Roundtable on Market Data and Market Access

Written Submission of Thomas Wittman

Executive Vice President, Head of Global Trading and Market Services

and CEO, Nasdaq Stock Exchange

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EXECUTIVE SUMMARY

Nasdaq, Inc. thanks the Securities and Exchange Commission for convening this Roundtable on the Overview of Current Landscape for Market Data Products and Market Services. Stakeholder forums such as these are essential for informing policies that make the U.S. financial markets the envy of the world.

Today's conversation takes place in a context of rapid technological change and intense competition, both of which have been massively democratizing forces for investors. Today's markets are light years ahead of where we were even a decade ago. And today's exchanges are ferociously competitive, much more so than when they were closed clubs owned by the broker-dealers and operated as near-monopolies in their listed stocks.

Nasdaq is in a unique position to comment on the issues before us today, as Nasdaq pioneered electronic trading, and has continuously led on innovation in trading technologies, data products, and market infrastructure. Globally, Nasdaq operates 25 markets and supplies state-of-the-art trading, clearing, settlement, and surveillance technology to over 100 other markets, clearing houses and regulators. In the United States, Nasdaq operates three equities exchanges, six options exchanges, one fixed income trading platform and a futures market. Nasdaq serves as the processor and administrator for the Nasdaq UTP Plan. It is also a leading distributor of market data for equities, options, futures, fixed income, and indexes.

We appreciate this opportunity to offer ideas to ensure markets are fair, orderly and protect investors—and to dispel myths in this long-running intra-industry debate. We begin with some key points in brief, followed by a detailed discussion:

- **Main Street investors are well served by today's market data infrastructure**

Chairman Clayton has emphasized that policy discussions on market data should be firmly grounded in the interests of Main Street investors—and we agree. Market data innovations have ushered in a Golden Age for Main Street investors, who enjoy historically low asset management fees and trading costs, and who benefit from the proliferation of empowering online brokerage services and financial apps powered by data. There is simply no Main Street problem for policymakers to solve here. Large commercial interests who are petitioning the government to intervene on their behalf will naturally try to position themselves as champions

of ordinary investor. But Main Street investors do not meaningfully participate in the market-data market, except through access to real-time, lightning-fast, state-of-the-art stock market data at little or no cost.[1]

- **Professional traders profit greatly from the proliferation of market-data services**

Large Wall Street firms are on track to record the largest equity trading revenues in a decade, per the *Financial Times* earlier this week.[2] According to Chairman Clayton "U.S. capital markets are the "deepest, most dynamic, and most liquid in the world."[3] Transparency is high and increasing. Data is the oil that fuels this market, and advances in market data services allow professional traders and commercial data vendors to exploit vastly more data while employing fewer people to execute trillions in transactions.[4] The securities industry is also benefitting from major investments in the technology running the exchanges as well as the SIPs[5] running the consolidated data feeds that provide a reliable national reference price for any stock at any time. Indeed, the SIP run by Nasdaq processes information *faster than any Nasdaq-owned exchange trading system*.[6] And it does so at a time of skyrocketing data traffic, with no compromise of reliability, and no increase in revenues to exchange operators.[7]

- **The SIP is lightning-fast and "latency" is not an issue for Main Street investors**

Latency on the UTP SIP operated by Nasdaq is down to 16 microseconds or 16 *millionths* of a second on average. [8] We are literally coming up against the physics of the speed of light. Having largely accepted that the speed and performance of the SIPs is state of the art, some in the securities industry want the government to address the issue of "geographic latency." To be sure, it takes time—measured in millionths of a second—to consolidate information from multiple exchanges and trading platforms, and disseminate into a national feed. Non-consolidated information coming directly from an exchange may potentially be delivered a few microseconds faster solely based on physics, but our infrastructure supporting the SIP is truly state-of-the-art to support both professional and non-professional traders alike.

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[1] Raymond James analyst Patrick O'Shaunessy has also noted earlier this month, "The reality is that due to the competitive nature of market making and equity brokerage, market data and connectivity fees are absorbed by the broker/dealer community and rarely, if ever, passed on to the end investor."

[2] *See* Wall Street Enjoys Bonanza from Trading Turmoil, Financial Times, Oct. 21, 2018. Available at https://www.ft.com/content/33bb6548-d175-11e8-a9f2-7574db66bcd5.

[3] *See* Testimony of SEC Chairman Jay Clayton Before the House Financial Services Committee, June 21, 20178, available at https://www.sec.gov/news/testimony/testimony-oversight-us-securities-and-exchange-commission.

[4] *See As Goldman Embraces Automation, Even the Masters of the Universe Are Threatened* (Feb. 7, 2017), available at https://www.technologyreview.com/s/603431/as-goldman-embraces-automation-even-the-masters-of-the-universe-are-threatened.

[5] Securities Information Processors or "SIPs" produces the consolidated data feeds or "Tapes" for securities listed on the New York Stock Exchange (Tape A), NYSE American and other exchanges (Tape B), and Nasdaq (Tape C).

[6] *See*, *infra* at p. 9 (Nasdaq Stock Market average latency is 25 microseconds).

[7] *See* Monthly SIP Performance Metrics, available at http://www.utpplan.com/DOC/UTP_Website_Statistics_Q1-2018-April.pdf (system "up-time" of 100 percent).

[8] *See* Monthly SIP Performance Metrics, available at http://www.utpplan.com/DOC/UTP_Website_Statistics_Q1-2018-April.pdf (15 microseconds at the 10th percentile and 18 microseconds at the 90th percentile).

There are professionals who hold onto stocks for a fraction of a second and for whom microseconds may matter. Those few participants create a demand for voluntary market data products that exchanges compete fiercely to supply—and the market determines a fair price. Those participants also place tremendous demands on the quality of the exchange technology to support their trading strategies, for which Nasdaq has paid billions of dollars to acquire and to build over the past fifteen years. In fact, Nasdaq's systems processed 28 billion messages on October 11th with no material degradation of performance in order to support our equities and options exchanges on behalf of our most sophisticated trading clients. The broader client-base, including professional traders, institutional investors, and non-professional investors, have the choice to rely upon a lightning fast SIP and/or to supplement or complement the SIP data with proprietary exchange products. Their choices have never been greater, and their trading experience has never been better.

- **The "two-tiered market" is a myth**

There is a persistent myth of a resource-starved and slow "public" feed of market data, and of competing and lightning-fast "private" data feed available for the exclusive use of Wall Street firms. This is not true, and if the only outcome of this Roundtable is putting this myth to rest forever, it will have been a good use of two days. All market-data feeds—consolidated and non-consolidated—are equally available to all market participants. All of them are overseen by the Commission. The main difference is that non-consolidated feeds are not designed to fulfill a regulatory purpose and are entirely voluntary. The Commission has determined that broker-dealers are not required to purchase noncore data to satisfy their duty of best execution.[9]

Key for this discussion, and as we detail below: Main Street investors are helped and not harmed by the existence of competing, proprietary, exchange data feeds. Companies such as Google and Yahoo use proprietary market data products to make stock market information available for free to millions of investors. Retail brokerage firms representing tens of millions of investors use proprietary products like Nasdaq Basic to save money when serving their Main Street customers. A variety of data products that serve a diversity of customers is overall good for the U.S. stock market, as it drives down costs, and encourages innovation and competition.

- **Market forces produce results superior to government intrusion, particularly rate-making.**

Competition and innovation have benefitted investors and firms alike, creating an array of products that professionals can choose to purchase or avoid. There is simply no basis for government intervention in a well-functioning marketplace to resolve a commercial dispute

[9] *Sec*. Sec. Indus. & Fin. Mkts. Ass'n, 2014 WL 1998525, at *1 & n.10 (citing 2008 ArcaBook Approval Order, 73 Fed. Reg. at 74,779); see also 2008 ArcaBook Approval Order, 73 Fed. Reg. at 74,788; accord NetCoalition I, 615 F.3d at 530 n.6. See generally FINRA Regulatory Notice 15-46 (providing that "a firm that regularly accesses proprietary data feeds . . . would be expected to also be using these data feeds to determine the best market under prevailing market conditions when handling customer orders to meet its best execution obligations"), available at http://finra.complinet.com/en/display/display_main.html?rbid=2403.

about the profits of sophisticated competitors. Indeed, that has been a guiding principle behind U.S. public policy for many years across critical sectors, whether in telecommunications, airlines, or the new Internet-powered industries. We rely as much as possible on market forces to drive innovation and democratize access for U.S. consumers. And we resist over-regulation that experience has shown time and again stands in the way of progress. Policy makers of all political stripes agree that New Deal-style government rate-making is a failed public policy.

