Division of Trading and Markets: Background Paper on the Market Structure for Thinly Traded Securities

I. Introduction

The staff in the Division of Trading and Markets of the Securities and Exchange Commission is issuing this background paper[1] in relation to the Commission Statement on Market Structure Innovation for Thinly Traded Securities to provide information regarding the trading challenges and characteristics of those national market system ("NMS") stocks that trade in lower volume ("thinly traded securities").[2] We summarize a variety of materials regarding secondary market trading of thinly traded securities, including a 2018 market analysis by the Division of Trading and Markets' Office of Analytics and Research ("OAR") and the U.S. Department of the Treasury's 2017 report on the regulation of the U.S. capital markets ("Capital Markets Report").[3] In addition, we discuss the Commission staff Roundtable on Market Structure for Thinly-Traded Securities ("Roundtable"),[4] where the dialogue among market participants and the comments submitted centered on the unique trading characteristics of thinly traded securities. Finally, we discuss the current regulatory framework for thinly traded securities.

II. Trading Characteristics of Secondary Market Trading for Thinly Traded Securities

A. SEC Staff Study

The data in a recent study prepared by OAR[5] indicated that approximately one-half of all NMS stocks have an average daily trading volume ("ADV") of less than 100,000 shares and constitute less than two percent of all daily share volume.

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[1] This background paper represents the views of staff of the Division of Trading and Markets. It is not a rule, regulation, or statement of the Commission. Furthermore, the Commission has neither approved nor disapproved its content. This background paper, like all staff statements, has no legal force or effect: it does not alter or amend applicable law, and it creates no new or additional obligations for any person.

[2] *See* Securities and Exchange Commission Statement on Market Structure Innovation for Thinly Traded Securities, Securities Exchange Act Release No. 87327 (October 17, 2019), *available at* https://www.sec.gov/rules/policy/2019/34-87327.pdf (the "Commission Statement").

[3] *See* Division of Trading and Markets Data Paper: Empirical Analysis of Liquidity Demographics and Market Quality, April 10, 2018, *available at* https://www.sec.gov/files/thinly_traded_eqs_data_summary.pdf (summarizing the quoting and trading characteristics of NMS stocks on the lower end of the liquidity spectrum) ("OAR Study"); A Financial System That Creates Economic Opportunities: Capital Markets, October 2017, at 59-60, *available at* https://www.treasury.gov/press-center/press-releases/Documents/A-Financial-System-Capital-Markets-FINAL-FINAL.pdf ("Capital Markets Report").

[4] *See* Equity Market Structure Roundtables: Roundtable on Market Structure for Thinly-Traded Securities, April 23, 2018, *available at* https://www.sec.gov/spotlight/equity-market-structure-roundtables (providing press release, agenda, transcript, comment letters, and other Roundtable materials).

[5] *See* OAR Study, *supra* note 3.

Focusing solely on corporate common stocks listed on U.S. exchanges during the fourth quarter of 2017 ("subject period"), the OAR Study found that of 4,656 corporate stocks, 1,301 of such stocks had an average daily share volume of less than 100,000 shares. While these corporate stocks represent approximately 28 percent of all corporate stocks and approximately 15 percent of all NMS stocks, they accounted for only 0.7 percent (*i.e.*, less than one percent) of NMS stock ADV during the subject period. In addition, while the median trades per day for all corporate stocks totaled approximately 2,000 trades, the median for corporate stocks that trade in greater volume was more than 3,600 trades, but was approximately 100 trades for corporate stocks with an ADV below 50,000 and approximately 500 trades for corporate stocks with an ADV between 50,000 and 100,000.

The OAR Study found that stocks with lower ADV exhibit different trading characteristics compared to stocks with higher ADV. First, the OAR Study noted that a higher proportion of volume in stocks with an ADV of less than 100,000 shares was traded off-exchange than the proportion of volume in stocks with an ADV of more than 100,000 shares.[6] With respect to trading occurring on-exchange, a slightly higher proportion of share volume of stocks with an ADV of less than 100,000 shares occurred on the listing exchange, relative to non-listing exchanges. Second, these securities had a smaller percentage of block trades than securities trading in greater volume.[7] Third, the OAR Study found that these securities had, on average, fewer exchanges quoting at the national best bid ("NBB") or national best offer ("NBO") than more actively traded securities. Additionally, these securities had a greater proportion of regular trading hours with only one exchange quoting at both the NBB and NBO or at either the NBB or NBO than more actively traded securities did. More volume executing off-exchange indicates that, relative to actively traded securities, investors view exchanges as less appealing venues on which to transact. Relatively more trading on the listing exchange may indicate that market makers on non-listing exchanges do not find it as profitable to make markets in these securities, causing trading to concentrate to a greater degree on the listing exchange. Additionally, if market makers on non-listing exchanges do not find it as profitable to make markets in such securities and thus are less active in these securities, then these securities will have, on average, fewer exchanges quoting at the national best bid or offer ("NBBO"). For these reasons, the staff believes that these securities likely face a trading environment with less market making activity at the inside (*i.e.*, the highest bid and lowest offer) or in larger order size, which may make finding a counterparty to execute a particular trade more difficult. Finally, quoted depths at the inside (*i.e.*, the volume of shares available at the highest bid and lowest offer) were smaller and quoted spreads (*i.e.*, the difference between bid and offer prices) and relative quoted spreads were greater for securities with an ADV under 100,000 shares than for more actively

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[6] More specifically, the average percentage of share volume executed off-exchange for each of the less liquid groups is greater than the average percentage of share volume executed off-exchange for the more liquid group, for both corporate stocks and exchange traded products ("ETPs"). This finding was more pronounced for ETPs than for corporate stocks.

[7] The OAR Study found, for corporate stocks with an ADV greater than 100,000 shares, that the median percentage of daily volume traded in blocks was 8 percent, while the median was 1 percent for corporate stocks with an ADV less than 50,000 shares, and 3 percent for corporate stocks with an ADV between 50,000 and 100,000 shares.

traded securities.[8] This lack of depth suggests that it will likely be more expensive for an investor to transact in larger size in these securities.

B. Treasury Capital Markets Report

In October 2017, the U.S. Department of the Treasury issued the Capital Markets Report.[9] The Capital Markets Report set forth a number of recommendations aimed at promoting economic growth and strong financial markets as well as, among other things, maintaining strong investor protection. A key category of the Capital Markets Report's recommendations addressed how to foster robust secondary markets in equity and debt.[10] These secondary markets, the Capital Markets Report noted, are critical to capital formation and, consequently, economic growth.[11] Therefore, the Capital Markets Report explained, developments in the markets require regulators to keep pace so that markets can function optimally for issuers and investors regardless of their size.[12]

The Capital Markets Report concluded that the current "one-size-fits-all" structure of the equity markets is not operating effectively for smaller companies that experience lower levels of liquidity today.[13] The robust market depth and breadth that are measures of good liquidity allow companies to more easily raise capital and investors to realize returns, the Capital Markets Report stated.[14] But liquidity requires a large pool of investors who want to buy and sell securities, as well as venues that allow them to interact.[15] What has emerged, the Capital Markets Report noted, is that although the largest and most actively traded companies benefit from the variety of trading venues available to them, the least liquid companies experience less effective liquidity provision because of that same fragmentation across the large number of

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8 *See* OAR Study, *supra* note 3, at 7. OAR also made this point during the Roundtable, discussed below. *See* Transcript for Roundtable, April 23, 2018, *available at* https://www.sec.gov/spotlight/equity-market-structure-roundtables/thinly-traded-securities-rountable-042318-transcript.txt ("Transcript"), at 14 (discussing one example of spreads, both quoted and relative quoted, being wider for the more thinly traded stocks is that the median quoted spread for common stocks in the lowest tier was 21 cents, and only 4 cents in the upper tier).

