



NYSE GROUP SUBMISSION FOR
SEC ROUNDTABLE ON MARKET DATA AND MARKET ACCESS
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Executive Summary

NYSE Group¹ welcomes continued dialogue and review of our current equity market structure. The US capital markets are the deepest, most liquid markets in the world. Guided by the forces of supply and demand, coupled with unparalleled transparency, they have been the envy of the world for decades and remain so today.

There is no question that since Regulation NMS was implemented there have been significant changes to equity market structure, principally driven by the Order Protection Rule.² Regulation NMS achieved its goals of creating significant competition among market centers for trading and execution services. Trading of NMS Stocks now occurs across 13 registered public equity exchanges and over 50 additional venues, including registered Alternative Trading Systems (“ATS”) and broker-dealer internalizers. In contrast to pre-Regulation NMS, up to 40% of all equity transactions now occur off of the registered exchanges. A Main Street investor is now able to see a stock quote for free, enter an order, and receive an execution in less than a second, all for less than the cost of a cup of coffee. Meanwhile, the banks and other financial intermediaries that serve the investing public are enjoying record profits.³

All trading venues, including well-established exchanges and new ATSS, now compete for orders. While the Main Street investor is the beneficiary, some market professionals question the consequences of this new landscape. Three consequences resulting from this competition are particularly relevant to the discussion of market data and market access.

- **First**, by increasing competition among trading centers, Regulation NMS has increased the value of market data. When over 80% of trading occurred on the primary listing market, as it did before Regulation NMS, there was less need for a market participant to consume market data from multiple venues as participation at the primary listing venue ensured interaction with the majority of the market’s liquidity. Today, however, market participants can and do choose from more than 50 venues for execution. This multiplicity of choices — often called fragmentation — means that in order to make informed choices, some market participants, depending on their chosen business models, may seek to be

¹ This submission is on behalf of New York Stock Exchange LLC (“NYSE”), NYSE Arca, Inc. (“NYSE Arca”), NYSE American LLC (“NYSE American”), NYSE National, Inc. (“NYSE National”), and Chicago Stock Exchange LLC (“CHX”).

² See Securities Exchange Act Release No. 34-51808, 70 FR 37497, 37558 (June 29, 2005) (“Adopting Reg NMS Release”).

³ See “Wall Street enjoys trading bonanza from market turmoil,” Financial Times, October 21, 2018. The equity trading revenues of just 5 banks for the first 9 months of the year are \$25.9 billion according research by Autonomous.

continuously aware of quotes and trades from multiple venues. Put differently, given the structure of electronic order books and electronic order matching, it is not possible to provide execution services without generating market data, which are joint products. Due to the fragmentation that has occurred, and as market participants automated and optimized their chosen business models, some market participants find value in consuming market data from multiple venues.

- Second, exchanges compete for orders across the related services of trading and execution, market data, and market access; these are all joint products. This means that the pricing of any one of these services by an exchange impacts the demand for the other services offered by that exchange. Additionally, the production and dissemination of market data is an intrinsic part of the operation of fair and orderly markets given the structure of electronic order books and electronic order matching and cannot be viewed as a stand-alone activity. For these reasons, it is impossible to consider the marketplace for market data and market access services offered by exchanges without also considering the marketplace for the other related services. Put differently, exchanges are some of the oldest known examples of what economists call multi-sided markets.⁴
- Third, beginning in the early 2000s, exchanges transitioned away from being member-owned, mutualized entities. When member-owned exchanges' revenues exceeded costs, those profits were returned to the member-owners. With the significant and continuous technological enhancements required as a result of public policy decisions like Regulation NMS and market demand for automated trading (including linkage among multiple trading venues, continuously increasing messaging requirements, and pressure to reduce latency), the member-owned structure of exchanges (where any profit was returned to members) was no longer appealing to members. Today, none of the registered exchanges are owned collectively by their members. Instead, both the publicly-owned and privately-owned exchanges - all of which are for profit - are better positioned to operate efficiently and have access to capital to invest in technology to respond to the intense competitive forces. And when publicly-owned exchanges earn more than their costs, profits are returned to public shareholders instead of member-owners.

We look forward to robust discussions about who is responsible for distributing market data, how it is distributed, the content it includes, and how market participants access both that data and trading on exchanges. With the advancements in technology over the last ten years, it is appropriate to review whether the considerations that drove Regulation NMS with respect to market data have been met by the current regulatory structure.

To foster an informed and productive discussion of market data and market access, NYSE Group believes it is important to "level set" the facts and dispel stale perceptions:

⁴ See David S. Evans and Richard Schmalensee, MATCHMAKERS 39 (2016). Thus, pursuant to the Supreme Court's decision in *Ohio v. American Express Co.*, 138 S. Ct. 2274, 2285 (2018), all of the services provided by exchanges must be considered a single market to reflect the commercial realities of how exchanges work.

- Consolidated Core Data. Today, Main Street investors benefit from the highest quality consolidated core data at historically low costs and historically high speed.
 - The exchanges have invested significantly in the operation of the securities information processors (“SIPs”), resulting in improved resilience and reduced latency, all while managing increased volumes.
 - The consolidated view of the market for each exchange-listed security disseminated by the SIPs is provided at a low cost that meets the needs of most Main Street investors, and retail investors typically pay nothing for such information.
- Proprietary or Direct Data.
 - Proprietary data products — also referred to as direct feeds — offered by exchanges supplement the data disseminated by the SIPs, in accordance with Regulation NMS. These direct feeds are available to anyone who wants to subscribe to them and the choices available include top-of-book quotes, trades, depth-of-book quotes, order-by-order detail, odd-lot quotations, and auction imbalance information.
 - No one is required to subscribe to proprietary data feeds, but these optional products enable, among other things, the automated trading businesses that many firms have chosen to enter.
- Market Data costs.
 - There is a false narrative that equity market data fee levels continuously rise. In fact, NYSE Group has rarely increased the fees charged for its market data products. The most significant change in market data economics was the introduction of non-display fees about 5 years ago, which appropriately shifted the model from charging based on “eyeball” display devices to charging automated trading firms and others who use computers to digest and act on the data without viewing it.
 - The scale of U.S. equities market data costs in the aggregate are low compared to the overall costs of running a broker-dealer, or even the Commission’s own Section 31 fees.
 - Based on disclosures from the SIPs (available on the SIP websites) and the exchanges (as part of public company reporting), the aggregate annual revenues from U.S. equity exchange real-time market data (both SIP and proprietary) are estimated at \$600 million (approximately \$60 million of which is shared with broker-dealers via the FINRA Trade Reporting Facility).