- **Debate about the cost of proprietary data is merely a commercial dispute among large industry players**

Let's remember: As Wall Street firms face confront the reality that prices they have historically charged investors are coming down, they will naturally seek to cut costs elsewhere. We urge the Commission to avoid unnecessary entanglement in what is essentially a commercial dispute between highly profitable Wall Street firms and their vendors. For the first nine months of 2018 alone, the largest five banks generated approximately $25B in equities trading revenues alone, according to the Financial Times.[10] Over the same period, Nasdaq generated $293 million in proprietary and SIP data revenue, which represents 0.33% of the largest banks' revenues. To the extent that our most sophisticated clients feel "compelled" to purchase proprietary data, they are solely feeling the effects of competition. We keenly feel those same forces, which limits our prices and pushes us to provide better service and better value.

Apropos proprietary data, one stubbornly persistent myth is that prices for proprietary market data and access services are "soaring." This misunderstanding is based on a false comparison. Capacity, latency and reliability have improved by an order of magnitude over the past decade. Comparing apples-to-apples, we find that the cost of fundamental market data services are certainly not soaring, and are in fact stable over time. Nasdaq Basic, our popular top-of-book feed, has increased from $20 to $26 per month in the last 10 years, or a mere 3 percent a year (and closer to 2 percent when adjusted for inflation). The price of Nasdaq TotalView, our depth-of-book feed for professionals has risen from $70 to $76 over the last 14 years and only then to incorporation OpenView with no net price increase.

Principles for Engagement

The question then becomes: What is the basis for government intervention?

To Nasdaq, it clearly is not Main Street investors. They pay low or no fees for a broad range of high-quality products and services. Between 2000 and 2017, equity mutual fund fees and 401(k) equity funds expenses declined 40 percent and 42 percent respectively. ETF fees followed suit, declining 28 percent between 2009 and 2017, while average U.S. stock trade commissions are down 40 percent.[11] Competition and innovation in proprietary data have

[10] *See infra* at fn. 2.

[11] See www.icifactbook.org/ch5/17_fb_ch5) for mutual fund fees, www.icifactbook.org/ch5/17_fb_ch5 for 401k equity funds, www.icifactbook.org/ch5/17_fb_ch5 for ETF fees,

created an array of products that professionals can choose to purchase or to avoid. There is simply no basis for government intervention in a well-functioning marketplace to resolve a commercial dispute about the profits of sophisticated competitors.

There is, however, a role for the government to guide the transparency and governance of a utility-like function such as the SIP, given the industry's apparent insufficient trust in the proper operation of the SIPs. Nasdaq thus adheres to three principles that guide our perspective for this Roundtable.

First, a primary function of equities markets is to serve Main Street investors that are saving for homes, college tuition, and retirement. The U.S. equity markets serve this purpose very well. Main Street investors pay little or nothing for access to rich market data and analytical tools; they enjoy low-cost trading; and ETF and mutual fund costs are low and constantly declining.

Second, competition, innovation, and choice have made U.S. markets the envy of the world. The securities industry—exchanges, banks, brokerages, and institutions alike—have been empowered to harness the explosion of innovation in computing, networking, and telecommunications. The result has transformed U.S. markets and benefitted investors with lower spreads and deeper markets that create a nearly frictionless trading environment.

Third, market-based solutions are preferable to government intervention because highly regulated industries are less likely to innovate. When intervention is necessary, it should be limited to ensuring fair competition and protecting investors from harmful practices by industry participants.

We do believe there is room for improvement and a role for policy. To strengthen our markets, Nasdaq recently issued *Improving Transparency: Nasdaq Market Data Proposals*, recommending three important reforms for the U.S. market data future:

- Enhancing stakeholder participation in SIP governance by, for example, ensuring that Investor representatives focus on issues of concern to Main Street investors.

- Encouraging better price discovery via the consolidated feeds. Nasdaq recommends adjusting the SIP allocation formula to better reward quotes that lead to trades.

- Clarifying the Vendor Display Rule to give broker-dealers clarity, choice, and flexibility on their use of SIP feeds and alternative data products.

To those we would add support for a discussion of empowering the SIPs to select and control the networks that connect exchanges and FINRA (the "SIP Participants") to the SIPs themselves. This change would standardize network connections, reducing transmission differentials and the impact of geographical latency. Finally, Nasdaq will enhance accounting transparency by

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and https://www.cnbc.com/2017/05/16/online-brokers-lower-trading-fees-theres-another-option-pay-nothing.html on U.S. stock average trade commissions.

publishing the amounts of SIP revenue shared by the FINRA/Nasdaq Trade Reporting Facility ("TRF").

This Roundtable is merely the latest chapter in a long-running debate about the role of market information in U.S. stock markets. This history includes the 1994 Report on Markets 2000[12], the 1999 Concept Release on Market Information[13], the 2001 Seligman Commission Report[14], the 2005 adoption of Reg NMS[15], the 2010 Concept Release on Equity Market Structure[16], and the 2016 Equity Market Structure Advisory Committee[17].

At every stage of the modern debate, Nasdaq has been a leader, actively discussing the proper role of market information and market services in U.S. stock markets. We welcome this Roundtable as an opportunity to further enhance the competitiveness, transparency and fairness of our markets for Main Street investors and contribute to good public policy.

DETAILED DISCUSSION

The following detailed discussion attempts to tracks the topics in roughly the same order as they are addressed in the Roundtable agenda.

ROUNDTABLE TOPIC: THE OVERALL MARKET FOR MARKET DATA

Main Street investors are well-served by today's markets.

Main Street investor costs are a fraction of what they once were - from zero fee ETFs, low-cost mutual funds to commission-free equity trades. They can access state-of-the-art analytical tools and market data at little to no cost. Research is plentiful, order entry is simple and clear, and any investor can open a smart phone and instantly buy or sell stocks for the best price available in any U.S. trading venue. Between 2000 and 2017, equity mutual fund fees and 401(k) equity funds expenses declined 40 percent and 42 percent respectively. ETF fees followed suit, declining 28 percent between 2009 and 2017, while average U.S. stock trade commissions are down 40

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[12] *See Market 2000: An Examination of Current Equity Market Developments* (1994), available at https://www.sec.gov/divisions/marketreg/market2000.pdf.

[13] *See* Securities Exchange Act Release No. 42208 (1999), available at https://www.sec.gov/rules/concept/34-42208.htm.

[14] *See Report of the Advisory Committee on Market Information: Blueprint for Responsible Change* (2001), available at https://www.sec.gov/divisions/marketreg/marketinfo/finalreport.htm.

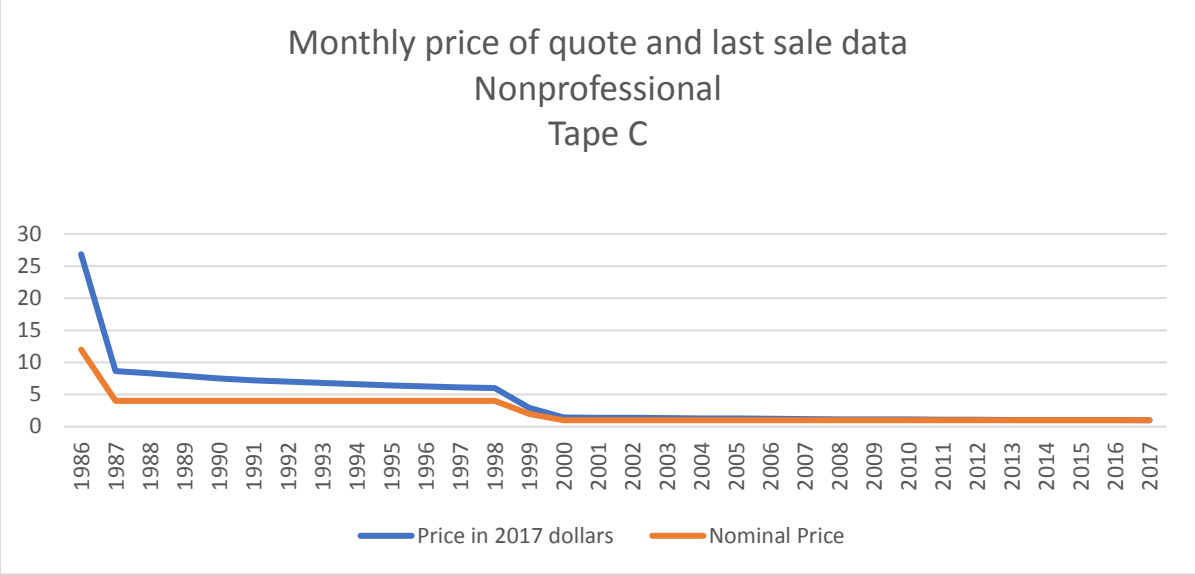
[15] *See* Securities Exchange Act Release. No. 51808 (2005), available at https://www.sec.gov/rules/final/34-51808.pdf.