9 *See* Capital Markets Report, *supra* note 3.

10 *See id.* at 6.

11 *Id.* at 7.

12 *Id.*

13 *Id.* The Capital Markets Report characterizes "liquidity" as relating to the "ease, speed, and cost with which investors can buy or sell assets." *Id.* at 56.

14 *Id.* at 57.

15 *Id.*

equity exchanges and alternative trading systems.[16] For these less liquid securities, the Capital Markets Report explained, liquidity provision and trading activity has declined.[17]

As a result, the Capital Markets Report recommended the Commission consider whether to implement regulatory changes aimed at promoting improved liquidity for these companies by tailoring regulation more appropriately to improve the market for less liquid stocks.[18] The Capital Markets Report noted that equity market regulation over the past 20 years has been focused on encouraging competition among multiple trading venues in order to improve trade execution pricing as well as market innovation.[19] It pointed to regulatory initiatives such as Regulation NMS, Regulation ATS, and decimalization, combined with the "electronification" of the equity markets and the demutualization of stock exchanges into for-profit entities, as instrumental contributors to the current market landscape.[20] In addition, the Capital Markets Report identified unlisted trading privileges ("UTP") as a key contributor to the significant competition among trading venues for secondary market trading volume.[21]

Although this competition among trading venues has mostly benefited more heavily traded stocks because the trading volume can support many trading venues, the Capital Markets Report stated, venue fragmentation can be particularly problematic for thinly traded stocks because relatively small volumes of trading are spread out among a number of different venues.[22] The Report discussed that this fragmented volume makes finding the contra side to a trade more difficult and can disincentivize market makers to quote in large size on any given trading venue as they limit their quoting size to better manage their risk.[23]

In light of these issues, the Capital Markets Report recommended exploring ways to consolidate liquidity for less liquid stocks on a smaller number of trading venues. Doing so, it

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[16] *Id.* at 7.

[17] *Id.* at 49. By way of example, the Capital Markets Report pointed to the liquidity differences between small- and mid-capitalization stocks and large-capitalization stocks, noting that a Commission staff study found that, in general, among companies with market capitalizations of less than $5 billion, companies with less than $100 million capitalization had larger quoted and effective spreads than spreads for those companies between $2 billion and $5 billion. *Id.* at 59 (citing Charles Colliver, A Characterization of Market Quality for Small Capitalization US Equities (September 2014), *available at* https://www.sec.gov/marketstructure/research/small_cap_liquidity.pdf). These smaller companies also had shallower depths of book. *Id.* However, market capitalization and trading volume are not perfectly correlated. *See infra* note 39.

[18] *See* Capital Markets Report, *supra* note 3, at 49.

[19] *Id.*

[20] *Id.* at 49-53.

[21] *Id.* at 49.

[22] *Id.* at 59.

[23] *Id.* at 60.

explained, would simplify the market making process for those securities. In turn, market makers would be more inclined to provide liquidity in those securities.[24]

Specifically, the Capital Markets Report recommended the Commission consider allowing the partial or full suspension of UTP for less liquid stocks and allowing the issuers of those stocks to select the exchanges and venues on which their stocks would trade until liquidity in those stocks reached a minimum threshold.[25] The Capital Markets Report recommended that to maintain a basic level of competition for executions, broker internalization (or off-exchange trading of the stock) should remain available for those thinly traded stocks for which UTP was restricted.[26] In addition, the Capital Markets Report suggested that, among the various measures of "illiquidity" available, a simple approach to distinguish between liquid and illiquid stocks for purposes of restricting UTP would be to use ADV.[27]

C. Securities and Exchange Commission Small Business Advisory Committee

The Commission's Advisory Committee on Small and Emerging Companies ("Committee") was organized to provide advice to the Commission regarding: (1) capital raising by emerging privately held small businesses and publicly traded companies with less than $250 million in public market capitalization; (2) trading in the securities of such businesses and companies; and (3) public reporting and corporate governance requirements to which such businesses and companies are subject.[28]

On March 23, 2013, the Committee recommended the creation of a separate U.S. equity market that would facilitate trading in the securities of small and emerging companies as well as encourage initial public offerings.[29] The Committee found, among other things, that the U.S. equity markets frequently fail to offer a satisfactory trading venue for small and emerging companies, which (1) has discouraged initial public offerings of the securities of such companies, (2) undermines entrepreneurship, and (3) weakens the broader U.S. economy.[30] The Committee recommended that the regulatory regime for this separate market be robust to protect investors but flexible enough to accommodate innovation and growth by these companies.[31]

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[24] *Id.*

[25] *See id.*

[26] *Id.*

[27] *Id.* The OAR Study used ADV as the basis for its analysis of NMS stock trading characteristics. *See* Section II.A, above.

[28] *See* Securities and Exchange Commission Advisory Committee on Small and Emerging Companies, Charter, *available at* https://www.sec.gov/info/smallbus/acsec/acsec-charter.pdf.

[29] *See* Recommendation Regarding Separate U.S. Equity Market for Securities of Small and Emerging Companies (February 1, 2013), *available at* https://www.sec.gov/info/smallbus/acsec/acsec-recommendation-032113-emerg-co-ltr.pdf, at 2.

[30] *See id.* at 1.

[31] *See id.* at 2.

D. Review of Economic Literature

The available economic literature includes several analyses of the relationship between liquidity and trading volume, the effects of market fragmentation on smaller stocks, and the potential benefits of allowing non-continuous secondary market trading.

1. Liquidity and Trading Volume

Both historically and in more recent years, the economic literature in this area has consistently documented that stocks with lower trading volume tend to have higher transaction costs.[32] This link between trading volume and liquidity also has been formalized theoretically by two models in the late 1980s.[33] Both models hypothesize that trading volume is linked to liquidity because as investors become aware that liquidity exists at a certain time or place they will congregate their trading at those times or places to benefit from the liquidity available there – thus further enhancing liquidity. Consequently, increased liquidity engenders increased trading volume which then further enhances liquidity. This effect is what is known as the liquidity externality.[34]

2. Liquidity and Capital Formation

Numerous studies have found evidence linking lower liquidity to lower stock prices,[35] which suggests that diminished liquidity may also impact stock prices. These analyses show that investors must be paid a premium in order to hold less liquid stocks. Consequently, thinly traded securities may have lower stock prices due to diminished liquidity. Additionally, one study indicates that investment bank fees are significantly lower for more liquid firms indicating that stock liquidity is a determinant of the cost of raising external capital.[36] Another study finds that

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32 *See* Harold Demsetz, *The Cost of Transacting*, 82 Q. J. ECON. 33 (1968); Michael Barclay & Terrence Hendershott, *Liquidity Externalities and Adverse Selection: Evidence from Trading after Hours*, 59 J. FIN. 681 (2005).

33 *See* Anat Admati & Paul Pfleiderer, *A Theory of Intraday Patterns: Volume and Price Variability*, 1 REV. FIN. STUD. 3 (1988); Marco Pagano, *Trading Volume and Asset Liquidity*, 104 Q. J. ECON. 255 (1989).

34 In certain circumstances, such as around news releases, increased trading volume in a given stock may be associated with diminished liquidity. *See* Joon Chae, *Trading Volume, Information Asymmetry, and Timing Information*, 60 J. FIN. 413 (2005). However, as a general cross-sectional effect (*i.e.*, certain securities as compared to other securities), the literature shows that liquidity is generally higher for securities that trade more often.