- For sake of comparison, the Commission annually collects approximately \$1.2 billion in Section 31 fees. Section 31 fees have been described by the Commission as “small”⁵ and “very modest,”⁶ and provide useful context given that the total spend on U.S. equity exchange real-time market data is half the size of this expense.
 - In fact, at approximately \$150 million per quarter, the total market data revenues for SIP and proprietary market data are less than 1% of quarterly equity trading revenues for the five largest U.S. banks alone.⁷
 - Also false is the disingenuous claim that end investors are being harmed by market data expenses. By all objective metrics, the costs borne by retail and institutional investors for trading have declined since 2007. For example:
 - The average commission rate that institutional investors pay has declined.⁸
 - The average buy-side management fee has declined.⁹
 - The average retail investor transaction fee has declined.¹⁰
 - These trends illustrate that Wall Street, not Main Street, is facing cost pressure. It is understandable that everyone wants to reduce the operating cost of their business, so as to be as profitable as possible. But, market structure policymakers should be clear-eyed about who is benefiting from any prospective changes, particularly when the top five bulge bracket firms (and SIFMA participants) have recorded equity trading revenues in 2018 running at \$25.8 billion, which is 18 percent higher than the same revenue figures for the first nine months of 2017, and those firms’ highest equity trading revenue figures for at least a decade.¹¹
 - Asking the SIPs and exchanges to engage in cost-based pricing for market data would require the Commission to engage in utility rate-making, which is not part of the Commission’s core mission.

⁵ See <https://www.sec.gov/fast-answers/answerssec31htm.html>.

⁶ See <https://www.sec.gov/news/testimony/testimony-white-oversight-sec-06-14-2016.html>.

⁷ See *supra* n. 3 and “Trading Revenues For Largest U.S. Banks Exceeded \$20 Billion For Second Consecutive Quarter,” *Forbes*, Aug. 20, 2018.

⁸ See Greenwich Associates US Equity Broker Commissions Report (“Total U.S. equity commission payments from institutional investors to brokers have fallen for eight consecutive years and are now down 45% from their peak.”).

⁹ See ICI 2017 Trends in Expenses and Fees of Funds (“Equity mutual fund expense ratios declined for the eighth straight year in 2017, falling 4 basis points in 2017”).

¹⁰ See Charles Schwab Form 10-K 2017 (“During the first quarter of 2017, we announced two trading price reductions which lowered standard equity, ETF, and option trade commissions from \$8.95 to \$4.95 and lowered the per contract option fee from \$.75 to \$.65”); E*Trade Form 10-K 2017 (“In March 2017, we reduced trade commissions for stock, options, and exchange traded funds (ETFs) to \$6.95 from \$9.99”); and TD Ameritrade Form 10-K 2017 (“Effective March 6, 2017, we reduced our online equity and ETF trade commissions from \$9.99 to \$6.95 per trade and also lowered options pricing to \$6.95 per trade (plus \$0.75 per contract”).

¹¹ See *supra* n. 3.

- Market Access. No one is required to connect to all exchanges - the Order Protection Rule simply requires that a market center cannot trade through the protected quotations of an exchange. Market participants can scale their scope and cost of market access to match the value they derive from such access based on the business models they choose to pursue.
 - Display access to the best quotes can be obtained from SIP data, and market participants can rely on a host of third-party vendors to access that data at low cost (or no cost for retail investors).
 - Access to depth-of-book direct feeds to support more advanced trading strategies is available either directly from an exchange or through third parties (generally at no cost for retail investors).
 - Connectivity to NYSE Group exchanges (both trading and market data) is available in the data center housing the NYSE Group exchanges in Mahwah, New Jersey, as well as via ICE Global Network Access Centers in 35 access centers globally and numerous third-party connectivity providers offering direct or indirect connections to the Mahwah data center.
 - NYSE Group offers co-location services for market participants that value the least latency in their trading strategies in a fair and transparent manner through a suite of connectivity choices that for a single, fixed cost, provides access to the NYSE Group equity and options exchanges and the Tape A, Tape B, and equity options SIP market data.

Recommendations

It is appropriate to re-evaluate whether improvements to the SIPs are needed after a decade of operating under Regulation NMS (and more than 40 years since their inception). We believe four areas merit SEC consideration and NYSE Group recommends the following immediately actionable improvements to the U.S. equity market data regulatory regime.

1. **Core Data:** Odd-lot quoting, particularly in high-priced securities, has become more prevalent in today's markets and its exclusion from SIP feeds seems anachronistic. Likewise, information about auction imbalances is now automated and yet is available only via proprietary data feeds.

Recommendation: Expand the definition of core data to include (1) the best bid and offer of any quantity and (2) auction imbalance information.

2. **Infrastructure:** Some market participants claim they subscribe to proprietary market data products solely because they are not subject to the SIPs' intrinsic geographic and aggregation latency.

Recommendation: The SIP Operating Committee should direct the SIPs to explore the feasibility of exchanges publishing their quotes and trades to the consolidator in their native formats via wireless connectivity (i.e., let the SIPs read the proprietary feeds) to eliminate any disparity in publishing times. Additionally, the Commission should undertake an analysis of the costs and benefits to the industry (institutional brokers, ATSS, retail investors, third-party data aggregators, institutional buy side, and exchanges) of de-centralizing the SIP architecture, either through multiple instances of the existing processors or an alternative method.