[16] *See* Securities Exchange Act Release No. 61358 (2010), available at https://www.sec.gov/rules/concept/2010/34-61358.pdf.

[17] *See* Securities Exchange Act Release No. 74092 (2015), available at https://www.sec.gov/rules/other/2015/34-74092.pdf.

percent.[18] Georgetown professor James Angel's recent in-depth analysis of the value of market data demonstrates that – far from cost being an issue – Main Street investors benefit greatly from the current market structure framework.[19]

The cost of providing this consolidated SIP data to Americans saving for retirement and other life goals through brokerage and 401(k) is **at most** $1.00 per month for real time data for each tape, and this cost has declined markedly over time. As shown below, the inflation-adjusted price of real-time Tape C nonprofessional data has fallen 96.3% since 1987 when Tape C cost nonprofessional investors $12 per month for real-time trade and quote data. That $26.84 in 2017 dollars. Moreover, Main Street Investors rarely, if ever, pay these fees directly because they are typically absorbed by the brokerage firms that provide the data to the investors.[20]



The cost is exceedingly low for institutions providing Main Street investors with free access to consolidated data. It costs institutions just $0.0075 to provide one investor free access to a single real-time quotation. It costs just $1.00 per month for an institution to provide one investor with free access to an unlimited number of quotations for Nasdaq stocks or $3.00 for all U.S. stocks. That fee is capped again for large institutions with over 618,000 subscribers. Therefore, Angel estimates that on average providing free access to SIP data to an investor costs Schwab 16.5 cents per month, TD Ameritrade 16.2 cents, and Fidelity 8.5 cents per month.[21]

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[18] *See infra* at fin.11.

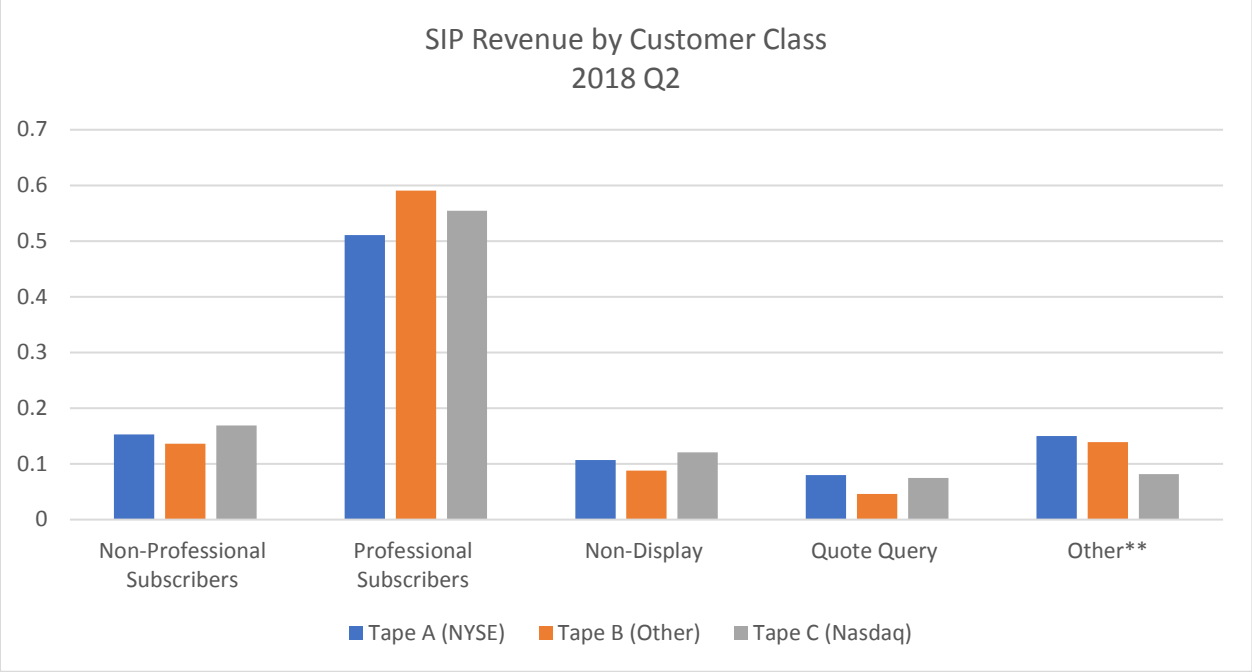
[19] *See Retail Investors Get a Sweet Deal: The Cost of a SIP of Stock Market Data* (2018), James J. Angel, Ph.D., CFA, Associate Professor of Finance Georgetown University, available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3268916.

[20] *See* infra at fn. 1.

[21] *See infra at fn. 19.*

Some argue that Main Street investors pay data costs indirectly through intermediaries such as pension funds and mutual funds that pay professional rates for data. This is not borne out by the data showing that commissions and mutual fund and ETF fees have declined substantially. It is true that, professional users pay more than Main Street investors for consolidated data, and this fee differential is by design to shift the burden of supporting consolidation to those who profit from using the data most and who therefore value it the most.

As can be seen in the chart below, total subscriber fees for Main Street investors, often absorbed by their brokerages, account for less than 20 percent of total SIP revenue. Eighty percent is borne by professionals, non-display machines, or other applications such as Television displays.



Angel puts into perspective the total cost to institutions of consolidated data is:

- 0.001% relative to the $34 trillion of trading annually in U.S. equities markets;
- 0.004% relative to the $10 trillion in US equity mutual funds, or 0.013% assuming average turnover of 30 percent;
- $0.00024 per share, or about a tenth of a basis point (.0012%) on the value of trading;
- 0.2% of the overall industry's $192 billion in annual revenue;
- 1.5% of the industry's $25 billion in annual profit; and
- Bloomberg's $9.8 billion reported revenue from purchasing and reselling SIP and other data is more than 19 times the *gross* SIP revenue[22]

[22] *See Bloomberg revenue* https://www.owler.com/company/bloomberg

This suggests that the debate about SIP costs is not actually about helping Main Street investors. It is about helping the bottom lines of large banks and brokerages, many of which already enjoy an average of 38% operating margin

ROUNDTABLE TOPIC: SIP CORE DATA

For professional traders, today's markets are light years ahead of where we were even a decade ago.

There is widespread agreement that liquidity is deep, spreads are tight, and executions are fast and certain. Market quality has never been better by any measure. Transparency is high, increasing,[23] and likely to increase further with the expected adoption of enhanced order routing disclosure rules.[24] And professional traders and commercial data vendors profit immensely as they use vastly more data and technology with fewer people to trade trillions of dollars of securities in world-leading companies. It bears repeating: U.S. stock markets are the envy of the world and we know this through our discussions with clients and investors around the world.