35 *See* Justin Chan, Dong Hong & Marti Subrahmanyam, *A Tale of Two Prices: Liquidity and Asset Prices in Multiple Markets*, J. BANKING & FIN. 947 (2008); Yakov Amihud, Haim Mendelson & Lase Pedersen, *Liquidity and Asset Prices*, FOUND. & TRENDS IN FIN. 269 (2006); Gady Jacoby, David Fowler & Aron Gottesman, *The Capital Asset Pricing Model and the Liquidity Effect: A Theoretical Approach*, 3 J. FIN. MKT. 69 (2000); Yakov Amihud & Haim Mendelson, *Asset Pricing and the Bid-Ask Spread*, 17 J. FIN. ECON. 223 (1986) and Yakov Amihud & Haim Mendelson, *Liquidity and Stock Returns*, 42 FIN. ANALYSTS J. 43 (1986).

36 *See* Alexander W. Butler, Gustavo Grullon & James P. Weston, *Stock Market Liquidity and the Cost of Issuing Equity*, 40(2) J. FIN. & QUANT. ANAL. 331 (2005).

that stock liquidity reduces firm default risk by improving stock price informational efficiency and facilitating corporate governance by blockholders.[37]

3. Market Fragmentation

Market fragmentation is generally studied as either fragmentation between exchange and non-exchange trading venues or as among exchanges. Academic views on the effects of market fragmentation among exchanges for small stocks are mixed. For example, one analysis uses U.S. data and finds cross-sectional evidence suggesting that increased exchange fragmentation is beneficial to liquidity for small stocks.[38] However, another analysis uses European data and a panel dataset and finds the opposite to be the case.[39]

The literature examining fragmentation between exchange and non-exchange trading venues is likewise mixed. For example, one theoretical study hypothesizes that an off-exchange venue alongside a consolidated exchange may facilitate large block trades. This would suggest that fragmentation between exchange and non-exchange trading venues may be beneficial to market quality as it enables investors of different types to more readily find one another (*i.e.*, large block traders will go to the non-exchange trading venues, while smaller traders will congregate on the exchanges).[40] Consistent with this, another study using Australian data finds that block trading off-exchange does not harm price discovery on exchanges. This study also finds that when the total level of off-exchange trading grows too high, it harms price discovery on exchanges, harming market quality.[41] Another study examines the impact of an exogenous

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37 *See* Jonathan Brogaard, Dan Li & Ying Xia, *Stock Liquidity and Default Risk*, 124(3) J. FIN. ECON. 486 (2007). Some academic literature addresses how liquidity impacts corporate decisions and behavior. This literature does not provide a consistent relation between liquidity and the quality of corporate decisions, but rather suggests various reasons why and circumstances under which liquidity or illiquidity may improve or harm the quality of corporate decisions. *See*, *e.g.*, Vivian W. Fang, Thomas H. Noe & Sheri Tice, *Stock Market Liquidity and Firm Value*, 94(1) J. FIN. ECON. 150 (2009); Amar Bhide, *The Hidden Costs of Stock Market Liquidity*, 34(1) J. FIN. ECON. 31 (1993).

38 *See* Maureen O'Hara & Mao Ye, *Is Market Fragmentation Harming Market Quality?*, 100 J. FIN. ECON. 459 (2011) ("O'Hara and Ye Study").

39 *See* Carole Gresse, *Effects of Lit and Dark Market Fragmentation on Liquidity*, 35C J. FIN. MKTS. 1 (2017). Both this study and the O'Hara and Ye Study use market capitalization as opposed to ADV to define small stocks; however, market capitalization and trading volume are positively related, although not perfectly so. Consequently, these studies can provide an idea of what may be expected among thinly traded securities.

40 *See* Pagano, *supra* note 33.

41 *See* Carole Comerton-Forde & Tālis J. Putniņš, *Dark Trading and Price Discovery*, 118 J. FIN. ECON. 70 (2015).

decline in non-exchange trading on trading volume for small stocks and finds no impact on execution quality.[42]

4. Potential Impact of Non-Continuous Trading

Some of the economic literature assesses the impact non-continuous trading may have on a market. For example, an alternative to a continuous trading market is a batch auction whereby at discrete points in time during the trading day the market holds an auction. According to this research, batch auctions may improve liquidity, particularly for thinly traded securities, by concentrating liquidity at certain points in time.[43] The research characterizes the tradeoff with continuous trading as the loss of continuity in trading and the costs of gathering market information that would otherwise be revealed through price quotations.[44] However, auctions may fail in consolidating liquidity and improving price efficiency. As two studies argue, when there is insufficient order flow or significant order imbalances, auctions lose their efficiency.[45] These studies generally assume that for a periodic batch auction to be effective, trading needs to be consolidated onto one exchange. However, another study argues that under certain conditions a continuous market can be implemented effectively alongside a periodic batch auction.[46]

E. SEC Staff Roundtable on the Market Structure for Thinly Traded Securities

In April 2018, Commission staff convened the Roundtable on thinly traded securities. Roundtable participants and commenters discussed the challenges of trading thinly traded equity securities, as well as potential improvements to the existing equity market structure that might be considered to facilitate secondary market trading in these securities.[47] As discussed in detail below, Roundtable participants and commenters generally agreed that the unique characteristics of the thinly traded segment of the equity market create different challenges than for the actively traded segment of the market, where the vast majority of trading occurs. While Roundtable participants and commenters expressed a range of views, they largely expressed concern that the existing equity market structure is not optimal for thinly traded securities, especially corporate common stock. Some expressed concern about the declining number of small publicly listed and traded companies in the U.S., echoing the Capital Markets Report assertion that the current

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[42] *See* Ryan Farley, Eric Kelley & Walter Puckett, *Dark Trading Volume and Market Quality: A Natural Experiment*, Working Paper (2018), *available at* https://www1.villanova.edu/content/dam/villanova/VSB/assets/marc/marc2018/SSRN-id3088715.pdf.

[43] *See* Robert Schwartz & Reto Francioni, *Call Auction Trading*, Encyclopedia of Finance 477 (2013).

[44] *See* Ananth Madhaven, *Trading Mechanisms in Securities Markets*, 47 J. FIN. 607 (1992).

[45] *See* Ananth Madhaven & Venkatesh Panchapagesan, *Price Discovery in Auction Markets: A Look Inside the Black Box*, 13 REV. FIN. STUD. 627 (2000); Schwartz & Francioni, *supra* note 43.

[46] *See* Eric Budish, Peter Cramton & John Shim, *Implementation Details for Frequent Batch Auctions: Slowing Down Markets to the Blink of an Eye*, 104 AM. ECON. REV. 418 (2014).

[47] *See* Roundtable, *supra* note 4.

market structure works quite well for liquid names but is inadequate for illiquid names,[48] and that more needs to be done to promote liquidity and to improve the listing and trading environment for thinly traded stocks.[49] Roundtable participants and commenters discussed how the secondary markets for thinly traded securities operated for a variety of market participants, including issuers, institutional investors, and market makers, as well as the different characteristics of trading thinly traded ETPs.

1. Issuers

One Roundtable participant, based on his discussions with small-cap issuers in advance of the Roundtable, identified the effect on capital formation of changes in attitudes towards thinly traded securities since before the financial crisis of 2008.[50] Specifically, he highlighted the move over the course of the past decade from investor interest in learning about the underlying quality of a more thinly traded issuer to investor interest in learning about how quickly a position in that security could be liquidated.[51] In particular, he expressed concern about the challenges in attracting growth capital that these changing attitudes have created for this segment of the market.[52] The ability to access capital and the terms of such financing are inextricably tied to trading volume, he explained.[53] He noted that investors look to the most liquid names, rather than to the company stocks that might best meet their portfolio needs.[54] He stated that when prospective issuers need to raise growth capital, fund managers estimate the percentage of market cap that an issuer will be able to raise by evaluating the volume of stock traded.[55] He indicated that this process makes it challenging for issuers to raise needed capital.[56]

The Roundtable discussion also explored how a company whose stocks are thinly traded may suffer not only in its more limited access to capital formation, but also in its day-to-day and long term operations and overall corporate health. The same Roundtable participant expressed his belief that trading illiquidity may significantly impact less capitalized companies by limiting their ability to obtain research coverage and to participate in the mergers and acquisitions market.[57]

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48 *See* Transcript, *supra* note 8, at 48 (Mr. Bryan Harkins, Executive Vice President and Head of U.S. Markets, CboeBZX).

