Nasdaq

TOTALMARKETS

A BLUEPRINT FOR A BETTER TOMORROW

Two years ago, Nasdaq launched *Revitalize*, our blueprint to reform U.S. equities markets to better serve American investors and companies of all sizes, and to position the U.S. for continued leadership of global capital market.

After launching Revitalize, we have worked with a broad and diverse coalition in Washington, D.C. to turn these ideas into reality to improve U.S. equity markets. In Congress, bipartisan members worked together to pass seven bills in committee or on the house floor to improve capital formation. Securities regulators have been strong partners, issuing 13 rules and announcements to help address issues Revitalize highlighted. The industry actively and constructively debated the nuanced issues highlighted in Revitalize, leading to action that will allow public investors to benefit from a more robust and diverse public company ecosystem.

It is time we expand Revitalize to a serious and balanced debate focused on the market structure that supports trading of public companies. Market structure has a significant impact on the cost of capital and the return on equity that companies and their investors rely upon to grow and expand their businesses. Market structure also defines the experience investors have in the public markets, which plays a key role in how willing they are to invest their hard- earned dollars in public companies.

Our drive for progress is focused on reforming the vast array of regulations that have created a patchwork of complexity for investors and public companies of all types and sizes. While U.S. regulators have worked diligently and with good intentions, many regulations no longer fit the ever-evolving markets. In recent years, this chasm has only widened, as technological change has only accelerated. Just as the Commission has taken important steps to modernize the disclosure obligations of public companies, so too should it address outmoded rules governing market structure that were promulgated years or even generations ago.

Over the coming pages, we examine the rules of yesterday, review the markets of today, and chart a path to better markets tomorrow. We have come to our views after months of discussions with industry participants, including a concentrated effort to engage with institutional investors and retail brokers. The recommendations for regulatory reform reflect our belief that nothing is more powerful than free markets with clear, consistent, and fair rules that catalyze innovation — rather than inhibit it. We view this as both a set of policy proposals and also the starting point of a conversation among all market participants on how to build future markets that better serve the common good.

Our recommendations focus on creating more market choice and opportunity across three key areas:

1. **Bolster liquidity for smaller publicly traded companies** – Smaller, growing companies are the lifeblood of our economy and our markets. We need to address shortcomings in the current market structure to ensure that small issuers can continue to rely upon the public markets to provide the best possible trading and investing experience for their investors.

2. **Enhance effectiveness for Institutional investors** – Many institutions that manage assets for retail investors suffer from one-size-fits-all regulation that has benefits but also hinders innovation and increases cost.

3. **Modernize data regulations to better serve Individual, long-term investors**
Technology has provided investors with access to a wealth of data and choice that was unheard of a generation ago. Overall, the experience for these investors in today's public markets is the best it has ever been. However, a few straightforward reforms can unlock an even greater wave of choice and opportunity for individual, long-term investors.

Tomorrow's markets, if governed with properly-calibrated regulation, should embrace rapid technological advancement for the betterment of all market participants and continue to unleash the dynamic, entrepreneurial spirit that drives the U.S. economy.

The ideas that follow will help us build these markets together. We look forward to transforming these ideas into action in the coming weeks and months.

Sincerely,

Adena Friedman
President and Chief Executive Officer

Highlights of Nasdaq's Proposals

1

Centralize liquidity in small company stocks by giving companies the choice to trade on a market without Unlisted Trading Privileges or Regulation NMS obligations.
Permit small to medium enterprises (SMEs) the opportunity to revoke unlisted trading privileges (UTP). This would concentrate their limited liquidity on their home exchange rather than fragment it across 13 venues. Maintain off-exchange trading to continue to offer choice to investors, but create a central source of price discovery, deeper lit liquidity, and on-exchange executions. This is simply restoring these stocks to their pre-2000 status, before the Commission extended UTP to all stocks.