Nowhere has improvement been more pronounced than the performance and capacity of the processor for the Nasdaq UTP Plan ("Nasdaq SIP"). In 2007, the UTP SIP consolidated quotes were calculated at a median latency of approximately ¼ second and a capacity of 14,000 messages per second. In October of 2015, Nasdaq delivered a SIP built on state-of-the-art technology that consolidated quotes with a latency of 19 microseconds and daily capacity of approximately 10 billion messages. Today, UTP SIP latency is 16 microseconds, 16 millionths of a second. This is 14,000 times faster than in 2010. The current capacity reflects at least 20 times headroom on the max amount of data seen to date. Sixteen microseconds is fifteen thousand times faster than the blink of an eye. Continuing advances in software, computing, storage and networking technologies can be expected to reduce this further in coming years.

In fact, the Nasdaq UTP SIP is faster at processing quote and trade messages than any Nasdaq-owned exchange trading system. The average SIP processing time is 16 microseconds from the SIP receiving a quotation message until the SIP transmits that quotation message on a SIP data feed. In contrast, on average, it takes 25 microseconds from entry of an order on the Nasdaq stock market until the associated quotation or execution message is transmitted on the exchange's proprietary TotalView data feed. For compliance and other purposes, Nasdaq also uses a state-of-the-art system to monitor that quotation messages are transmitted to the SIP in accordance with SEC Rule 603(a).

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[23] *See* Securities Exchange Act Release No. 83663 (2018) (amending Regulation ATS), available at https://www.sec.gov/rules/final/2018/34-83663.pdf.

[24] *See* Report of the U.S. Department of the Treasury, A Financial System That Creates Economic Opportunities, Capital Markets (2017), available at https://www.treasury.gov/press-center/press-releases/Documents/A-Financial-System-Capital-Markets-FINAL-FINAL.pdf. *See also* Securities Exchange Act Release No. 78309 (2016) (proposing increased disclosure of order handling information), available at https://www.sec.gov/rules/proposed/2016/34-78309.pdf.

Anyone claiming today that SIPs are slow or starved for funding is uninformed or dissembling. Likewise is true for those claiming that improving SIP latency will help Main Street investors.

ROUNDTABLE TOPIC: CORE DATA INFRASTRUCTURE

Geographic latency is a concern of banks and professionals, not Main Street investors.
The real concern of industry professionals is no longer the latency of the SIP itself, but of geographic latency, the quantum of time inherent in the process of transmitting data to and from the SIPs. The computing infrastructure of all SIPs and most SIP participants is housed in three data centers located in Carteret, Mahwah, and Secaucus, New Jersey.[25] Quote and trade information from each SIP Participant is sent to the appropriate SIP's data center (for instance, Carteret where Nasdaq's SIP is located), processed, and then returned to wherever investors and traders are located in other data centers. The fastest transmission time between data centers is roughly 150 microseconds each way or 300 microseconds for the round-trip, which is roughly seventeen times greater than the SIP processing time of 16 microseconds. When banks and professionals complain about latency, they mean 300 microseconds of geographic latency.

Does 300 microseconds matter to Main Street investors who buy and hold securities for the long term? Absolutely not. Millionths of a second are immaterial to those who hold for weeks, months or years at a time. When Main Street investors use a trading application on their smart phones, they immediately receive a stock execution for a tiny commission or they purchase a no load mutual fund for ever-shrinking expense ratios. Main Street investors are unaware or unconcerned with SIP latency, geographic latency, connectivity or ports. What matters most to Main Street investors is having a single, reliable, NBBO and last sale price and geographic latency is simply the cost of creating a those.

On the other hand, brokers, banks, market makers and professional traders are acutely aware of this latency as markets can move during these small periods of time, and they need to manage the execution risk associated with all of the Main Street Investor orders they are handling. When an exchange transmits an order to the SIP in Data Center "A", that order becomes known to a trader located in Data Center A in just 16 microseconds. However, a trader located in Data Center B learns of that order from the SIP after an additional 150 microseconds of geographic latency, perhaps costing it an execution and the resulting profit. Amplifying this effect, the price movement may have come from an exchange housed in Data Center B, doubling the risk period of that trader in Data Center B. Although this risk exists, professional traders have developed skills needed to manage this risk by accounting for the geographic latencies in their algorithms. As such, these traders continue their fierce competition, which is the primary driver in reducing costs for Main Street investors, from low commissions to *low-cost mutual funds*.

ROUNDTABLE TOPIC: GOVERNANCE OF MARKET DATA

[25] Nasdaq's back-up data center is located in Chicago.

There is no two-tiered or private market; there is a single and transparent market with multiple choices.

Exchanges have no "private" data feeds or "private" markets, as some uninformed observers have claimed. All SIP data feeds and all proprietary exchange data feeds are public: they are equally available to every market participant that serves Main Street investors. All SIP data feeds and all proprietary exchange data feeds are filed with and reviewed by the Commission; published on the exchanges' websites as proposals and as final rules; published on the SEC website; and published in the federal register. Unlike ATSs and broker-dealers, SIPs and exchanges must publicly file every new data feed, every change to an existing data feed, and every charge for every data feed that they make available.[26]

Contrary to some claims, no bank, market maker or professional trader is required by law or regulation to buy any proprietary exchange data products. Some banks, market makers and professional traders attempt to avoid or minimize the impact geographic latency by purchasing exchange proprietary data feeds. To avoid geographic latency and to learn about orders quickly, the professional trader may decide to purchase a proprietary data feed from an exchange located in the same data center rather than wait for the consolidated feed from a SIP located in another data center. The trader is not compelled by law to purchase the exchange's proprietary data feed, nor should it be. If the trader is compelled at all, it is by competition and the drive for greater economic success and increased bottom-line profit.

Main Street investors are helped and not harmed by proprietary exchange data feeds. First, Nasdaq's proprietary top-of-book and last sale products, called Nasdaq Basic and Nasdaq Last Sale are used by millions of Main Street investors around the globe without even knowing it. Companies such as Google and Yahoo use proprietary last sale products to make market data available for free to millions of investors. Retail brokerage firms representing tens of millions of investors use Nasdaq Basic or competing exchange products to save money when serving their Main Street customers. Banks and market makers also use proprietary data feeds to provide Main Street investors with the real-time best bid and offer information. Having launched in 2009, Nasdaq Basic will save investors more than $200 million by the end of 2018. Last month Nasdaq announced an agreement with Morningstar to integrate Nasdaq Basic real-time market data across their global platform. Main Street investors do not need the exchanges' proprietary depth-of-book data offerings, and the fact that some firms choose to purchase them has no adverse consequence to the Main Street investor. Nearly 97% of trades occur at or within the NBBO, reflecting that most customers do not require any sort of depth-of-book data.

In addition Nasdaq sees no conflict of interest in offering Nasdaq Basic and Nasdaq Last Sale to Main Street investors when they do not need consolidated data. First, the Commission

[26] In reality, the "private" data is from single-dealer platforms and dark pools that are responsible for most of the 40 percent of equities trading that occurs off exchanges. For this 40 percent of the market, there are no public rule proposals or rules, no public quotations, and no public fee schedules. The Commission's recent amendments to Regulation ATS will cast sunlight on these markets. *See* Securities Exchange Act Release No. 83663 (2018), available at https://www.sec.gov/rules/final/2018/34-83663.pdf.

specifically determined in adopting Regulation NMS that exchanges should be free to distribute this data alongside the SIP data. Second, the Commission simultaneously determined that investors need not see a consolidated quote unless they are making a trading or routing decision, offering investors and the industry more choice and flexibility. Third, the resulting competition between exchanges selling top-of-book and last sale products is good for Main Street investors and the industry alike because it saves them money and promotes innovation. Fourth, there is no evidence that this competition has been detrimental to the performance of the SIPs; quite the contrary, the SIPs perform exceptionally well when Main Street investors need them. Lastly, Nasdaq has taken prudent steps to ensure that any potential conflicts are controlled by industry standard policies and procedures, as is the case with conflicts experienced by banks and broker-dealers that compete with Nasdaq.