49 *See id.* at 27 (Mr. Frank Hatheway, Chief Economist, Nasdaq OMX Group, Inc.).

50 *See id.* at 50 (Mr. Adam Epstein, Founder, Third Creek Advisors).

51 *See id.* at 51 (Mr. Epstein).

52 *See id.* (Mr. Epstein).

53 *See id.* (Mr. Epstein).

54 *Id.* at 21 (Mr. Epstein).

55 *See id.* at 52 (Mr. Epstein).

56 *See id.* (Mr. Epstein).

57 *Id.* at 22 (Mr. Epstein).

He also explained that low trading has a negative impact on a company's relationships with its customers, vendors, and partners, as well as potentially harming its ability to hire and retain high quality employees.[58] In particular, when potential and existing employees have a negative perception of a company's future prospects because they are looking at its perceived health through the lens of its trading volume and trading volatility, the company potentially can find it more difficult to attract and retain qualified employees.[59] Similarly, it can be more difficult to contract with reliable vendors and suppliers at favorable rates.[60] The additional burdens that are placed on less liquid companies can be stifling, negatively affecting the companies' operations and potentially resulting in fewer opportunities for such companies to become more liquid in the secondary markets going forward.[61] None of the other Roundtable participants or commenters expressed contrary views.

2. Institutional Investors

Several Roundtable participants noted that the challenges in trading thinly traded securities are compounded by the self-perpetuating nature of the problem of illiquidity.[62] For example, one Roundtable participant representing the buy side (institutional investment management firm) pointed to the prevalence and popularity of passive investments in the market as a factor that has bifurcated the market.[63] He noted that the penalty imposed on a less liquid security that is not selected as a component of a frequently traded index is fewer trades and, consequently, less liquidity.[64] Another Roundtable participant representing a large retail broker-dealer agreed, noting that the factors that primarily contribute to low liquidity are small floats, highly convicted owners of those securities (*i.e.*, owners that are inclined to hold), and lack of index inclusion.[65] These factors may exacerbate what a number of Roundtable participants highlighted as a general reluctance by institutional investors to invest in thinly traded securities.

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[58] *See id.* (Mr. Epstein).

[59] *See id.* at 22, 85 (Mr. Epstein). For example, he noted anecdotally, experienced potential or existing employees will leave or disregard smaller companies that offer less trading liquidity and higher trading volatility because they determine those issuers' stocks do not offer adequate opportunities to monetize their stock options. *Id.* at 85-86 (Mr. Epstein).

[60] *Id.* at 22, 85 (Mr. Epstein). Smaller companies with few choices in suppliers and little leverage to negotiate vendor agreements may find themselves at odds with a supplier's credit and risk tolerance thresholds entirely based on trading illiquidity rather than on the company's fundamentals. *See id.* at 86 (Mr. Epstein).

[61] *See id.* at 22, 85-86 (Mr. Epstein).

[62] *See*, *e.g.*, *id.* at 34 (Mr. Jason Vedder, Director of Trading and Operations, GTS Capital Management), 108 (Mr. Brian Frambes, Co-Head Global Cash Trading, Fidelity Management & Research Co.).

[63] *See id.* at 34 (Mr. Vedder).

[64] *See id.* at 34-35 (Mr. Vedder).

[65] *See id.* at 108 (Mr. Frambes).

A key issue for institutional investors is the perceived difficulties they may encounter in attempting to unwind a position taken in a thinly traded security.[66] One Roundtable participant representing an institutional broker-dealer trading (sell side) noted in particular the dissonance resulting from the fact that the demand to acquire a position is generally more patient than the demand to unwind a position.[67] According to another Roundtable participant, representing a national securities exchange, issuers of thinly traded securities listing on his exchange frequently hear that institutional investors may be interested in their companies, but then are confronted by those investors' concerns about being able to trade in and out of the stock.[68] To the extent that this concern presents an impediment to investing, he noted, it only perpetuates the perceived limitations of the marketability of these securities.[69]

A Roundtable participant representing the sell side described the difficulty his firm has encountered in accessing liquidity in these types of securities for his firm's clients, stating that the liquidity of the markets does not really meet that demand.[70] Similarly, one Roundtable participant representing the buy side described in detail the challenges that he faces routinely in attempting to fill customer orders for thinly traded securities. He indicated that he would first attempt to trade whatever percentage of the order that he could off-exchange.[71] After that, he noted, it becomes a "cat and mouse game" where he needs to shift from venue to venue in search of a fill.[72] The result, he said, is that market participants end up battling others trying to access that market space, and they are eager to glean any information about how competitors are entering the market.[73] He expressed frustration that to get merely 10 percent of a trade completed, he has to go to multiple exchanges.[74] In his view, the market has gone from being a negotiated market to one where market participants hunt across venues for limited pockets of liquidity.[75] Another Roundtable participant speaking from an asset manager perspective echoed the observation that it takes longer to trade and find liquidity in small capitalization stocks than it does for large capitalization stocks.[76] Other Roundtable participants, representing the sell side and a national securities exchange, agreed that in trading thinly traded securities, there are

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[66] *See id.* at 35 (Mr. Vedder).

[67] *See id.* at 37 (Mr. Brian Fagen, Head of Execution Strategy for Equities, Deutsche Bank).

[68] *See id.* at 45 (Mr. Hatheway).

[69] *See id.* (Mr. Hatheway).

[70] *See id.* at 36 (Mr. Fagen).

[71] *See id.* at 53 (Mr. Vedder).

[72] *Id.* at 53-55 (Mr. Vedder).

[73] *Id.* at 53-54 (Mr. Vedder).

[74] *See id.* at 54 (Mr. Vedder).

[75] *See id.* at 54-55 (Mr. Vedder).

[76] *See id.* at 154 (Mr. Frambes).

challenges created by an investor's interest in finding liquidity where there is no interest on the other side of the transaction at the time that liquidity is being sought.[77]

One Roundtable participant representing a large market maker questioned whether the challenges described in accessing liquidity were caused more by timing dislocation, where there is a limited number of, or a lack of, diverse holders of the name at any given time, rather than geographic fragmentation caused by multiple venues.[78] One commenter, providing the view of an equity trading platform, elaborated on the idea that this "temporal fragmentation" is the root cause of small capitalization stock illiquidity.[79] Investors are wary of placing limit orders and waiting for executions, the commenter explained, due to concerns about perceived information leakage and adverse selection.[80] Although the Commission should not consider self-interested proposals for regulatory action, the commenter cautioned, the Commission should consider whether the prevailing market model – displayed liquidity in continuous markets – is truly appropriate for all small companies.[81] Some stocks, the commenter explained, may benefit from privately negotiated trades or trading in public auctions that seek to mitigate the temporal fragmentation.[82] The commenter also stated that the Order Protection Rule under Regulation NMS dampens innovation in the markets, which disadvantages these securities, noting that in many cases what market participants are willing to display bears little relation to what they are willing to transact.[83]

One Roundtable participant, representing the buy side, discussed at the length the effort required to try to locate interest on the other side of the market of a potential trade.[84] He explained that, in thinly traded securities that trade 100,000 shares, there likely will be only two to three participants in the marketplace, at most, who would take the counter side to his orders.[85] Another Roundtable participant, representing a large market maker, emphasized the difficulties caused by the wide variety of market participants, each of whom may have a different time horizon and varied reasons to trade, and each of whom may employ different risk and reward metrics in its decision-making processes.[86]

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77 *See id.* at 98 (Mr. Chris Concannon, then-President and Chief Operating Officer, Cboe Global Markets, Inc.), 135-36 (Mr. Joseph Mecane, Head of Execution Services, Citadel Securities).