3. **Economics:** Following a public Commission notice and comment period, a fairly complex SIP revenue allocation methodology was adopted by the Commission in accordance with Regulation NMS. It merits reconsideration.

Recommendation: The SEC should undertake rulemaking to establish a simplified SIP revenue allocation methodology. The new methodology should consider rewarding quotes that result in trades and dis-incentivizing quotes that fade before execution.

4. **Governance and Transparency:** There is a misperception that the SIP Operating Committee is a smoke-filled room with conflicted actors. Improved transparency would demystify what is intended to be a technocratic function.

Recommendation: Publicly webcast all SIP Operating Committee meetings.

Detailed Submission

I. Overview of Current Market Data Landscape

In 1975, when Congress mandated the creation of the National Market System, it noted that the systems for disseminating consolidated market data would “form the heart of the national market system.”¹² Accordingly, in 2005 when the Commission adopted the changes to the market data plans in Regulation NMS, it stated that “one of the Commission’s most important responsibilities is to preserve the integrity and affordability of the consolidated data stream.”¹³

Today, as in 2005, under SEC rules and the National Market System market data plans, investors are able to obtain real-time access to the best current quotes and all trades for all NMS stocks. The Commission stated in Regulation NMS that “[a]s a result, investors of all types – large and small – have access to a comprehensive, accurate, and reliable source of information for the prices of any NMS stock at any time during the trading day.”¹⁴

Following decisions made by the Commission in adopting Regulation NMS, there are two broad categories of market data:

- **Core Data:** For each exchange-listed security, core data is the national best bid and offer (NBBO), the best displayed bids and offers from each market, and the last-sale information. All exchanges and those ATs with more than 5% of trading volume that display their prices to their participants (today none do) must provide their best quotations, including quantities, and all market centers must provide last-sale trade information to the single SIP for a security. The SIP distributes core data for each exchange-listed security to the public and also calculates and disseminates the NBBO for each security based on the quotation information provided by the exchanges.
- **Non-Core Data:** Regulation NMS granted self-regulatory organizations and broker-dealers increased authority and flexibility to offer new and unique market data to the public -- in other words, it allowed them to sell their market data, subject to certain requirements. It was believed that permitting exchanges to sell non-core data would expand the type and amount of data available to consumers, and spur innovation and competition for the provision of market data. This has come to fruition: all of the 13 public U.S. exchanges offer non-core market data via direct feeds. In addition to the exchange’s best bid and offered prices, direct feeds from the exchanges include “depth of book” information, which indicates the available displayed liquidity at multiple price levels and/or order-by-order detail.

Rule 603 of Regulation NMS requires exchanges that offer market data for a fee to publicly disclose and support the rationale for such fees. When selling core market data, any national securities exchange that distributes information with respect to quotations for or transactions in an

¹² See Adopting Reg NMS Release (citing 1975 site H.R. Rep. No. 94–229, 94th Cong., 1st Sess. 93 (1975), 70 FR 37497, at 37503 fn.41, *supra* n. 2.

¹³ See *id.* at 37503.

¹⁴ See *id.* at 37557.

NMS stock does so on terms that are not unreasonably discriminatory (and must justify such fees with public rule filing). When selling non-core market data, fees charged by an exchange (which are also filed with the Commission) must be fair, reasonable, and not unfairly discriminatory.

II. Improvements at the SIP at Almost No Cost to Investors

The exchanges and FINRA must develop, administer, and operate National Market System plans for the consolidation and dissemination of core data.¹⁵ Under each Plan, the exchanges and FINRA are required to designate a representative to sit on the Operating Committee for the Plans and have responsibility under SEC rules to administer the plan according to its terms.

These Plans also have an Advisory Committee, consisting of industry representatives that are intended to represent a retail broker, vendor, institutional investor, ATS, and prime broker. In addition, each exchange and FINRA may designate an individual to join the Advisory Committee. The Operating Committees of the Plans meet quarterly with SEC staff and the members of the Advisory Committee to review SIP performance and discuss operations, enhancements and policy matters. The agenda and meeting summaries are public. The SIP web sites include information on SIP metrics, subscriber usage metrics, pricing, policies, contracts, and the respective Plans. Plan amendments and fee changes must be filed with the SEC and are subject to public notice and comment.

In turn, as contemplated by Regulation NMS, the Plans provide that the exchanges and FINRA each receive an allocation of SIP market data quotes and trade revenue. As publicly disclosed on the Plans' websites, certain of this SIP revenue, an estimated \$60 million annually (approximately a third of the total trades revenue distributed to the exchanges and FINRA), is further shared with the broker-dealers operating ATSs and reporting trades to the SIPs.¹⁶

A. The Operating Committees Have Directed the Processors to Improve the Resiliency, Efficiency and Speed of SIP Data

Five years ago, market participants had valid complaints about the operation of the SIPs. They were significantly slower than direct feeds from the exchanges and a high-profile outage resulted in a halt in trading in Tape C securities for over three hours. But the snapshot of the state of the SIPs in 2013 looks very different from today and stale perceptions about the operation of the SIPs from that period should not form the basis of discussion today.

¹⁵ There are two Regulation NMS plans that govern the dissemination of equities consolidated last-sale and quotation information: the "CQ Plan" (governing quotation information in Tape A and B securities), the "CTA Plan" (governing last-sale information in Tape A and Tape B securities), and the "UTP Plan" (governing last-sale and quotation information in Tape C securities) (collectively, the "Plans"). All registered exchanges and FINRA are participants in each of the Plans. Information about the CQ and CTA Plans is available at ctaplan.com and information about the UTP Plan is available at utpplan.com.