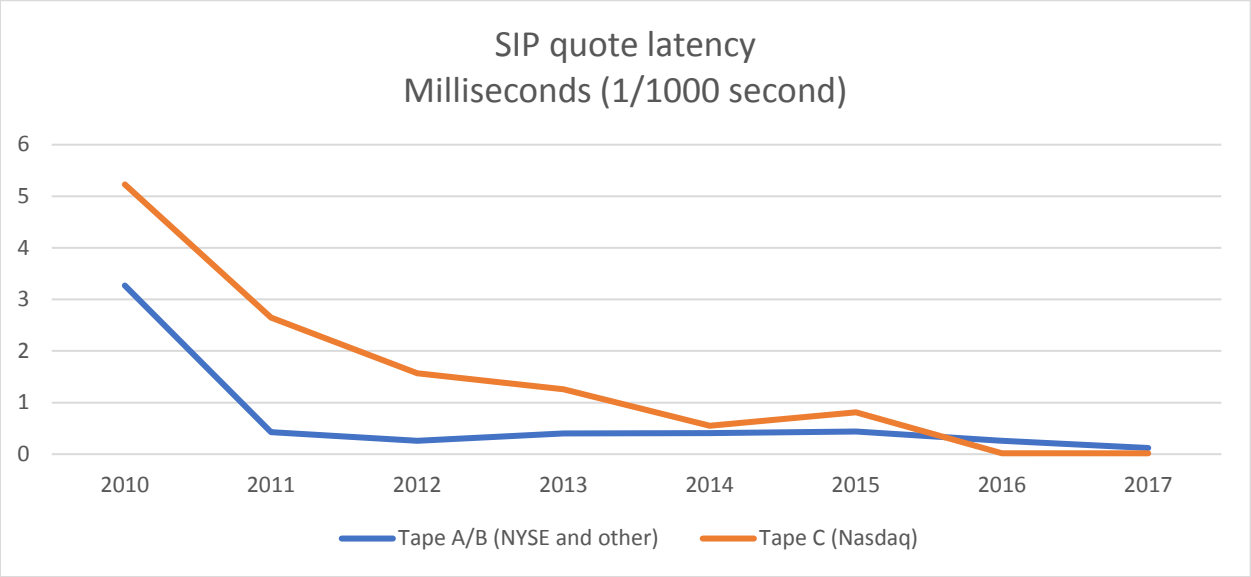
Limited government and solutions that rely on market forces are best.

The role of government should be limited to creating a fair competitive environment for free markets to thrive. For exchanges and ATSs, the government's role is to create a level playing field for competitors to operate markets and to erect guardrails to protect Main Street investors. Regulations should foster innovation, provided that new technologies are properly tested and safe for investors. The government should promote competition, especially price competition, provided that the terms of competition are fair and evenly applied. The genius of the marketplace is that it makes complexity manageable.

In the case of SIPs, the SEC's role may be more expansive. The SIPs are critical infrastructure and must keep pace with technological change, which is why we agree with the SEC that we should constantly be looking for ways to modernize them, strengthen price discovery, and improve market quality. Having created an industry utility, the SEC must ensure that they are properly governed and operated. Thus, Nasdaq has publicly supported more industry input in governing the SIPs. Specifically, Nasdaq believes it is appropriate for the Advisory Committee of the SIPs to have a vote on the Operating Committees through a fair and transparent mechanism that controls for potential conflicts of interest among Advisors. As part of this new governance, it is important that the increased authority be coupled with increased obligations to promote public transparency and acknowledge and mitigate and inherent conflicts of interest. Also, the Operating Committee and SEC staff must regularly review the qualifications and performance of current and future advisors to ensure that they can and do fulfill their desired functions. The designated Investor representative must work diligently to advocate for Main Street investors.

The government can also play a salutary role in governance by supporting competitive bidding for technology contracts to ensure that both SIPs deploy the best technology at fair and reasonable prices. In 2014, both the Processor and Administrator functions of the Nasdaq UTP Plan were subjected to a lengthy and intensive competitive bidding process. The results have transformed the Nasdaq SIP and benefitted investors greatly. In 2010, the latency for quotes and trades for the Nasdaq SIP was approximately 225 milliseconds. In 2015, after the competitive bidding process, the Nasdaq SIP was re-platformed to state-of-the-art technology and average latency fell dramatically to 0.016 milliseconds, a 99.7% reduction in latency from

2010. Simultaneously, the SIP increased capacity and reliability. The biggest cause of delays now in data is not from the SIP, but from the physics of the speed of light.[27] The following graph displays the declines in latency:



Sources: www.utpplan.com and www.ctaplan.com

Lastly, Nasdaq believes it would be a mistake to expand government-sponsored utilities any further than absolutely necessary by adding more data or services to it. The SIP operates as an exception from the principles of competition and the laws of antitrust enforcement. As such, the role of the SIP should be minimized to perform only those functions that are absolutely necessary to be performed by a utility-like entity. For the same reason, our government should not turn back the clock on technology and innovation by impeding speed or efficiency outside of the SIP. This would greatly prohibit by the exchanges to deliver non-core data outside of the SIP.[28]

Distributed SIPs are worth exploring but change should be gradual, never abrupt.

Our stock markets have evolved effectively when government neither gets in the way nor changes course too dramatically. Our government is neither designed nor resourced to dictate or control U.S. stock markets that are complex, sophisticated, and ever-changing. Major structural changes, no matter how carefully considered and well intentioned, create unintended consequences. Therefore, the desire for change must be preceded by precisely

[27] For more on the impact of the speed of light on securities regulation, see Angel, James J., 2014, *When Finance Meets Physics: The Impact of the Speed of Light on Financial Markets and Their Regulation*, The Financial Review 49, 271–281.

[28] Under SEC Rule 603, exchanges are prohibited from sending data via proprietary data feeds any faster than they report the same data to the SIPs. As a result, they report data to the SIPs and to their proprietary data feeds simultaneously.

defining the problem, must include a clinical evaluation of many alternatives, and must include a detailed examination of costs and benefits. Anything less directly threatens markets that are the envy of the world and currently extremely effective in serving Main Street investors everywhere.

Major structural change being considered are "distributed" SIP and multiple competing SIPs, both of which are said to address geographic latency that is inherent where the computing infrastructure of SIPs and participants are housed at different physical locations; it simply takes time for information to travel the physical distance between participants and the SIPs. We note, however, that both of these proposals would introduce new expensive, operational complexities, legal and regulatory questions, and possible unintended consequences—even as it is unclear that competing SIPs would satisfactorily resolve concerns about issues such as geographic latency.

One problem would be that the National Best Bid and Offer("NBBO"), the critical snapshot for a stock, could differ among distributed SIPs because the data still has to travel from exchanges, which are themselves not individually "distributed." Due to geographic latency, a single NBBO cannot exist across the entire nation at a single moment in time. While it is technologically possible to develop a "distributed SIP", it is not theoretically possible to produce the same NBBO at the exact same moment at multiple locations. Multiple SIPs could each produce an NBBO, but each would differ slightly based on its geographic distance from SIP Participants (even assuming all other elements of performance remain constant). This leads to a head-spinning assortment of operational and compliance questions that would require significant advances in clock synchronization techniques. As with all facets of market structure, Nasdaq urges caution when considering radical market structure changes that could undermine the public reference price, thereby harming investors and public companies.

The latency inherent in moving information from SIP participants to the SIPs can be better managed. Unlike SIP latency, geographic latency is neither managed nor controlled by the SIP operating committees. The SIP Participants independently choose locations and telecommunications circuits, choices that contribute to geographic latency differentials between SIP Participants and between SIPs. The industry is legitimately concerned about such differentials but the performance of these networks connecting participants and SIPs are not managed by a central authority. To address this, Nasdaq proposes that the SIP committees manage these telecommunication networks, and in doing so, extend each SIP network to their participant's locations. Doing this would offer greater consistency and transparency, and have the added benefit of defining the boundary of the SIP to be at each participant's location, thereby removing ambiguity related to SEC Rule 603(a) compliance.

Competition and freedom of choice are superior to government-mandated centralization and equality.

Some in the industry have urged the Commission to expand the SIPs and consolidated data and to eliminate proprietary depth-of-book and top-of-book feeds. Nasdaq believes that such

profound government intervention would damage our well-functioning markets and hurt Main Street investors by eliminating choice and stifling innovation. The most damaging version of this "equality" strawman would require all market participants to use the same connectivity and the same all-encompassing data, the so-called "one-speed-one-feed" approach. Nasdaq believes that centralization and government control are anathema to free markets. Therefore, any further centralization, even centralization that contemplate multiple offerings from a centralized SIP, is anti-competitive and harmful to the markets and investors. If the Commission must perpetuate the anti-competitive SIP model, it should do so with the least intrusion and the least data necessary to accomplish its limited mission of creating a robust and reliable NBBO.