78 *See id.* at 57 (Mr. Steve Cavoli, Senior Vice President, Global Execution Services, Virtu Financial).

79 *See* Letter from Don Ross, Chief Executive Officer, PDQ Enterprises, LLC (May 10, 2018), *available at* https://www.sec.gov/comments/265-31/26531-3619683-162360.pdf ("PDQ Letter").

80 *Id.* (PDQ Letter).

81 *Id.* at 1-2 (PDQ Letter).

82 *Id.* at 2 (PDQ Letter).

83 *Id.* at 3 (PDQ Letter).

84 *See* Transcript, *supra* note 8, at 53 (Mr. Vedder).

85 *See id.* (Mr. Vedder).

86 *See id.* at 57 (Mr. Cavoli).

Speaking more generally about the trading challenges raised by thinly traded securities, a number of Roundtable participants agreed that the information cost of attempting to access liquidity in thinly traded securities was too high. One Roundtable participant, representing the sell side, described it as one of the biggest costs that his firm incurs, not only because of the actual cost of the trade itself, but the cost of finding that liquidity.[87] Other Roundtable participants generally agreed that this impact is markedly more significant in the thinly traded segment of the market where there is less likelihood of obtaining an execution quickly, if at all.[88] Another Roundtable participant from one of the exchanges noted that this is an issue for both on-exchange and over-the-counter ("OTC") trading in this segment of the market.[89]

One commenter, representing the buy side, noted that, although order flow competition has benefited investors by incentivizing various trading venues to reduce costs and improve the quality of their products and services to a high level,[90] the approach may not be optimal for thinly traded securities.[91] More specifically, the commenter stated that although having 13 national securities exchanges and UTP in place "fosters continuity, resilience, innovation, and exchange fee competition," the consequent liquidity fragmentation may be ineffective for those securities traded infrequently or at consistently lower volumes.[92] Of the 4,000 corporate common stocks listed on the major U.S. exchanges, the commenter identified approximately 20 percent in 2017 as having an ADV of 50,000 shares or less, representing 35 basis points of dollar turnover, and with a median bid-ask spread of 234 basis points versus a median of 36 basis points for corporate common stocks overall.[93] In the current market structure, the commenter explained, these thinly traded securities generally have higher transaction costs for investors.

The national securities exchange Nasdaq, Inc. ("Nasdaq"), submitted to the Commission and placed in the Roundtable comment file an application to the Commission (the "Nasdaq Application") under Section 12(f) of the Securities and Exchange Act ("Exchange Act"). The Nasdaq Application stated that in more active (and typically large) stocks, the displayed quote is narrow, often the one cent minimum, and changes in the NBBO for those securities are frequent.[94] According to Nasdaq, in such conditions, resting limit orders are likely to become

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[87] *See id.* at 60 (Mr. Fagen).

[88] *See id.* at 62 (Mr. Vedder).

[89] *See id.* at 121 (Ms. Stacey Cunningham, then-Chief Operating Officer, NYSE Group).

[90] *See* Letter from Nathaniel N. Evarts, Managing Director, Head of Trading, Americas, State Street Global Advisors and David LaValle, Managing Director, US Head of ETF Capital Markets, Global SPDR Business (April 12, 2018) ("State Street Letter").

[91] *Id.* at 2 (State Street Letter).

[92] *Id.* (State Street Letter).

[93] *Id.* at 3 (State Street Letter).

[94] *See* Application to Permit Issuer Choice to Consolidate Liquidity by Suspending Unlisted Trading Privileges (April 25, 2018), *available at* https://www.sec.gov/comments/265-31/26531-3515735-162293.pdf, at 11. The Nasdaq Application requests that the Commission suspend, for a period of up to 12 months, UTP for certain Nasdaq-listed securities. More specifically, Nasdaq requested that the Commission restrict UTP for Nasdaq-listed securities that are: (1) issued by an operating company; (2)

marketable; for the most active issues the likelihood was as high as 90 percent that a limit order priced at the inside bid or offer would become marketable within thirty minutes of submission.[95] By contrast, in less active (and typically small) stocks, the quote is wide and changes less often; displayed limit orders rarely become marketable due to changes in the quote and executions are primarily triggered by the appearance of an opposing aggressive order.[96]

The Nasdaq Application also provides an analysis of the impact of fragmentation by looking at the actual experience of a sample of inactive stocks (daily volume less than 100,000 shares).[97] The Nasdaq Application identified 791 episodes where: (1) an exchange set a new inside quote in a less active stock (a higher national best bid or lower national best offer); (2) the quote-setting exchange was subsequently joined at the quote-setting price by at least one other exchange, and (3) at least one trade occurred at the quote-setting price. In these instances, the quote-setting exchange traded in only 31 percent of the cases.[98] Nasdaq found that in the remaining 69 percent of cases where the quote-setting exchange did not trade, another exchange traded in 29 percent of the cases, an OTC venue traded in 32 percent of the cases, and both another exchange and an OTC venue traded in 8 percent of the cases.[99] Nasdaq therefore concluded that the submitter of the price-improving limit order was not necessarily rewarded with an execution.[100] Nasdaq also found that, based on data for 561 Nasdaq-listed securities with less than 1 million shares outstanding on October 10, 2017, on average, one market was alone at the best price 65 percent of the time for stocks with ADV of 10,000 shares or less; by comparison, one market was alone at the best price 38 percent of the trading day for stocks with ADV between 10,000 and 100,000 shares and 18 percent of the trading day for stocks with ADV between 100,000 and 1,000,000 shares.[101]

Another commenter, representing the views of proprietary trading firms, agreed that trading venue fragmentation is a reason why many stocks have wide spreads and low trading

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have an initial market capitalization of $700 million or less or a continued market capitalization of $2 billion or less; (3) have an initial ADV of 100,000 shares or less; and (4) have a bid price greater than $1. In addition, Nasdaq proposed to remove quotation and trading activity in these securities from the revenue allocation formula for the Nasdaq UTP Plan. Nasdaq indicated market structure innovations it might implement for these securities, upon the restriction of UTP, could include periodic auctions, market maker incentives, and tick and lot size variation. Under the Nasdaq Application, a security that no longer fits the criteria for UTP suspension would be restored to regular trading requirements within 6 months. Nasdaq explained that doing so would incentivize the exchange to implement exchange structure innovations for thinly traded securities aimed at improving liquidity and secondary market trading in those securities. *See id*. Nasdaq did not propose to restrict OTC trading. *See id.* at 17.

[95] *See id.* (Nasdaq Application).

[96] *See id.* (Nasdaq Application).

[97] *See id.* (Nasdaq Application).

[98] *See id.* (Nasdaq Application).

[99] *See id.* at 11-12 (Nasdaq Application).

[100] *See id.* at 12 (Nasdaq Application).