2

Simplify trading for institutional investors by eliminating the Order Protection Rule for the smallest markets and allowing those small markets to innovate and operate outside some stringent requirements of Regulation NMS.
Nasdaq believes there is a better way to maintain the benefits of the Order Protection Rule while creating a better balance between value and obligation. Nasdaq proposes to give investors some freedom to choose the small markets in which to trade by excluding the smallest markets from the Order Protection Rule. At the same time, we would unlock exchange innovation by giving the smaller markets the freedom to innovate, create differentiated market models, and compete on a more level playing field with non-exchange dark pools, all within the conventions of Best Execution and SEC Rule 605.

3

Modernize the minimum quoting requirements and fee regimes for the markets to better recognize different liquidity characteristics of small and large company stocks.
Today's one-size-fits all quoting and fee regimes fits a segment of stocks, but other segments would benefit from a more flexible approach that allows markets to better encourage and reward liquidity in smaller companies and in high-priced stocks.

4

Change the definition of "professional" and "non-professional" users in market data agreements to be more modern and flexible for retail brokers.
For many years, market data fees have differed for various categories of users. Exchanges have argued and the Commission has accepted that it is equitable to allocate market data costs across a diverse group of users by distinguishing between them based upon their purpose and ability to pay for the data (professional versus non-professional), the value they extract from the data (displayed on a screen versus non-displayed usage by a server), and the volume of data they purchase (tiers and enterprise caps), among others. However, some of the distinctions have become arbitrary and more complex than is necessary and create undue administrative burden to manage. We should modernize the user definitions to achieve the same general goals while streamlining the administrative burden.

5

Create more efficiency, choice, and industry participation in the Securities Information Processors through a series of important reforms.
The SIP monopolies should be reviewed to ensure that they only include the data needed to meet regulatory mandates, which in turn must match the needs of investors. This means removing vestigial data from the SIPs, while also revisiting the outdated Vendor Display Rule. Nasdaq shares the securities industry's view that, as a public good, the SIP should be governed by a partnership between the exchanges and the industry, with appropriate government oversight and extensive public transparency. Investors should have more freedom to choose the market data they use.

Technology Drives Markets Forward

The public equity markets exist to facilitate job creation and wealth creation for millions of people, ultimately driving economic growth for our country. The most important test of our success is whether those who invest and raise capital are well served by the public markets: can we help people save for homes, college, and retirement, and help businesses flourish, create jobs, and contribute to a strong and growing economy? The policy choices we make about how our markets operate day-to-day and evolve year-to-year critically impact how successfully the public markets serve Main Street investors and navigate larger economic forces.

In the last twenty years, markets have harnessed remarkable new technologies to transform equities trading. Trading that once required shouting ticket runners on a market floor, migrated to powerful computers, which began to level the playing field and provide access to data and tools to all participants, large and small. In these markets, as in other economic sectors, technology has expanded possibilities in ways previously unimagined. However, technology alone cannot achieve all goals. It needs to be coupled with smart and ever-evolving rules of engagement to create a truly level playing field across a diverse set of participants in the markets.

Equity mutual fund fees declined

40%

between 2000 and 2017[1]

U.S. stock average trade commission[2] down

40%

ETF **fees declined 38%** between 2009 and 2017[3]

U.S. stock average spreads down

88%

between 2000 and 2018[4]

Technology itself has achieved tremendous benefits for the broader investor base. Today, trades are executed at better prices than ever before (spreads collapsed by 88 percent between 2000 and 2018), and at lower cost (commissions down 40 percent between 2009 and 2017); and investment products are less expensive (equity mutual fund fees were down 40 percent between 2000 and 2017, while ETF fees were down 38 percent between 2009 and 2017).

Individual investors have ubiquitous and easy access to real-time market data; quote and trade data is free to access on television, websites, and smartphone applications.