This radical expansion of centralization would be fundamentally at odds with free market choice. Different customers need different products. For Main Street investors placing a market or limit order, the current core data is sufficient for that purpose. Even a professional trader watching a stock only needs a small amount of data to see prices and enter a trade. Institutional investors, who likely trade in larger quantity and measure trading objectives differently to retail, may need much more nuanced information. And a market maker actively monitoring and moving bids and offer for 3000 stocks at once needs still more data Which of these customers models, and other variations too numerous to describe, should the one-feed-one-speed serve? Should a market maker attempting to monitor and maintain accurate ETF values and manage risk effectively be forced to view the NBBO via a standard FIX port? Should retail investors or the firms serving them be forced to consume full depth data via a 40-gigabyte circuit and microwave transmission at tremendous added expense? Should the most sophisticated traders be forced to sacrifice speed and transparency (by using standard, yet sub-optimal connectivity choices)? Nasdaq sees no basis in free market policy or empirical data demonstrating the need for the government to step in to limit choices in this radical manner. In this context, it is important to recognize that equal is not the same as fair, nor will a single model for market data consumption meet the needs of a broad and diverse set of investors.

These are complex choices that the government is ill-suited to make, especially over time as technology continues advancing. The Commission is neither designed nor resourced to lead the industry on technological issues and it never has been. Asking the Commission to control trading speeds is essentially guaranteeing that the government will reduce choice, stifle innovation and impair competition. These difficulties are not new; accurate and fast information has always been essential to the market. While some question the SIP latency of 16 microseconds (millions of a second), recall that just two years ago, the Commission agonized in deciding that one millisecond (thousandth of a second) of delay was *de minimis* for purposes of Regulation NMS compliance.[29] Rule 605 statistics are measured in multiple of seconds just as they were over a decade ago.

[29] *See* Securities Exchange Act Release No. 78102 (2016) (interpreting automated quotations for IEX), available at https://www.sec.gov/rules/interp/2016/34-78102.pdf.

Forcing the SIP to consolidate more of the industry's data adds risk and complexity. Commission staff and the industry view the SIP as a single point of failure requiring active management such as back-up facilities and processes. In addition to technology failures, these risks flow into market events such as volatility and trading halts. Expanding the SIP compounds these risks at a time when the industry has overcome many of the challenges of the past. Layering multiple consolidators or competing SIPs onto a one-speed-one-feed world of expanded data consolidation would further magnify these risks.

Whatever choice the government might make would impose a tax on the industry or on "losing" segments of the industry. If, for example, the government were to force all depth-of-book data into the SIP and require all investors to see and use it equally, this would be quite costly. The SIP would need to expand capacity, processing power, networking capabilities, and other expenses to accommodate this change. Market participants currently using top-of-book data would be forced to upgrade their capacity, bandwidth and other capabilities as well. Forcing the use of ultra-fast connectivity options would have the same taxing effect on large groups of unsophisticated investors. Conversely, forcing all investors to use top-of-book or slower connectivity options than are currently available would tax other groups of investors, forcing them to sacrifice performance, efficiencies, and economies of scale in which they have currently invested.

ROUNDTABLE TOPIC: FUNDING OF MARKET DATA

Concerns over proprietary data cost and various data center solutions is a commercial dispute about the profitability of large institutions, not the welfare of Main Street investors.

Institutions, banks, and brokers earn massive profits trading for investors and for themselves but as competition reduces the fees institutions can charge investors, they naturally seek to cut costs elsewhere. We should be careful not to turn commercial negotiations into policy arguments and increase the role of government regulation in setting prices and practices that are being addressed effectively by market forces, innovation and choice.

Firms and professional traders claim they are forced to purchase the fastest data feeds and access with the lowest latency. This is not true, and to the extent firms feel compelled to make such purchases, it is competition and not government fiat that requires it. The Commission has never issued a rule or regulation requiring firms to purchase anything other than consolidated best bid and offer data. Nor has the Commission issued any rule or regulation requiring direct market access, much less colocation or microwave or laser transmissions. Trading firms purchase these valuable services only where it is profitable to do so in the course of their regular business. It is competition, pure and simple.

A lack of understanding has created the misimpression that prices for proprietary data market access services are soaring. This is based on a false comparison. Capacity, latency and reliability have improved by an order of magnitude over the past decade. To compare the cost of exchange technology in 2018 to that in 2010 is the same as comparing the cost of renting a

movie at Blockbuster to streaming via Netflix—the services may appear broadly similar, but they are self-evidently different businesses which provide different experiences.

When comparing products with characteristics that are relatively stable over time, we find that the cost of fundamental services have remained relatively stable. Nasdaq Basic, a popular top-of-book feed, has increased from $20 to $26 per month in the last ten years. That's a compounded annual increase of three percent in actual dollars and 2.37 percent in inflation-adjusted dollars. Nasdaq TotalView, Nasdaq's professionally-oriented depth-of-book feed, has remained stable over the last 14 years (there was a recent change from $70 to $76 because of the incorporation of OpenView, but no net price increase). Fees for baseline connectivity have remained relatively stable. In the past three years, Nasdaq has increased prices on only 6 of 114 of its data center services, and in 2017 we discounted on 11 wireless connectivity solutions. In 2013, Nasdaq lowered the cost of cabinets in its data centers because clients were choosing other vendors over our own services, a good example of competitive forces at work.

When comparing products with characteristics that have changed radically over time, we see higher fees for the more capable product. For example, we now offer a 40GB connection for $25,000 per month, a product and capacity that did not exist 10 years ago. Also, fees for a 10GB connection have increased by $7,635 per month because the ability of that connection to serve different markets has increased over time—from only 3 markets over 10 years ago to 10 markets today.

To understand how to respond to changes in the market, we must keep three salient points in mind.

First, not every customer chooses to be at the "bleeding edge" of technology—that is a function of the business model chosen by the customer, and we have a large number of customers that choose to continue to rely on technology that was available ten years ago. To meet market demand, the exchange must develop and offer an array of products that suit every business need.

Second, fees for "bleeding edge" products reflect the price of innovation—research and development, maintenance, and a return for the risk inherent in offering new products. An appropriate rate of return for innovation is essential to encouraging innovation.

Third, it is never appropriate to freeze innovation in an attempt to control costs. If we had done that 10 years ago, our markets would be much less efficient and effective today. The proper solution to manage costs is competition—competition among exchanges will lower costs in the long run, just like the cost of a flat-screen television falls as production becomes more and more efficient.

Competition, innovation and choice are working.

We cannot turn back the clock on competition and innovation, two massively democratizing forces for investors. Competition among new and established trading platforms have

compressed fees and brought down costs for pension fund and mutual fund managers and brokerages. In the last ten years, there has been a 45 percent increase in the number of exchanges, including the BATS and IEX Stock Exchanges.

Exchanges are ferociously competitive, much more so than when they were closed clubs controlled by and for the benefit of member broker-dealers, and operated as near-monopolies in their listed stocks.[30] This is directly linked to an explosion of competition, deployment of technology, and a resulting decline in investor costs. Of course, we must maintain safe markets, where technology is tested and smartly deployed, and fair markets, where investors are equally free to choose from a broad range of opportunities that competition and choice create. SIP revenues support competitive entry in the exchange space by providing a ready source of revenues for new entrants like IEX.

Exchanges also compete with off-exchange venues for consolidated data revenues. Professor Jones recently observed:

> Off-exchange trading also provides a significant source of competition for consolidated market data revenues. FINRA's competing TRFs—the FINRA/Nasdaq TRF and the FINRA/NYSE TRF—pass through the majority of their market data revenue from the CTA and UTP Plans to broker-dealer market centers that report trades to the TRFs. ATSs and broker- dealers trading as principal (including internalizers and wholesale purchasers of retail order flow) report their trades in this way. Thus, it is not just exchanges that receive revenue from consolidated feeds, but also dark pools, ATSs, and internalizers (who collectively receive tens of millions of dollars annually in market data revenue rebates). In fact, the total dollar amount of market data distributed to FINRA members who report off-exchange trades to a TRF has increased over time as the off-exchange share of trading has increased.[31]

Even the SIPs — which some have mischaracterized as outdated and starved for funding —have benefited from technology and competition. In addition to the speed and capacity enhancements described earlier (16 microsecond latency and 200 million daily message capacity), the SIPs and exchanges have made substantial investments in cybersecurity and fraud-prevention that improve overall market efficiency and resiliency. The latency differences between SIP and proprietary products are negligible, often in favor of the SIP.