[101] *See id.* at 15 (Nasdaq Application).

turnover, but also identified other factors he thought affected liquidity in thinly traded stocks and that the Commission should consider.[102] Only by addressing these factors, the commenter stated, will liquidity in these stocks increase and bid-ask spreads narrow.[103] One factor the commenter noted is the risks and costs associated with providing liquidity in thinly traded stocks, which in turn informs the bid-ask spread. Because the bid-ask spread reflects an equilibrium point at which a liquidity provider finds a positive rate of return, the commenter explained, identifying and reducing the risks and costs of making a two-sided market in those securities can help narrow those spreads and incentivize market makers to provide liquidity.[104] A number of the risks and costs the Roundtable commenter identified are internal to a liquidity provider, such as licensing, cost of capital, or trading losses.[105] Others, however, are related to the current market structure and trading expectations in the equity markets, such as the execution risk due to a complicated market structure, technology costs due to the current market structure focus on speed and automation, and connectivity, and market data costs due to venue fragmentation in the equity markets.[106]

3. Role of the Over-the-Counter Market

Roundtable participants and commenters also discussed the role OTC trading plays for thinly traded securities, including benefits to retail investors and block size transactions. One Roundtable participant representing the retail buy side noted that the prevalence of OTC trading for thinly traded securities was beneficial to retail investors and did not result in detrimental execution quality.[107] Instead, he stated that retail investors generally receive price improvement and enhanced liquidity when transacting off-exchange in thinly traded securities.[108] He also said that retail investors are not necessarily concerned with liquidity when they transact in thinly traded securities.[109] Other Roundtable participants, representing the sell side and a national securities exchange, respectively, noted that the amount of price improvement delivered to retail investors off-exchange is material and care should be taken so that it is not negatively impacted by any of the market structure changes discussed at the Roundtable.[110] Other Roundtable participants representing national securities exchanges, however, cautioned against addressing

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102 *See* Letter from Daniel Schlaepfer, President, Select Vantage (April 20, 2018), *available at* https://www.sec.gov/comments/265-31/26531-3489072-162255.pdf ("Select Vantage Letter").

103 *Id.* at 2 (Select Vantage Letter).

104 *Id.* at 1 (Select Vantage Letter).

105 *See id.* (Select Vantage Letter).

106 *See id.* at 1-2 (Select Vantage Letter).

107 *See*, *e.g.*, Transcript, *supra* note 8, at 30 (Mr. Ovi Montemayor, Managing Director of Financial Market Services, TD Ameritrade), 38-39 (Mr. Montemayor).

108 *See id.* at 38-39 (Mr. Montemayor).

109 *Id.* (Mr. Montemayor).

110 *See id.* at 133 (Mr. Mecane). *See also id.* at 147 (Mr. Concannon).

liquidity concerns on-exchange without addressing the same issues in the OTC market.[111] Some Roundtable participants, representing both the buy side and the sell side, noted that OTC trading provided similar benefits to large size trades, for which the information leakage discussed above can become particularly problematic.[112] In particular, a Roundtable participant representing the sell side noted that institutional investors with large order flow seek to control information leakage and costs, and dark pools provide an efficient and inexpensive transaction with the least amount of information leakage.[113]

One commenter, representing the sell side, stated that the existence of competitive markets and, in particular, the prominent role of the OTC market in providing liquidity for thinly traded securities, benefits investors.[114] The commenter stated that retail investors account for a significant percentage of the trading in thinly traded securities and benefit principally from the availability of OTC trading. For example, the commenter noted, from September 2017 to February 2018, based on Regulation NMS Rule 605 data as compared to total trading volumes, retail investors constituted 18 percent of the trading activity in thinly traded securities.[115] The commenter also explained that OTC trading allows investors to effect larger transactions without market impact and with lower transaction costs and spreads. More specifically, the commenter stated, the ability of market makers to commit capital in size and provide price improvements is a result of the non-displayed and bilateral nature of market making in the OTC markets.[116] The commenter cautioned that market structure changes aimed at addressing on-exchange liquidity could disrupt the OTC markets and negatively impact investors, so any such changes should be structured to leave the OTC market unaffected.[117]

Another commenter, representing a national securities exchange, also noted that the OTC markets represent a significant percentage of the thinly traded securities market, but stated instead that, consequently, steps to address market fragmentation and improve liquidity for thinly traded securities should apply to both on-exchange and OTC trading.[118] The commenter explained that OTC trading in this market segment currently is more fragmented than trading on non-primary exchanges, noting that 13 percent of share volume in thinly traded securities is traded across 18 alternative trading systems ("ATSs"), and a further 26 percent of share volume

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111 *See id.* at 102 (Ms. Cunningham), 105 (Mr. Brad Katsuyama, Co-founder and Chief Executive Officer, IEX), 121 (Ms. Cunningham).

112 *See id.* at 69-70 (Mr. Cavoli), 132 (Mr. Owain Self, Global Head of Execution Services, Millennium Management).

113 *See id.* at 70 (Mr. Ari Rubenstein, Co-founder and Chief Executive Officer, GTS).

114 *See* Letter from Douglas A. Cifu, Chief Executive Officer, Virtu Financial (April 20, 2018), *available at* https://www.sec.gov/comments/265-31/26531-3488782-162247.pdf ("Virtu Letter"), at 3.

115 *Id.* (Virtu Letter).

116 *Id.* (Virtu Letter).

117 *Id.* at 2-3 (Virtu Letter).

118 *See* Letter from Elizabeth K. King, General Counsel and Corporate Secretary, New York Stock Exchange (November 20, 2018), *available at* https://www.sec.gov/comments/265-31/26531-4668089-176554.pdf ("NYSE Letter").

is executed on non-ATS OTC venues.[119] In addition, the commenter stated that thinly traded securities are less fragmented across exchanges than more actively traded securities, with the primary listing exchanges for those securities accounting for 43.5 percent of the total share volume quoted at the NBBO based on the commenter's data set.[120]

4. Market Makers

Several Roundtable participants and commenters discussed the role of market makers in facilitating trading in thinly traded securities. One Roundtable participant, representing an academic perspective, discussed the fragility of liquidity and linked it to a lack of affirmative market maker obligations. He stated that without affirmative obligations, market makers' participation tends to be highly correlated with each other, rather than related to the needs of the individual securities in this segment of the market or the market as a whole.[121] As a result, he stated, during favorable market conditions, there is a lot of market maker participation; by contrast, when market conditions are unfavorable for market making activities, market makers scale back in unison.[122] This behavior is economically sensible, he noted, because on a risk-adjusted basis, unfavorable market conditions indicate it is not particularly profitable to make markets.[123]

According to this Roundtable participant, from a regulatory perspective as well as from an issuer or investor perspective, this results in an unstable supply of liquidity where the counterparty may not be on the other side of a trade.[124] He observed that, although this problem is not unique to thinly traded securities, it is particularly relevant for small capitalization stocks because unfavorable trading conditions that make market makers step away, such as low volume or one-sided order flow, happen more frequently for these stocks than for large capitalization stocks.[125] He stated that this is the result market participants should expect in a situation where market makers do not have affirmative obligations and where it is not particularly profitable to make markets in thinly traded stocks.[126]

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119 *Id.* at 2 (NYSE Letter).

120 *Id.* (NYSE Letter). The commenter also noted that its calculations of the Herfindahl-Hirschman Index (a measure of market participant activity concentration) for February 2018 indicated a high degree of concentration for quoting activity across the exchanges for thinly traded securities as opposed to a moderate degree of concentration for more actively traded stocks. *Id.* at 3 (NYSE Letter). For trading activity across exchanges and some ATSs, the commenter also calculated a high degree of concentration for thinly traded securities. *Id.* at 3-4 (NYSE Letter).

121 *See* Transcript, *supra* note 8, at 192-93 (Mr. Kumar Venkataraman, Professor of Finance, Cox School of Business, Southern Methodist University).

122 *See id.* (Mr. Venkataraman).

123 *See id.* (Mr. Venkataraman).

124 *See id.* at 193 (Mr. Venkataraman).

125 *See id.* (Mr. Venkataraman).

126 *See id.* (Mr. Venkataraman).