1 Source: https://www.ici.org/pdf/2018_factbook.pdf [p.119, Figure 6.1]
2 Source: https://www.cnbc.com/2017/05/16/online-brokers-lower-trading-fees-theres-another-option-pay-nothing.html
3 Source: https://www.ici.org/pdf/2018_factbook.pdf [p.128, Figure 6.8]
4 Source: https://www.cnbc.com/2017/05/16/online-brokers-lower-trading-fees-theres-another-option-pay-nothing.html

Technology has also made markets safer. As trading technology has advanced, so too has the technology powering surveillance. For example, Nasdaq surveillance software runs dozens of algorithmic patterns over billions of equities quote and trade messages every day. One in 10 servers operating Nasdaq markets is dedicated to surveillance of our markets.

46,201

SEC filings reviewed in 2018

424,366

Alerts reviewed; ↑ 16% from 2017

6.7 Billion

Message per day processed by Nasdaq's real-time regulatory systems

Nasdaq is convinced the technological evolution of the markets and resulting benefits to investors is in its infancy. We continue to test new technologies to improve trading and surveillance; including artificial intelligence, blockchain, and cloud computing. We envision a future in which U.S. markets leverage the power of technology to differentiate, customize, and personalize the investor and issuer experience of the markets. We seed and nurture our future markets' potential, even as we celebrate what they accomplish today. If we allow it, technology will accomplish far more to aid investors and shape our markets in coming years.

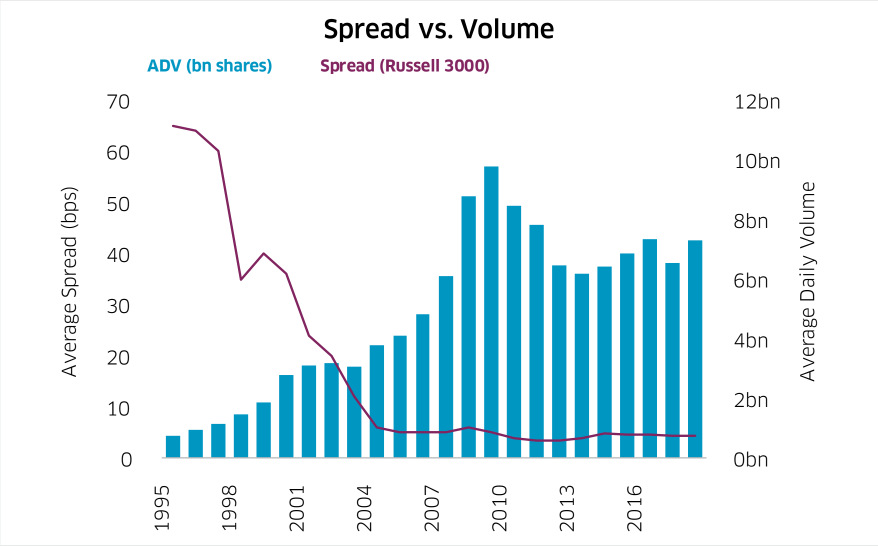
The Growing Disconnect Between Technology and Regulation

Technology is a powerful tool for good, enabling innovation, creating new opportunities and capabilities that help markets evolve and better serve Main Street investors. At the same time, it creates opportunities for manipulative trading practices and puts additional pressure on regulators to keep pace and manage these risks. Technology and regulation must advance together.

Nasdaq believes regulation has failed to keep pace with advancing technology. Regulations developed in a "one-size-fits-all" format and adopted as long as 40 years ago are out of step with today's markets. They have become more limiting and less flexible over time.

CHART 1: The addition of technology to trading has changed the way trading works, collapsing spreads and increasing the amount of trading and liquidity.

Since the 1990's, the market has automated and rules were enhanced to accommodate the rise of automation, with decimalization and a protected consolidated quote. As this took hold, spreads collapsed, making trading cheaper, and volumes increased. Studies showed this dramatically improved market efficiency and allowed electronic arbitrageurs to reduce or eliminate many market inefficiencies.