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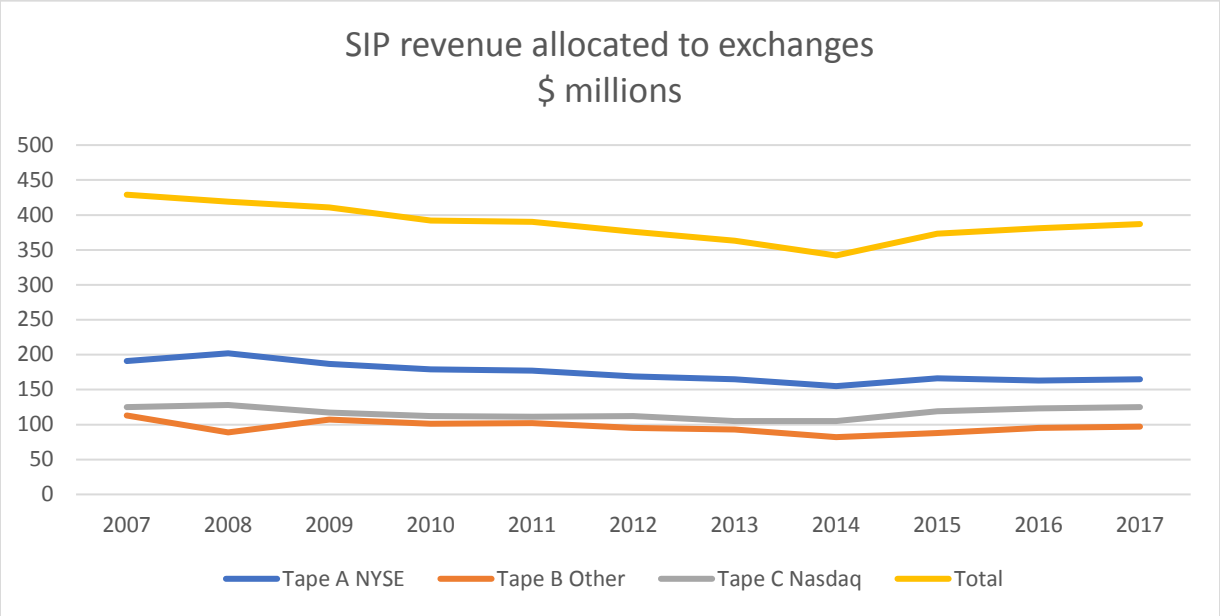
[30] In fact, the trigger for Nasdaq to begin demutualizing was the Commission's 1996 enforcement action against the NASD for failing to supervise the broker-dealers that controlled it, in which the NASD committed to spend $100 million dollars to enhance broker-dealer supervision. *See* Statement of Chairman Arthur Levitt, U.S. Securities and Exchange Commission (1996), available at https://www.sec.gov/news/speech/speecharchive/1996/spch113.txt.

[31] *See Understanding the Market for Equity Market Data* (2018), Professor Charles Jones, Columbia University, available at https://www0.gsb.columbia.edu/faculty/cjones/papers/2018.08.31%20US%20Equity%20Market%20Data%20Paper.pdf.

ROUNDTABLE TOPIC: PUBLIC TRANSPARENCY

Disclosure regarding the amount and uses of SIP revenue can be improved.

Although the distribution of SIP revenue to each exchange and FINRA is fully disclosed on the SIP websites, it is still widely misunderstood.[32] Total SIP revenues allocated to exchanges have declined over the past 10 years from $429 million in 2007 to $389 million in 2017. In inflation-adjusted terms, the SIP revenue allocated to the exchanges has fallen 23.7% from $507 million in 2007 to $387 million in 2017. The idea of rising SIP revenues is a myth:[33]



Source: Jones (2018)

In addition to declining SIP revenue overall, exchanges also give the vast majority of the TRF SIP revenue back to the broker dealers that report off-exchange trades to the TRF. From 2013 to 2017, the FINRA/Nasdaq TRF received $272 million of SIP revenue. Of that $272 million, $232 million or 83 percent was given to broker-dealers and Nasdaq retained $40 million or 17 percent.[34] Because the NYSE/FINRA TRF fee schedule indicates that it shares the same or greater revenue with broker-dealers, Nasdaq can estimate that broker-dealers received another $25 million of SIP revenue from that TRF. All told, the TRFs paid approximately $257 million of SIP revenue to broker-dealers between 2013 and 2017. In 2017 alone, the TRFs

[32] *See* http://utpplan.com/metrics (Tape C data); https://www.ctaplan.com/sip-metrics#110000108803 (Tape A and B data)

[33] The charts and data here are based on the publicly disclosed allocations of SIP revenues to the exchanges. The SIPs themselves deduct the direct cost of distributing the data before allocating the bulk of their fees to the exchanges that contribute the data to the SIPs. Note that the direct costs of the SIPs deducted from these revenue figures do not include any costs incurred by the exchanges to produce the data or transmit the data to the SIPs.

[34] Pursuant to FINRA Rule 7610A, members reporting trades to the FINRA/Nasdaq Trade Reporting Facility earn rebates as high as 98 percent of SIP revenue attributable to their trades.

shared approximately $53 million of SIP revenue with the dark pools and internalizing brokers. The Nasdaq/FINRA TRF shared over $49 million, representing 30 percent of NASDAQ's aggregate revenue from the SIPs.

Professor Jones explained well the impact of TRF revenue sharing:

> Market data rebates to broker-dealers reporting off-exchange trades serve two important disciplining roles. First, they effectively reduce the net amounts that off-exchange market centers pay for market data. Second, these rebates create an additional form of competition. In competing vigorously for order flow, exchanges can and do recognize that they must offer a trading product that is attractively priced relative to an alternative that may include market data rebates.[35]

Nasdaq believes it would be useful to disclose this information regularly to provide market participants with a more complete view of the allocation of SIP revenues.

We should remember that SIP revenues serve not just to finance the cost of the operation of the SIPs, but also support several important public policy goals. First, they encourage price discovery by rewarding exchanges that display lit quotes. Nasdaq has recommended altering the revenue allocation formula to reward not just the existence, but also the quality of those quotes. Second, SIP revenues support competitive entry in the exchange space by providing a ready source of revenues for new entrants like IEX, which received $9.2 million from the SIPs in its first year of operation according to publicly-available SIP data. And third, as has long been recognized, they help cover the substantial fixed costs of operating an exchange and regulating the markets.

A belief in public transparency runs deep in Nasdaq's culture, legacy, and view of the markets.

As an operator of public exchanges across the globe, we are in the business of creating transparent, fair, safe, and reliable markets—and we believe strongly in the salutary benefits of trading that takes place in the open. As a self-regulatory partner to the SEC, we share a foundational commitment to the principle that it is preferable to leverage transparency in energizing competitive forces than to rely on blunt prescriptions that could undermine those forces. And as a regulated entity, we seek transparency and clarity in rules and guidance. Whatever differences stakeholders may have about market data, we share a common appetite for more transparency concerning the standards the Commission applies to decisions about market data.

As a key participant in the operation of the SIPs, we share the securities industry's view that the SIPs are a public good that should be governed with extensive transparency. In the case of the SIP, three categories of transparency exist and each requires separate examination: (1) governance, (2) performance, and (3) accounting. The SIP Operating Committee has taken

[35] *See supra* fn. 34 at p. 33.

important steps to increase transparency in each of these categories, and Nasdaq believes more can and should be done.

The Commission provides "sunshine" In SIP Governance. Before turning to each category of transparency, Nasdaq wishes to highlight the critical role the Commission and SEC staff play in providing "sunshine" to the SIPs and thereby ensuring proper governance and governance transparency. First, it bears repeating that the Commission itself established the National Market System and NMS Plans in 1979, and that it has firmly controlled the rules and operations of the NMS Plans since. The Commission alone is authorized to change those rules, as it did in 2005 by inserting the Public Advisor requirement into Regulation NMS and into each NMS Plan.