¹⁶ See

<https://www.nyse.com/publicdocs/ctaplan/notifications/trader-update/Q2%202018%20CTA%20Financial%20Disclosure.pdf> and <https://www.nyse.com/publicdocs/ctaplan/notifications/trader-update/Q2%202018%20CTA%20Financial%20Disclosure.pdf>.

Rather, since that time, the SIP Operating Committees have invested heavily to increase resiliency, boost capacity, and reduce latency. For instance, after the outage of the SIP for Nasdaq-listed securities in August 2013, the Operating Committees of both SIPs invested in improving disaster recovery capabilities such that, today, each SIP has the ability to fail over to geographic back-up centers in under ten minutes. The SIPs regularly test the use of these back-up centers with all market participants. In addition, the SIPs have invested in significant cybersecurity and fraud-prevention initiatives, which are the type of improvements not readily visible to the market data consumer, but crucial in today's interconnected and technology-dependent world.

Moreover, after significant investments in the ongoing operations, both SIPs have been operating at 100% system availability for the last seven (7) quarters. Further, investments in the SIPs over the last decade have resulted in dramatic improvements in the latency for both quotes and trades - and information about these latency statistics is publicly available on the Plans' websites.

- Currently, the median latency for the processing of quotes reported through the SIPs is 70 microseconds for Tape A and Tape B securities and 17 microseconds for Tape C securities. These quote latencies represent a significant reduction since the first quarter of 2010, when the median processing latency was 4.04 milliseconds for Tape A and Tape B securities and 5.42 milliseconds for Tape C securities.
- There have been similar improvements in trade reporting times. Currently, the median latency for trades reported through the SIPs is 150 microseconds for Tape A and Tape B securities, down from 6.46 milliseconds in the first quarter of 2010, and 17 microseconds for Tape C securities, down from 6.06 milliseconds over the same period.
- The processing capacity of the Tape A and B SIP has also steadily increased: The SIP has the capacity to handle 16 billion quotes and 1 billion trades per day — up from 8 billion and 200 million, respectively in 2010. It can also process 4.5 million quotes and 1 million trades per second — up from 250,000 and 50,000, respectively, in 2010. It is estimated that with continued upgrades, the SIP will have the capacity to handle 10 million quote messages per second and 3 million trade messages per second.

B. Consideration of Additional SIP Enhancements

By investing in enhancing SIP processor performance, the Operating Committee, working closely with members from the Advisory Committee, are now able to identify additional areas for improvement, specifically as it relates to differences between the speeds of the SIP feeds and the direct data feeds. In assessing these differences, it is important to keep three things in mind. First, the latency differences between delivery of SIP and direct data feeds are measured in microseconds. These differences are meaningful to sophisticated, latency-sensitive trading strategies, but are meaningless to Main Street investors or professional wealth advisors whose market data needs for making trading decisions are a display view of the best quote and last-sale information.

Second, because the process of consolidation by the SIPs inherent in core data takes time, differences in the time of receipt of proprietary data and time of receipt of SIP data cannot be eliminated. As noted above, the aggregation performed by the SIPs takes about 70 microseconds for Tape A and B securities and about 17 microseconds for Tape C securities. Because an exchange's proprietary data is disseminated without consolidation, by definition, it is not delayed by the time it takes to consolidate.

Finally, in any discussion of latency reduction, there is also the simple reality of physics. Four NYSE Group exchanges and the Tape A and B SIPs are located in a data center in Mahwah, New Jersey. The Nasdaq exchanges and the Tape C SIP are located in Carteret, New Jersey. The balance of the registered exchanges and many broker-dealer ATs are located in a data center in Secaucus, New Jersey. While data transmission today can occur at the speed of light, the fact remains that to create a consolidated feed, data needs to be transmitted from one location to another, processed, and then disseminated back to market participants.

Some of the alternatives being discussed for dissemination of consolidated core data seek to solve the geographic latency question. One proposal, the "distributed SIP model," would hew more closely to the requirements of Regulation NMS and envisions that the existing SIPs would build processing centers in all three of the New Jersey data centers. All exchanges would be required to transmit their data to all three locations, and each location would separately consolidate and disseminate both last-sale and quotation information. Market participants could then choose to access SIP core data directly from any of those data centers.

There are open questions of whether this model would be consistent with the requirements of Regulation NMS to have a "single" plan processor. In addition, this model raises questions about which SIP location would be responsible for regulatory messages, including calculating price bands for the limit up-limit down plan and market wide circuit breakers. Finally, there are valid questions of whether the cost necessary for the industry to connect to this infrastructure outweigh the benefits, particularly those that would inure to the retail investor. NYSE has submitted a more detailed description of the Distributed SIP concept in a separate letter to the comment file.¹⁷

Other proposals for addressing geographic latency include eliminating the notion of a single processor and replacing it with either numerous processors or none at all. These concepts are worthy of evaluation, but in our opinion the least complex and least costly approach for the industry to ensure that core data is available in all three major data centers with minimal geographic transmission time would be to introduce additional instances of the existing technology. This could be paired with technical enhancements to the SIPs that allow exchanges to publish their trades and quotes via wireless connectivity for the lowest possible latency.

When assessing alternative models of SIP market data dissemination, NYSE Group believes that the standard of review the Commission followed when adopting Regulation NMS is still relevant. Specifically, when Regulation NMS was adopted, the Commission undertook an extended review of the various alternatives for disseminating market data to the public — other than the SIPs — in

¹⁷ See Letter from Michael Blaugrund, Head of Transactions, NYSE Group, to Mr. Brent J. Fields, Secretary, Commission, dated October 24, 2018.

an effort to identify a better model. In choosing not to adopt one of alternative models — each of which was found to have serious weaknesses, the Commission noted that:

the great strength of the current model is that it benefits investors, particularly retail investors, by helping them to assess quoted prices at the time they place an order and to evaluate the best execution of their orders against such prices by obtaining data from a single source that is highly reliable and comprehensive.¹⁸

Accordingly, the Commission stated that “[i]n the absence of full confidence that this benefit would be retained if a different model were adopted, the Commission has decided to adopt such immediate steps as necessary to improve the operation of the current model.”¹⁹

Today, the primary driver for whether to change Regulation NMS should still focus on Main Street, and whether the benefits of the proposed models for retail investors would outweigh the cost of upending current market structure, which as discussed below, has served Main Street well.