Source: Nasdaq Economic Research, Angel (2010), KCG, Rosenblatt.

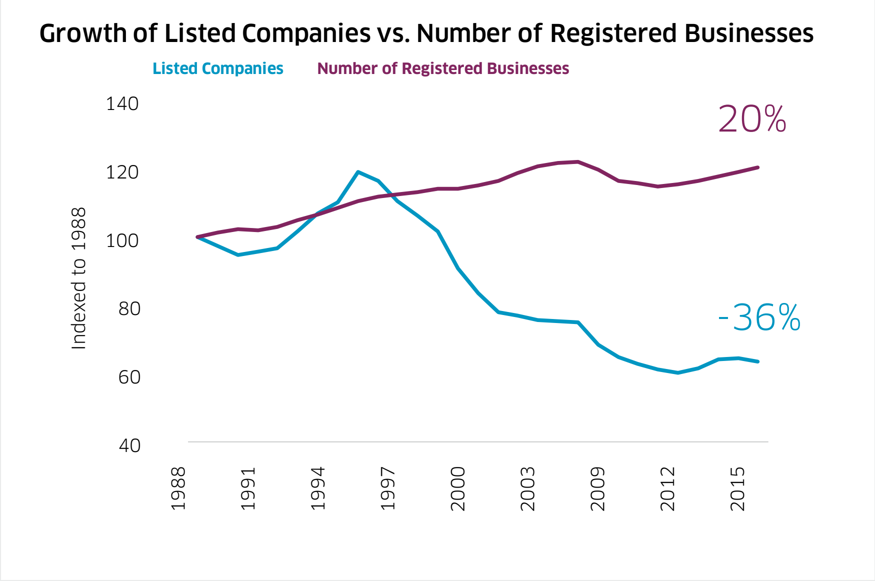
Three areas of regulation in particular deserve re-examination: the Securities Information Processor, or SIP rules, combined with the Vendor Display Rule or VDR, and the Order Protection Rule or OPR. Each regulation had a laudable goal: the SIPs were designed to increase exchange-level competition before the age of electronic trading; and the OPR to ensure the best-priced orders were actually executed at a time when computer algorithms did not exist to help investors and traders find them.

Each prescriptive regulation brought more trading activity under a strict governmental regime. Essentially, the government layered mandate atop mandate atop mandate, resulting in fewer choices and more obligations across the industry.

Finding the proper path forward requires an understanding of how and why those regulations were created in the first place:

CHART 2: Listed companies are falling even though the number of registered businesses has increased.

Many companies are waiting longer to IPO or sometimes opting to stay private forever. As a result, the number of listed companies has fallen even as the count of US registered businesses has continued to rise.



Source: World Bank, Census Bureau

- In 1978, the Commission ordered the exchanges to create centralized facilities called SIPs that would collect and combine in one place the quotations and trade prices (known as "market data") from each exchange for each stock.[5] In an effort to help smaller markets compete and contribute to price discovery, the government made centralized SIPs veritable monopolies; they became the single source for critical market data that brokers need to trade and to serve investors. The SIPs' monopoly position were strengthened with the Vendor Display Rule in 1980, which required that brokers provide the SIP data to their investors. The revenue SIPs earned from selling market data was then allocated back to the exchanges in proportion with their level of activity. While this market intervention may have been justified in 1978, the market has moved on. This antiquated regime led to today's monopoly SIPs and is in need of updating.
- The Commission later became concerned that the best publicly displayed orders were still marginalized. To address this, in 2005, the Commission adopted the Order Protection Rule or "OPR" that directed trading firms to attempt to execute orders posted at the best published price, essentially ignoring other important factors that contribute to best execution. This 2005 mandate was initially well intended and has many benefits, but it can reduce the flexibility that long- term investors have when attempting to satisfy the obligations to investors.

