³⁶

IV. METRICS FOR SUCCESS

Both positive and negative effects can be linked to almost any program. Often, market participants' positions in the industry determine whether they view the effects as positive or negative. Thus, the relevant question is whether the market is more efficient with or without a trade-at rule targeted to decrease off-exchange trading. This determination can best be done by studying empirical evidence, namely the data from the aforementioned programs. Regulators can effectively use such data to determine whether a program will increase market quality and should be implemented. This article proposes regulators look to market share, bid-ask spreads, and price as measures of market quality.²³⁷

First, market share is a useful indicator to determine whether the trade-at rule achieves its goal of decreasing off-exchange trading and improving price discovery. Specifically, as mentioned above, dark trading impairs the price discovery process. Thus, it is useful to measure whether dark trading decreases with the implementation of the trade-at rule. To prove useful, the trade-at rule must push some dark trading to lit markets where it can contribute to price discovery.

233. *Some Questions*, *supra* note 188.

234. *Id.*

235. *Id.*

236. Nathaniel Popper, *As Market Heats Up, Trading Slips into Shadows*, N.Y. TIMES (Mar. 31, 2013), http://www.nytimes.com/2013/04/01/business/as-market-heats-up-trading-slips-into-shadows.html?_r=0.

237. See Letter from Larry Tabb, Founder & CEO, TABB Group, to Elizabeth Murphy, U.S. Sec. & Exch. Comm'n (Dec. 10, 2014).

If dark trading decreases but does not shift to lit markets, the situation in the U.S. begins to resemble that of Canada and Australia after the implementation of the trade-at rule. If dark trading does not shift to lit venues, the market may experience less overall trading volume. Such a scenario can subject investors to high price impact when trading.²³⁸ Investors prefer high trading volume, where it is relatively easy to buy or sell a security, because a trade will have a relatively minor impact on the stock price.²³⁹ In contrast, when there is less opportunity for orders to interact, investors face higher price impact because variations in supply and demand can move the market.²⁴⁰

Second, bid-ask spreads are a useful measure of the success of a trade-at rule. If stocks subject to a trade-at rule experience wider spreads, a trade-at rule makes the market less efficient. Investors prefer narrow spreads to wide spreads. Wide spreads signify that trading has become more expensive and buyers and sellers have to concede more to enter or exit trades.²⁴¹ Accordingly, stocks with narrow spreads are easier to trade since investors can generally agree on the price.

Third, prices are an effective metric in determining whether the market is better with a trade-at rule. Evaluating prices allows regulators to measure whether investors receive better executions under a trade-at regime. For instance, if orders begin to execute at the midpoint of the best bid and ask prices under a trade-at rule, investors may receive less price improvement. Additionally, if the trade-at rule forces brokers to forego lower cost internal executions or higher rebate venues, they may pass along excess costs to investors. Thus, price serves as a useful indicator of how much investors gain or lose as a result of the trade-at rule. Therefore, market share, bid-ask spreads, and price are valuable measures in determining whether a trade-at rule has benefitted investors in the market.

Further, if implementing a program with a variable fee schedule, it is worthwhile to determine which stocks are motivated by access fees and rebates. Thus, appropriate fees can be implemented in conjunction with a trade-at rule to decrease brokers' costs and encourage more liquidity to exchanges. Regulators should pay special

238. J. P. BOUCHAUD, PRICE IMPACT 1–2 (2009), <http://arxiv.org/pdf/0903.2428.pdf>.

239. *Id.*

240. Beny, *supra* note 99, at 419.

241. *Morningstar Investing Glossary: Bid-Ask Spread*, *supra* note 88.

attention to stocks with unusually high levels of off-exchange trading activity to determine whether a certain level of access fee or rebate can influence their trading activity.

Therefore, evaluating a program's effects on market share, bid-ask spreads, and price will test whether the market is more efficient under a trade-at rule. Because industry participants have different motivations, these metrics provide more objective indicators of market quality to determine whether the market is more efficient with a trade-at rule.

CONCLUSION

Off-exchange trading accounts for a significant amount of the market. Currently, forty percent of stock trading occurs in off-exchange venues. While off-exchange trading can lower transaction costs and offer price improvement, it can also pose conflicts of interest and harm price discovery. Therefore, this article advocates for the implementation of a program that incorporates a trade-at rule, decreased cap on access fees, variable access fee and rebate schedule, and an exemption for block trades as a solution to the negative effects associated with off-exchange trading. Empirical evidence is crucial in measuring the success of this program. Accordingly, this article suggests measuring market share, bid-ask spreads, and price to determine whether the current market is more efficient with a trade-at rule.