C. Cost of SIP Data is Low for Main Street

The reality is that the cost for SIP data is exceedingly low. Anecdotally, it has been estimated that “[f]or a very large broker, the cost of real-time nonprofessional data is about \$0.17 per customer per month, about the same as a sip of Starbucks.”²⁰ Retail investors are receiving more data, at faster speeds at a stable, low cost.

More specifically, the fees applicable to non-professional subscribers (i.e., retail investors) of SIP data have not changed in over ten years. Moreover, most brokerage firms absorb those low costs and provide SIP data to their customers with real-time prices as part of their brokerage service. For example, at a recent industry conference, the CEO of a large online retail brokerage firm stated that his firm provides retail investors access to 80% of the market data content that is available on a Bloomberg terminal for free.²¹ Providing this service does not appear to impact the bottom-line for retail brokerage firms, which have reported record profits the last several years.²²

¹⁸ See Adopting Reg NMS, 70 FR 37497, at 37558, *supra* n. 2.

¹⁹ See *id.* at 37504.

²⁰ See James Angel, “Retail investors get a sweet deal: The cost of a SIP of stock market data”, October 17, 2018.

²¹ See, for example, pricing information available from TD Ameritrade, *available at*: <https://www.tdameritrade.com/pricing.page> (“Waiver of NASDAQ Level II and Streaming News subscription fees applies to non-professional clients only”); E*TRADE, *available at*: <https://us.etrade.com/a/home3> (“Get real-time streaming market data and easy-to-read charts”); Charles Schwab (StreetSmart Edge), *available at*: https://www.schwab.com/public/schwab/active_trader/trading_tools/trading_software (“Both versions include free streaming, real-time data, ability to create and save multiple layouts, customize tools, expand the platform to multiple monitors, and more”); and Fidelity, *available at*: <https://www.fidelity.com/customer-service/how-to-get-real-time-quotes>, (“Fidelity offers Real-Time Quotes to help you stay on top of the markets and your investments”).

²² The top three retail brokerage firms have all recently publicly reported record earnings. For example, TD Ameritrade’s 2018 net earnings were up 82% year-over-year, and the company announced a dividend increase, *available at*:

<https://www.amtd.com/newsroom/press-releases/press-release-details/2018/TD-Ameritrade-Reports-Rec>

D. Notwithstanding the Significant Technological Improvements, SIP Revenue Over the Last Ten Years has Trended Down

NYSE Group believes it is a misperception that SIP fees have increased over the years. They have not. In adopting Regulation NMS, the SEC reported that, in 2004, \$434.1 million was collected in revenues from the SIP, \$393.7 million of which was distributed to the exchanges and FINRA. In March 2018, the Operating Committees to the SIPs began disclosing historical information about the annual revenue from the SIP (going back to 2007) that has been distributed to the exchanges and FINRA. The data indicate that revenue from the SIPs has in fact declined.

Total SIP revenues distributed in 2017 were \$387 million, which is 10% lower than they were in 2007, even without adjusting for inflation. After adjusting for inflation using the CPI-U, consolidated revenues distributed declined by more than 23% over the 10 years ending in 2017. The average SIP revenue per share traded decreased on an annualized basis from \$0.024/share traded during 2007 to \$0.0215/share traded as annualized volume increased from 1.6 trillion shares to 1.81 trillion shares due to heightened volatility and trading volume. This information is now made publicly available.²³

What has changed is how SIP fees are charged, which reflects the evolution of market structure and the changed importance of market data in today's fragmented markets as a result of Regulation NMS. While fees for non-professional subscribers have not changed, the SIPs have adjusted their fee structure to account for the decline in professional human traders relying on market data display devices and increased reliance on non-display uses of market data to power algorithmic trading in today's fragmented markets. Importantly, the difference in how SIP fees are assessed has not resulted in overall higher costs for the industry or the end retail or institutional asset owner.

While the revenue distributed to exchanges and FINRA (and in turn, to broker-dealers) has trended down, how that revenue is allocated among the Plan participants is based on a formula implemented after Regulation NMS was adopted. The methodology for how SIP revenues are allocated among the Plan participants is available on the Plans' websites.²⁴ These calculations are complex and create an incentive for off-exchange trading that may have contributed to the growing opacity of the U.S. equities markets. NYSE Group believes it would be worthwhile for the Commission to re-examine this formula and identify an allocation model that rewards quoting activity that results in trades.

[ord-Fiscal-2018-Earnings/default.aspx](#); E*Trade's last quarterly results including a record operating margin of 52%, available at: <https://etradefinancialcorporation.gcs-web.com/news-releases/news-release-details/etrade-financial-corporation-announces-third-quarter-2018-0>; and Charles Schwab's last quarterly net income was a record \$923 million, up 49% year-over-year, available at: <https://pressroom.aboutschwab.com/press-release/corporate-and-financial-news/schwab-reports-record-quarterly-net-income-923-million-49>.

²³ See <https://www.ctaplan.com/index>.

²⁴ See http://www.utpplan.com/DOC/Revenue_Allocation_Formula.pdf and https://www.nyse.com/publicdocs/ctaplan/notifications/trader-update/Revenue_Allocation_Formula_Summary.pdf.

E. Core Data Meets Main Street Needs

Consistent with the Commission's findings when it adopted Regulation NMS, most retail (nonprofessional) investors rely on core data from the SIP when making investment decisions. For retail investors, the SIP links our fragmented markets by providing a single, consolidated stream of real-time best quote data from each individual exchange, the aggregate best quote data across all exchanges, and real-time trade data from all venues, including dark trading venues.