Second, the Commission staff are intimately involved in operating the SIP Plans, both formally and informally. Formally, the staff attend each and every meeting of the Operating Committees — both the general and the executive sessions — as well as every sub-committee except the Legal Sub-committee where its attendance would invalidate any potential legal privileges. Informally, the Commission staff guide Operating Committee decisions in ways invisible to the Public Advisors when, for example, the SEC staff believes the Operating Committee has exceeded its authority under an NMS Plan.

Nasdaq firmly believes that the Commission and SEC staff work hard at ensuring proper SIP governance, and that they deserve more credit for the salutary effects of the sunshine it provides and encourages.

Governance Transparency. Governance of the SIPs is substantially more transparent than it once was. Today, eleven "Public Advisors" serve on the Operating Committee; five are required in functional areas specified by Regulation NMS and another six the SIP Participants nominate directly.[36] The Public Advisors enjoy access to information that is nearly coextensive with that of the SIP Participants. Public Advisors attend the general session of each Operating Committee meeting, and they receive all documents received by the Operating Committee for the general session. Public Advisors can and do add discussion items to the Operating Committee meeting agenda. The Public Advisors (and any visitor to the SIP public website) can find multiple governance artifacts: minutes of operating committee meetings; agendas and minutes of all executive sessions; and the names and contact information of each Public Advisors. The SIP Participants have attempted to be responsive to requests by the Public Advisors that the SIP Participants conduct more business in general sessions and less in executive sessions. The executive session minutes reveal that the SIP Participants spend very little time in executive session, as little as 12 minutes in the last meeting.

[36] A list of advisors by capacity is available on the official Nasdaq UTP website: http://utpplan.com/DOC/UTP_ADVISORY_COMMITTEE.pdf.

Despite the critical efforts of the Commission staff and despite the broad and deep involvement described above, the industry has clamored for additional governance transparency and also for more control of the SIPs. The SIP Participants have offered more and more elements of transparency but have been reluctant to cede control. This has fostered mistrust that Nasdaq believes is unwarranted but to a certain extent unsurprising.

Some in the industry support expanding the role of Public Advisors to include one vote on the Operating Committee. This change would need to be accomplished through an amendment to Rule 608 of Regulation NMS and to the NMS plans to ensure proper and consistent application. In addition, significant questions exist about how that vote would be cast and whether the Public Advisor vote could defeat measure that requires unanimity among the Operating Committee.

Expanding the authority of the advisory committees magnifies potential conflicts of interest that must be acknowledged, controlled, and coupled with increased obligations to promote public transparency. For example, market participants that operate their own "dark pools" are simultaneously SIP customers, SIP revenue recipients, and SRO competitors. Therefore, SIP governance should be structured to reflect a public-oriented partnership between exchanges and the industry, and accommodate differing legal obligations among market participants.

Performance Transparency. As described above, SIP performance and resilience is exceptional and still improving. All data demonstrating those facts is and has been publicly available. Visitors to the SIPs' public websites[37] can view a wide variety of monthly SIP performance metrics: system up-time percentages; peak rates and system capacity of messages per second, per 100 milliseconds, and per day; the ratios of peak rates to capacity; and latency at the average, median, 10th, 90th, and 99th percentiles. Nasdaq generally supports requests for performance transparency and of the government's role in ensuring that transparency.

Accounting Transparency. There is substantial accounting transparency into the revenues distributed to SIP Participants for each consolidated tape. Today, visitors can find on the public website data from 2007 onward data for each tape showing annual distributed revenue for quoting and trading, by SIP Participant and in aggregate. These metrics have been updated quarterly since the fourth quarter of 2017. Additionally, viewers can find quarterly reports of user populations dating from the fourth quarter of 2010. These include counts of non-professional users (3.8 million in 1Q18), professional users (295,922), queries (537 million), and television households (146 million). The fees for these categories of usage are also publicly disclosed.

Should that transparency extend to more disclosures of costs of market data products, both SIP and proprietary? When it comes to the SIP, cost disclosure is an important question, but one that requires careful exploration, because it is not clear what the word "cost" means in this context. Obviously, the administrative and processing costs of the SIP are only a fraction of the

[37] Available at http://www.utpplan.com/DOC/UTP_Website_Statistics_Q1-2018-April.pdf.

true economic cost of producing these data. Defining and allocating "costs" of the SIPs would require careful and detailed regulatory guidance from the Commission—else any disclosure would be false and misleading, and no benefit to the public. The fact of declining or stable SIP revenues, and the fact that SIP costs borne by individual investors are trivial or nonexistent, shows quite plainly that existing transparency and competitive forces are working well and that there is no urgent policy problem to solve.

Likewise, in the case of proprietary data and connectivity, defining the costs that are relevant requires a clear understanding of what costs are relevant and the use to which this information will be put, lest the disclosure provide a misleading picture of the true cost of generating data. Disclosing the cost of a piece of wire is no more meaningful than disclosing the cost of printer ink in assessing the appropriate price of a book. The cost of producing data and providing market connectivity is the cost of operating the entire market infrastructure: data center rent, electricity, servers, routers, switches, cybersecurity, tech personnel salary, and of course, regulatory costs. And, as we know, the battle to operate market infrastructure – the battle between exchanges, internalizers, and dark pools – is the subject of fierce competition.

Terms like fair, reasonable and not unreasonably discriminatory are not defined in the Act, and the Commission has resisted defining them itself. As recently as last week, the Commission issued lengthy decisions that again failed to articulate meaningful interpretations of these terms, although it wisely rejected the idea that these terms give it carte blanche to become a New Deal style ratemaking agency. In our view, the Commission should continue to evaluate the applicability of modern economic analysis to the markets for proprietary data and connectivity, particularly with respect to platform theory, two-sided markets, and the efficiency of pricing that accounts for the benefits received by customer segments. If it does so, we believe that it will understand the competitive constraints that operate within this market, and the unworkability of heavy-handed price regulation.

When it comes to proprietary data, Nasdaq is hard-pressed to find a policy rationale for additional disclosures, as both their production and purchase is voluntary and they are subject to significant competitive forces. Nasdaq and other SROs are publicly-reporting companies that are already subject to significant financial disclosure obligations, the same disclosure obligations that apply to many banks and brokers that operate ATSs and single-dealer platforms that compete with Nasdaq. In fact, Nasdaq is more transparent than a private company and, as Chairman Clayton has observed, the process of becoming and operating as a public company tends to make companies healthier.[38]

Conclusion

Our analysis finds that the regulatory scheme for U.S. stock market data—both consolidated feeds and proprietary feeds—is exceptionally successful. Main Street investors enjoy low

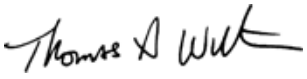
[38] *See* Testimony of SEC Chairman Jay Clayton before the House Financial Services Committee ("Examining the SEC's Agenda, Operations and Budget ") (October 5, 2017).

commissions, low mutual fund and ETF fees, fast and effective services, and sophisticated analytical tools. Within its framework, the national market system produces a reliable, industry- standard reference price for every stock at low or no cost to Main Street investors, while encouraging innovation and competition among exchanges and market participants. It also has been a catalyst for a flourishing and innovative market data industry that provides more choice and value every day to the Main Street and institutional investor alike.

Those who seek improvements should be guided by the shared goals and principles that the SEC and its self-regulatory partners like Nasdaq are entrusted with ensuring on behalf of the public. The goal of public policy is to ensure our financial markets are fair, orderly, and protect investors—above all the long-term interests of Main Street investors. Put to good use, the forces of competition and transparency are better at producing fair and orderly markets than are prescriptive regulations. Our financial system is stronger when competition between and among exchanges and other financial information providers is robust, and when the markets are structured to produce accurate and efficient price discovery.

This is not a one-dimensional conversation about market data, or about access fees, or colocation, or best execution. Our complex markets exist as a single fabric whose strength relies on many threads. Pull those threads carefully.

Respectfully submitted,



Thomas Wittman