Another Roundtable participant, representing a national securities exchange, echoed the concern about the difficulty in finding liquidity in thinly traded securities particularly during adverse trading conditions, asserting that market makers today would be fairly exposed to risk during times of volatility if they did not pull out of unfavorable markets quickly.[127] In his view, a key way to address this issue would be to adopt a market model in which market makers with affirmative quoting obligations would have additional incentives that would help to ensure that they would comply with such obligations not only during normal market conditions, but also during times of duress.[128] Another Roundtable participant, representing the sell side, echoed this concern during the discussions, noting that seeking liquidity in this range of securities is comparatively challenging, especially during times of market stress or other times of illiquidity that arise around significant events.[129]

Other Roundtable participants, representing the sell side and national securities exchanges, also commented on the difficulty of making markets in thinly traded securities and possible ways to incentivize market maker involvement. One Roundtable participant from the sell side advocated amending the rules governing market makers, pointing specifically to the impediments to providing liquidity caused by short selling restrictions.[130] Another Roundtable participant, representing a national securities exchange, asked whether exchanges could better link the economic rewards resulting from making markets in liquid names to an obligation to facilitate trading in illiquid securities.[131]

Another Roundtable participant, representing the buy side, regretted that the traditional operations of market makers have disappeared today because of the challenges presented by venue fragmentation.[132] He stated that many regional firms do not make markets in this segment of the market because it is difficult to profit from providing liquidity in thinly traded securities when they are much more volatile than a well-established, highly liquid security.[133] He also stated that the current NMS model has disserviced this segment of the marketplace because it has impeded relationships and communication between individual firms placing trades and market makers. As a result, trading in this segment of the market is now less transparent than it was when market participants fostered relationships with market makers and could communicate about their trading intentions.[134]

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[127] *See id.* at 150 (Mr. Tal Cohen, Senior Vice President, North American Equities, Nasdaq).

[128] *See id.* at 150-52 (Mr. Cohen).

[129] *See id.* at 24 (Mr. Fagen).

[130] *See id.* at 71-72 (Mr. Rubenstein). He described a situation in which their systems were bound by these requirements, resulting in less liquidity in the markets at the expense of investors, right when there was enormous demand for liquidity. *See id.* at 52.

[131] *See id.* at 49 (Mr. Harkins).

[132] *See id.* at 74 (Mr. Vedder).

[133] *See id.* (Mr. Vedder).

[134] *See id.* at 74-75 (Mr. Vedder).

One commenter, representing the buy side, stated that another key factor affecting liquidity in thinly traded securities is the difficulty of using automated systems for market making in these securities.[135] Previously, human market makers were obligated to make markets in a range of stocks, including less liquid stocks, the commenter explained; whereas currently, market liquidity largely is provided by firms operating automated systems with no obligation to support less liquid stocks.[136] Because per-share profitability is lower, and trading frequency is higher, the commenter stated, these liquidity providers concentrate their trading in higher-volume securities.[137]

5. Thinly Traded Exchange Traded Products

Roundtable participants and commenters also discussed issues and concerns related to the secondary market trading of thinly traded ETPs. In particular, Roundtable participants and commenters discussed whether the same liquidity considerations are a significant factor for investments in ETPs or whether other factors are equally or more relevant to ETP secondary market trading determinations.

For ETPs, one commenter, representing the buy side, identified 60 percent of the 2,147 U.S.-listed products as having an ADV of 50,000 shares or less, representing 1 percent of total dollar turnover, and with an average bid-ask spread of 33 basis points versus 8 basis points for the more actively traded ETPs.[138] The commenter noted, though, that the liquidity characteristics of an ETP's underlying constituents also should be considered in assessing ETP liquidity.[139] A number of Roundtable participants made similar observations, noting that, as opposed to a corporate stock, an ETP that is thinly traded may still be highly liquid, and that therefore the level of secondary market trading does not correlate as closely with liquidity as it does for corporate stocks. One Roundtable participant representing the buy side asserted that for ETPs, being thinly traded does not equate to being illiquid because traditional measures of liquidity such as ADV or the size of the quoted spread are not necessarily the best measurements of liquidity for an ETP.[140] Assessing the liquidity of an ETP instead involves assessing the liquidity profile and the tradability of the ETP's underlying reference assets.[141] Another Roundtable participant, representing a national securities exchange, asserted that even the illiquidity of some of the underlying reference assets for an ETP may not necessarily create a liquidity problem for

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135 *See* Select Vantage Letter, *supra* note 102, at 2.

136 *See id.* (Select Vantage Letter).

137 *Id.* (Select Vantage Letter). In particular, as opposed to rebates for more actively traded securities, the per-share rebates provided by exchanges generally are insufficient to compensate for the greater risk of providing liquidity for thinly traded securities. *Id.*

138 *See* State Street Letter, *supra* note 90, at 3.

139 *See id.* (State Street Letter).

140 *See* Transcript, *supra* note 8, at 179 (Mr. David LaValle, U.S. Head of SPDR ETF Capital Markets, State Street Global Markets).

141 *See id.* (Mr. LaValle).

the ETP itself because ETP market makers often address illiquidity in the underlying reference assets by using derivatives to hedge their positions.[142]

Another Roundtable participant representing the buy side commented that, although there are many equity market structure commonalities between corporate stocks and ETPs, liquidity for ETPs is more nuanced because of the primary market issuance process for ETPs.[143] Because ETPs have a regular daily creation and redemption function that corporate stocks do not have, he explained, an ETP investor or an ETP market marker can increase or decrease the supply of ETP shares in the market place on a daily basis.[144] As a result, he stated, as a practical matter, ETPs have "unlimited liquidity" and an ETP can be both thinly traded and very liquid at the same time.[145] In effect, Roundtable participants explained, there are two layers of liquidity: there is the secondary market trading of the ETP, but the principal liquidity backstop for ETPs is the creation and redemption mechanism.[146] Because of this dynamic, some of the Roundtable participants representing market maker interest explained there are no ETPs that are "too illiquid to touch."[147]

Instead, several Roundtable participants representing market makers and national securities exchanges noted that a larger concern for thinly traded ETPs is the lack of flexibility in creation and redemption unit sizes. If there were smaller creation and redemption unit sizes, one market maker Roundtable participant commented, market makers then could facilitate trading in smaller size for less frequently traded ETPs, which may have wider spreads than other ETPs.[148] These wider spreads reflect, among other considerations, the risk and cost of holding and hedging large size creation units and holding the hedge on the other side of the trade. As a result, facilitating small retail trades is quite costly.[149] Another Roundtable participant representing market makers explained that determining how widely to quote an ETP is a function of factors such as creation and redemption sizes, creation and redemption fees, and the availability of authorized participants in the ETP.[150] He also noted that from his perspective, the most noteworthy characteristic of less liquid ETPs is that spreads are much tighter at larger trade

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142 *See id.* at 200 (Mr. Phil Mackintosh, Global Head of Economics and Research, Nasdaq).

143 *See id.* at 190 (Mr. Charles Thomas, Head of U.S. ETF Capital Markets, Vanguard Group Inc.).

144 *See id.* (Mr. Thomas).

145 *Id.* (Mr. Thomas).

146 *See id.* at 208 (Mr. Thomas).

147 *Id.* at 203-04 (Mr. Greg Sutton, Managing Director, Citigroup Global Markets Inc.), 208 (Mr. Thomas).

148 *See id.* at 209 (Mr. Josh Kulkin, Head of Trading, Jane Street Capital LLC).

149 *See id.* at 182 (Mr. Mackintosh).