The NBBO and consolidated trade report information disseminated by the SIPs are valuable for any investor thinking about buying or selling a security because it indicates other investors' willingness to buy or sell. SIP market data is used as a standard reference price for all U.S. securities trading, and many brokers and exchanges use it in compliance procedures to meet their regulatory obligations (i.e., best execution obligation of broker dealers). For these reasons, the Commission has noted that SIP data is the cornerstone of the U.S. equities markets.

Although most retail investors have no practical need for depth-of-book direct data feeds, critics of exchanges nonetheless argue that the wealth of data available to professional investors via exchange direct feeds creates unfair informational advantages for these market participants. The Commission expressly considered this issue when adopting Regulation NMS and concluded that core data available from the SIPs was sufficient for the average investor, because "statistics on order execution quality for small market orders (the order type typically used by retail investors) reveal that their average execution price is very close to, if not better than, the NBBO."²⁵ Indeed, execution quality statistics disclosed by retail brokers and wholesale market makers indicate that upwards of 99% of shares executed from small retail orders execute at or better than the NBBO.²⁶ Instead, the Commission determined to "allow market forces, rather than regulatory requirements, to determine what, if any, additional quotations outside the NBBO are displayed to investors."²⁷ Should a particular investor "need the BBOs of each SRO, as well as more comprehensive depth-of-book information," the investor may obtain such data from exchanges or third-party vendors.²⁸

As noted above, NYSE Group believes that Main Street would benefit if the prices disseminated by the SIPs included odd-lot quotes (odd-lot trades are already included in core data). In addition, NYSE Group believes that Main Street could also benefit if auction imbalance information were included in the core data disseminated by the SIPs. However, NYSE Group believes that the Commission's prior conclusion that retail investors do not need depth-of-book data has not changed.

²⁵ See Adopting Reg NMS, 70 FR 37497, at 37567, *supra* n. 2.

²⁶ See Financial Information Forum Retail Execution Quality Statistics, available here: <https://fif.com/tools/retail-execution-quality-statistics>.

²⁷ See Adopting Reg NMS, 70 FR 37497, at 37567, *supra* n. 2.

²⁸ See *id.*

III. Exchange Direct Feed Offerings Support Trading in Today's Fragmented Markets

A. NYSE Group Optional Market Data Offerings Complement the SIPs

As noted above, Regulation NMS has resulted in fragmentation of the markets and an increased reliance on electronic trading. Twenty years ago, informed investors did not require high-speed data because markets were not fragmented and they only had to trade on the primary market. Today, through deliberate Commission policy, the markets are fragmented. As such, Regulation NMS has dramatically increased the value of market data as some participants who, based on their particular business models, believe they need to connect to multiple market centers in order to view the "full" U.S. equity marketplace. As noted above, some firms have responded by replacing scores of human traders with technology-driven trading strategies that analyze vast amounts of trading data to make decisions not only at what price to trade, but where to trade. As automated quoting reduced the size and duration of quotes at the inside market, depth-of-book market data became more important for traders whose total order size exceeds the BBO quantity.

As contemplated by Regulation NMS, exchanges have responded to this market force by offering direct feeds with depth-of-book information. Over the years, the offerings among the NYSE Group exchanges have differed and NYSE Group has invested to normalize the market data products offered by each of its exchanges. NYSE Group has also invested to improve the resiliency and latency of its direct feeds. Importantly, these investments were not done at the expense of the SIPs or in lieu of making investments to the SIPs, but rather, to respond to market forces demanding new or improved complementary products. As noted above, the Operating Committees have invested significantly in the operation of the SIPs.

There is no regulatory requirement for exchanges to provide, or for market participants to subscribe to exchange direct feeds. Instead, the commercial needs of some market participants have caused them to feel competitive or client pressure to subscribe to these direct feeds. Moreover, firms have been provided regulatory guidance that if they use direct feeds for their own trading strategies, they must also use those direct feeds for trading strategies for their customers. Importantly, this does not impose a regulatory requirement to subscribe to direct feeds (if the firm does not already); it only means that if a broker-dealer chooses to subscribe for its own strategies, this use must be extended to agency trading.

But market participants in fact do not all subscribe to all proprietary data products. Looking at just the depth-of-book products available from the NYSE Group exchanges, 155 customers subscribe to NYSE Arca depth information, but only 121 subscribe to NYSE depth information and 70 customers subscribe to NYSE American depth information. Even though NYSE National is free, only 43 customers subscribe to that depth information. In addition, we see that only half of the global bulge-bracket firms subscribe to NYSE's order-by-order data feed, which is the market data product with the richest content. In fact, more than half of the registered ATs that report volume to FINRA do not subscribe to any NYSE Group exchange proprietary market data at all. Of the ATs that do subscribe, there is a mix of market data products to which they subscribe and at what level. Finally, the CEO of Clearpool (who is also participating in this roundtable), was recently reported as saying that he discontinued certain direct feed market data products because

of their high cost.²⁹ Accordingly, the notion that firms are compelled to subscribe to the all of most-expensive market data offerings made available by exchanges is simply not borne out by the facts.

B. The Fees For Direct Feeds Have Remained Steady

As contemplated by Regulation NMS, exchanges have filed fees to charge for their proprietary market data, which are then publicly posted on exchange websites. Unlike any other segment of the market data industry, including the vendors that charge for the redistribution of data, exchanges cannot negotiate different terms for individual customers, including for affiliated entities.

Similar to the SIP fee structure, prior to 2013, the fees applicable to the NYSE Group direct feeds were based on individual device fees; that is, fees were charged for each device that displays data to a human. As algorithms replaced human traders, NYSE Group responded in 2013 by modifying its fee schedule to charge for such non-displayed market data consumption based on the use. For example, a firm using market data to power an ATS and to trade on a proprietary basis will be charged more than a firm that solely uses market data for algorithms that trade client orders on an agency basis.

With respect to market data pricing, NYSE Group competes vigorously with other exchanges. Exchanges are subject to market forces like other financial firms: If the price charged is too high (particularly if the quality of the product or service being sold is subpar), consumers of market data will take their business elsewhere. NYSE Group is not the sole purveyor of market data; investors today have an array of choices. This dynamic is especially important because exchanges are multi-sided platforms that sell joint products; by definition, each exchange competes with each other exchange across the entire array of services they offer, with each exchange having to engage in a balancing exercise to determine how the fees for all of its services are set. As the Supreme Court recently explained, such platforms cannot raise prices on one "side" without risking a feedback loop of declining demand.³⁰ Put differently, evidence of a price increase on one side of a platform cannot by itself demonstrate an anticompetitive exercise of market power.³¹ And there is no simple way to compare cost and price in multi-sided markets.³²

Another common misperception is that exchanges have been continually raising prices for their proprietary market data products. NYSE Group appreciates that the overall cost of market data has gone up for many participants (though, not for the retail investor). However, this is largely due to the increased fragmentation following Regulation NMS and the fact that some market participants may feel the need to connect to and subscribe to market data from 13 exchanges in

²⁹ See "SEC Ruling Takes Aim at Stock-Exchange Profits; The Securities and Exchange Commission decision blocking higher fees for certain stock-market data casts doubt on a crucial and growing source of revenue that has helped exchanges make up for the declining income from trading," Wall Street Journal, October 16, 2018.

³⁰ See *Amex*, 138 S. Ct. at 2285, *supra* n. 4.

³¹ See *id.* at 2287.

³² See David S. Evans and Richard Schmalensee, *Markets with Two-Sided Platforms*, in 1 ISSUES IN COMPETITION LAW AND POLICY 667, 675 (ABA Section of Antitrust Law 2008).

order to remain competitive. The costs to the industry have changed as exchanges become more mature and begin charging for their proprietary market data.

However, the actual fees that NYSE Group charges for its market data have remained largely flat over the last ten years. An interested party can cherry-pick among the fees charged by NYSE Group to identify specified price increases. For example, as noted above, NYSE Group introduced non-display fees for its market-data products in 2013 and in 2016 introduced order-by-order feeds on NYSE and NYSE American, with related pricing. But when reviewing the entire landscape of NYSE Group's proprietary market data offerings and related pricing, for the last ten years, the vast majority of fees for market data have not changed. For example, the access fees charged for all but one of the NYSE Group market data products have not changed since each respective market data product has been introduced.

IV. NYSE Group Market Access is Regulated and Transparent

An integral aspect of today's fragmented markets is the cost to access exchange services across an array of venues. Since the days of the open-outcry trading floor, traders have vied for the closest position to the point of sale. This is just as true in an electronic market, except in an electronic trading environment, the point of execution is located in an exchange data center, and some members are interested in the opportunity to place their own trading technology as close to those exchange systems as possible. And, as with any communication network, there are fees associated with obtaining the connectivity necessary for such electronic access. To whom those fees are paid depends on who is offering the access.

A. NYSE Group's Co-Location and affiliated Connectivity Services Are Fair and Transparent

For those market participants interested in low-latency access, NYSE Group offers co-location services, which provide market participants with access to its markets, both for trading and receipt of market data, in the same data center where the matching engines for four of the NYSE Group exchanges are located. Importantly, if a market participant chooses NYSE Group's co-location services, such services and the fees charged for such services are regulated, transparent and open to all market participants.

NYSE Group's co-location services are available to any market participant and we offer a suite of tools so that a market participant can scale the level of access that meets its needs. For example, a user can install its own hardware directly in the co-location facilities, or for a lower cost, obtain access through a third-party vendor who takes space at our co-location facility. For those customers who elect to have a direct relationship with NYSE Group for co-location services, it is important to note that since the introduction of our co-location facilities in 2010, we have not increased prices relating to infrastructure despite having heavily invested in such infrastructure. Instead, we have implemented a variety of options to allow the larger customers to consume service at a volume-based discount versus a la carte pricing and to allow smaller customers to purchase only the services they need.

Similarly, the connectivity services that NYSE Group provides to its co-location customers have seen very few fee changes over the last eight years despite a continuous and significant program of investment. In recognition that the needs of different market participants vary, NYSE Group also offers different port sizes, including both LCN and IP Network access, each ranging from 1 GB to 40 Gb circuits, with the price per gig for larger ports offered at a significant discount. The size of a market participant's connection is highly dependent on the total amount of content one wants to consume via such connection. When one considers that the average messages per day of the OPRA feed alone have grown by 450% over the last 5 years, with peak message rates approaching 20 billion messages per 100 milliseconds, one can understand why market participants require significantly more bandwidth than they needed five years ago; and why we are continuously investing in the capacity available on the entirety of our infrastructure.

Whatever the chosen level of services, for a single, fixed cost, a co-location user gains access to trading and market data for six of NYSE Group's markets (four equities markets and two options markets) and market data for the Tape A, Tape B, and OPRA Plan SIPs and has the ability to add a variety of global third-party content from more than 80 market centers.

NYSE Group's co-location services are available on a fair and equal basis. For example, every co-located customer's equipment stack is the same distance in switches and cable lengths from the exchange's systems, regardless of where they are positioned in the facility. As a result, no co-location customer obtains superior access to the NYSE Group exchange vis-à-vis another co-location customer.

By contrast, exchanges or ATSS that do not offer co-location services do not have any control over what services are available, how close a customer in that data center is located to an exchange's matching engine, or the fees associated with such services. In the absence of a regulated co-location service, traders with speed-sensitive trading strategies will take up the next closest real estate to exchange systems in an unregulated data center environment. There would be inevitable winners and losers of that real estate battle, and NYSE believes fair and equal access is better facilitated by exchange offerings of co-location services.