150 *Id.* at 177 (Mr. Kulkin). An authorized participant is an ETP liquidity provider who is permitted to create or redeem ETP shares directly with the ETP fund.

sizes due to creation and redemption sizes and minimum creation and redemption size requirements.[151]

III. Current Regulatory Framework for Thinly Traded Securities

A. Unlisted Trading Privileges

As discussed in the Commission Statement, potential market innovation to improve secondary market trading in thinly traded securities may implicate Section 12(f) of the Securities Exchange Act of 1934 ("Exchange Act").[152] Section 12(f) permits securities listed on any national security exchange to be traded by other such exchanges.[153] Enacted in 1936, when a market structure that differs significantly from today's market structure existed, amendments to this provision and the rules promulgated thereunder have been aimed largely at streamlining the UTP process without substantially altering the basic principles underlying its adoption.[154]

Prior to the enactment of Section 12(f), there was significant Commission and Congressional concern about the prevalence of unlisted securities and the potential for speculation regarding, and manipulation of, such unlisted securities.[155] Congress and the Commission were also concerned, however, about supporting intermarket competition and, to that end, ensuring the survival of the regional exchanges in the face of the New York Stock Exchange's ("NYSE") market dominance.[156] This desire to foster and maintain competition among the exchanges was central to the Commission's recommendation to continue to permit the

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151 *See id.* (Mr. Kulkin).

152 15 U.S.C. 78l(f).

153 Currently, UTP is automatically extended to a security when at least one transaction in a security that is the subject of an IPO has been effected on the national securities exchange on which the security is listed and the transaction is reported under an effective transaction reporting plan. *See* Securities Exchange Act Release No. 43217, 65 FR 53560 (September 5, 2000) (eliminating the one day waiting period for exchanges to extend UTP to listed IPOs).

154 Section 12(f) of the Exchange Act as initially enacted required the Commission to "make a study of trading in unlisted securities upon exchanges" and to report the findings and recommendations to Congress before January 3, 1936. *See* Pub. L. 290, 73rd Cong., as Approved June 6, 1934, 48 Stat. 881. The Commission provided Congress with the Report on Trading in Unlisted Securities Upon Exchanges on January 3, 1936. Securities and Exchange Commission, REPORT ON TRADING IN UNLISTED SECURITIES UPON EXCHANGES (January 3, 1936) ("1936 Report"). The 1936 Report recommended that unlisted trading be continued as long as it satisfied certain conditions, and the amendments of 1936 codified UTP.

155 *See*, *e.g.*, *Stock Exchange Practices Report of the Senate Committee on Banking and Currency Pursuant to S.Res. 84 (72d Congress) and S.Res. 56 and S.Res. 97 (73d Congress)*, S. REP. NO. 1455, 74 (June 16, 1934) (explaining the concerns raised by unlisted securities). At the time, the unlisted securities category of primary concern was "solely traded" securities that were traded on an exchange, but were not listed on any exchange. These "solely traded" securities were not required to comply with the extensive financial information and regulatory disclosure requirements to which dually traded securities (*i.e.*, securities listed on one exchange but permitted to trade on another exchange) were subject. *See id.* at 69.

156 *See id.* at 3 ("If tomorrow, for example, unlisted trading should be abolished and the requirement should be made that all securities should be required to register, the result would be that many small exchanges would be forced to close.").

trading of unlisted securities and Congress's enactment of the 1936 amendments to Section 12(f) to allow for UTP.[157] Concern about intermarket competition, given the market dominance of first the NYSE and later both the NYSE and Nasdaq, also largely informed the subsequent legislative and Commission approaches to UTP through the early 2000s.[158] Since the approval of Regulation NMS in 2005, however, there has been a proliferation of trading across multiple trading venues, which has contributed to fragmentation and related concerns regarding market quality and liquidity for thinly traded securities.[159]

B. Regulation NMS and Other Exchange Act Rules

The Commission Statement notes that some market structure innovations may require exemptive relief from certain Regulation NMS or other Exchange Act rules. The Exchange Act establishes a statutory scheme for the trading of securities. In particular, the 1975 amendments to the Exchange Act enacted Section 11A, which sets forth the five objectives of the U.S. national market system: (1) economically efficient execution of securities transactions; (2) fair competition among brokers and dealers, among exchange markets, and between exchange markets and markets other than exchange markets; (3) the availability to brokers, dealers, and investors of information with respect to quotations for and transactions in securities; (4) the practicability of brokers executing investors' orders in the best market; and (5) an opportunity, consistent with (1) and (4) above, for investors' orders to be executed without the participation of the dealer.[160] Subsequently, in 2005, the Commission adopted Regulation NMS, which in large part established new substantive rules designed to modernize the national market system, such as the Order Protection Rule, as well as modernized and incorporated existing national market system rules, such as those addressing quoting obligations.[161]

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157 The Commission's recommendation in the 1936 Report was "an endeavor to create a fair field of competition among exchanges and between exchanges as a group and the over-the-counter markets and to allow each type of market to develop in accordance with its natural genius and consistently with the public interest." H.R. REP. NO. 2601, 74th Cong., 2d Sess. 4 (1936). *See also* Tom Arnold, Philip Hersch, J. Harold Mulherin & Jeffry Netter, *Merging Markets*, 54 J. FIN. 1093 (1999) (providing a detailed history on the changes impacting regional exchanges in the early to mid-twentieth century and the impact of mid-twentieth century regional stock exchange mergers).

158 The Unlisted Trading Privileges Act of 1994 removed the application, notice, and Commission approval process from Section 12(f) to expedite the process for exchanges to extend UTP. Pub. L. No. 103-389, 108 Stat. 4081 (1994). At the time, Congress viewed eliminating such rules as consistent with its general policy of "always seeking to increase competition." *See Hearing Before the Subcommittee on Telecommunications and Finance of the House of Representatives Committee on Energy and Commerce on HR 4535*, 103rd Cong., 2d Sess. (June 22, 1994), at 20-21.

159 Currently, there are 13 national securities exchanges trading equities. There has been one additional equities exchange that has been approved by the Commission but that has not commenced trading. *See* Securities Exchange Act Release No. 85828 (May 10, 2019), 84 FR 21841 (May 15, 2019) (order approving the Long Term Stock Exchange, Inc. as a national securities exchange). The number of national securities exchanges trading is subject to change.

160 *See* 15 U.S.C. 78k-1(a)(1)(C).

161 The Order Protection Rule requires trading centers to establish, maintain, and enforce written policies and procedures reasonably designed to prevent the execution of trades at prices inferior to protected quotations

When the Commission adopted Regulation NMS, it sought to balance competition among markets and competition among orders,[162] explaining that in its marketwide approach it was aiming to avoid the two extremes of, on the one hand, "isolated markets that trade an NMS stock without regard to trading in other markets and thereby fragment the competition among buyers and sellers in that stock," and, on the other hand, a "totally centralized system that loses the benefits of vigorous competition and innovation among individual markets."[163] The Commission highlighted, among other things, the drawbacks of insufficient competition among orders, including lower quality of price discovery, which could in turn reduce market depth and liquidity and create excessive short term volatility. The Commission also highlighted the importance of promoting deep and stable markets that minimize investor costs.[164]

IV. Conclusion

This staff paper provides information on the market structure related to thinly traded securities, including the unique trading challenges and characteristics related to thinly traded securities. It is intended to provide some background context as market participants consider the Commission Statement. The staff looks forward to any proposals that may be submitted in response to the Commission Statement.

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displayed by other trading centers, subject to an applicable exception. *See* 17 CFR 242.611. *See also* Securities Exchange Act Release No. 51808 (June 9, 2005), 70 FR 37496 (June 29, 2005) (adopting Regulation NMS) ("NMS Release"). Rule 602 under Regulation NMS outlines the requirements for disseminating quotations in NMS securities. *See* 17 CFR 242.602.

[162] *See* NMS Release, *supra* note 161, 70 FR at 37499.

[163] *Id.* at 37498-99.

[164] *See id.*