Moreover, while an exchange that does not offer co-location services may not have connectivity charges, that access is not free for the market participant seeking such market access. Rather, the fees for such access are paid directly to the data center that houses that exchange's matching engine and those fees are neither regulated nor transparent.

B. Market Participants Are Not Required to Maintain Direct Access to All Exchanges

Discussions about market access often begin with the misstatement that market participants must have direct market access to all 13 exchanges, and therefore are forced to pay exchanges the costs for such market access. While the Order Protection Rule mandates that protected quotes of an exchange cannot be traded through, accessing such protected quotations does not require direct access to each exchange.

NYSE Group has a lens into this issue. We operate five equities exchanges. Our exchanges that provide the most value to traders have larger numbers of members. By contrast, the exchanges that are perceived to have less value have far fewer members. If direct access to all exchanges were required, then presumably the membership across all of the exchanges would be identical. The only conclusion to be drawn from the difference in membership across different exchanges is that broker-dealers do not feel compelled to connect to all exchanges at the same level. Rather, whether a broker-dealer connects to an exchange directly correlates to the value provided by such exchange to that broker-dealer.

If a firm feels compelled to maintain direct connectivity to multiple equities exchanges, single-family ownership of multiple exchanges helps drive down costs. For example, a single family of exchanges can keep fixed costs down by maintaining uniformity of technology for access points into each exchange and a single connectivity point to multiple exchanges, thereby reducing the costs for broker-dealers' technology infrastructure. Likewise, as discussed above, a single, fixed cost can provide access to multiple markets at once.

And if a market participant chooses to access an exchange, there is no single required manner for obtaining that access. For example, non-latency sensitive market participants may choose to access the NYSE via a Floor Broker or another member firm, rather than directly accessing the NYSE itself. From a technology perspective, a market participant can choose to access an NYSE Group exchange directly in the Mahwah data center by either co-locating their equipment there, or building their own telecommunications circuits to connect their equipment outside of the data center to the NYSE inside of it. Customers may also access NYSE in the Mahwah data center through one of 35 ICE Global Network remote access centers, or numerous other access center options offered by third-party competing extranet providers, all of which access centers in turn have direct or indirect connections to NYSE in the Mahwah data center. Notably, when using market access services via the ICE Global Network, a user can access not only the NYSE Group exchanges, but also can obtain connectivity to over 150 trading venues and over 600 financial data sources via a single connection.

V. Governance of the Plans

NYSE Group generally supports the Commission eliminating reliance on NMS Plans to implement Commission policy goals and instead using Commission rules. However, while NMS Plans continue to be in effect, the exchanges within NYSE Group will continue to fulfill their obligations with respect to those Plans.

Specifically, as noted above (see Section II), the exchanges have an obligation under SEC rules to comply with and enforce compliance with the Plans. This obligation, with oversight by the SEC, is a strong incentive for exchanges to administer the Plans vigilantly. Some have questioned whether exchanges and FINRA should be responsible for administering the Plans, but have failed to point to any actual failure by the Operating Committees to support the Plans or circumstances where a Plan participant has allowed its competing interest to sell direct feeds to interfere with the operation of the SIPs. To the contrary, as discussed above, the Operating Committees have invested significantly in the SIPs, and core data remains at the same low cost for Main Street.

Moreover, innovations in exchange direct feeds have been in direct response to market forces, as contemplated by Regulation NMS.

Any discussions about changes in Plan governance should be grounded in fact, not perception. If an interested party can point to a sustained problem with the current governance structure (as opposed to a governance issue that has already been addressed and resolved), we welcome input. But instead there have been improvements. Among other things, the Operating Committees have shifted most discussions about SIP operations from its Executive Sessions, which are not attended by the Advisory Committee, to the General Sessions, which are. The Operating Committee also provides transparency into why an agenda item is confidential and should be included in the Executive Session and requires a vote by the Plan participants before an agenda item is moved to the Executive Session.

There have been calls for “conflicts of interest” and “confidentiality” policies as well. Yes, as contemplated by Regulation NMS, NYSE Group sells market data, but doing only what Regulation NMS itself contemplates does not itself create any conflict. NYSE Group has steadfastly supported the SIP and also has supported the significant investments in the SIPs outlined above.

Some have suggested that Advisory Committee members should have a vote within the Plans’ governance. While input from the advisors is crucial to the operation of the SIPs, providing them a vote raises a host of new issues. The current voting members of the Plans are there as representatives of each Plan participant, which as noted above, has the responsibility under SEC rules to operate, improve, and administer the NMS Plans consistent with those Plans and the securities laws. The Plan participants also bear the costs of any litigation in connection with the SIPs, including potential SEC enforcement actions. Moreover, the market data submitted to the SIPs is a product of the Plan participants trading services.

The individuals on the Advisory Committee, on the other hand, are there to represent the varied interests of different classes of market participants, but none of them individually, or the firms that employ them any risks associated with non-compliance with the NMS Plans. Indeed, their firms belong to industry groups that sue the Plans. Providing them a vote would need to take into consideration their conflicts of interest. In addition, NYSE Group believes that absent the same regulatory obligations as the exchanges, Advisory Committee members would not have an incentive to cast their votes consistent with the terms of the Plan.

That said, we recognize that there is a perception that how the SIPs are governed is not transparent enough, which may be why stale views of SIP operation persist. NYSE Group believes that this perception can be easily rectified without any need to alter the corporate governance of the Plans. Specifically, NYSE Group recommends that the quarterly SIP Operating Committee meetings be webcast so any interested party can observe the proceedings.

Conclusion

Public exchanges today offer trading, connectivity, and data services that are more valuable, efficient and resilient than at any time in history. The cost of trading for the Main Street investor

has never been lower. Recent suggestions otherwise by exchange critics are unfortunate and overlook several important realities about how our capital markets work today.

As the industry discusses market data and connectivity services, we want to ensure we are clear about the problems we are trying to solve, the incentives that drive who is asking for change, and that we consider the costs and benefits to various stakeholders affected by any change.