We appreciate the rationale for these rules, but circumstances have changed. To move forward we must acknowledge the transformation of our markets over the past 40 years. All told, modern trading, data, and routing technology, coupled with current (and, hopefully, updated) best execution obligations, can ensure that every order entering the trading ecosystem will find the best market and the best price.

Considering all these developments, it becomes clear the proposed Transaction Fee Pilot compounds these historical shortcomings. Rigid and prescriptive rules did not evolve intelligently and did not benefit all investors and issuers equally. Instead, it led to a market that works better for some than for others; creating haves and have-nots; favoring large-cap securities over all others.

We must revisit and review the rules, take what we learn, and then adjust. Radical change is not required, but common sense is. It's time to roll back certain government mandates to build markets that are friendlier for all types of investors and issuers – and to re-establish choice as a priority in the public markets.

5 Securities Exchange Act Release No. 15009, 43 FR 34851, 34855 (Aug. 7, 1978).

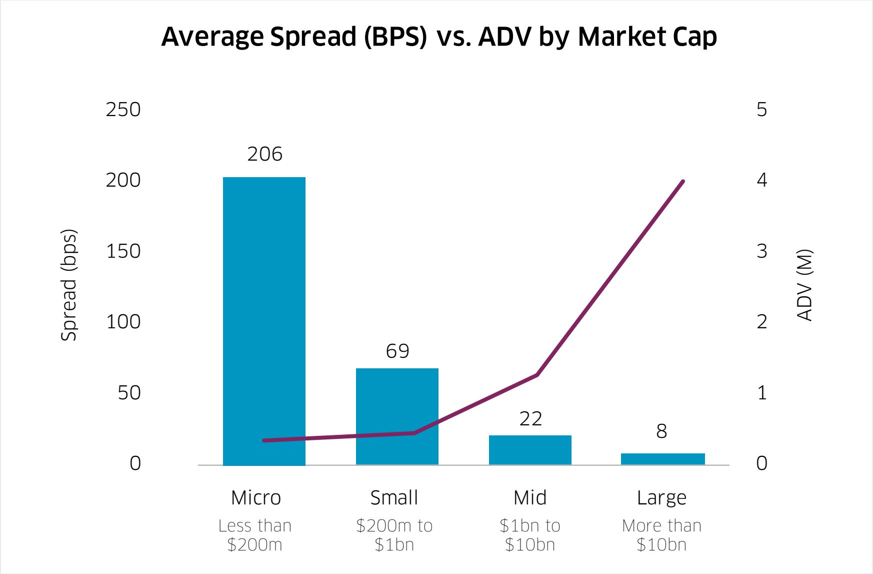
Nasdaq Proposals for More Choice

Smart, technology-sensitive regulatory change can preserve what works well today, while improving the markets for Main Street investors who are saving for their future as well as institutions like pensions, mutual funds, and insurers that manage and protect Main Street investors' assets. The rules should do a better job supporting innovative companies that leverage the public capital markets to grow their businesses and create jobs. The companies should be rewarded with a market that properly reflects the value of their businesses, while giving them efficient access to additional capital.

CHART 3: Smaller cap stocks have much lower liquidity and wider spreads.

Wider spreads make it more expensive for investors to trade smaller stocks, and less liquidity increases the market impact that large trades have. Both act to make it more expensive for institutions to trade, increasing the required returns to enter a stock; thereby increasing the cost of capital for those investors as well as for small, growth companies who may want or need to raise additional equity to grow their businesses. It is a lose-lose proposition.

Importantly, studies have shown a link between higher cost of trading and lower liquidity increasing the cost of capital which in turn reduces the returns on harder to trade stocks.



Source: Nasdaq Economic Research (NMS Common Stocks, data as at Jan 2019)

Instead, we have a one-size-fits-all regulatory approach to issuing companies, whether they are trillion-dollar behemoths or $100 million micro-cap stocks, or whether their shares are priced from a dollar to thousands of dollars per share. For each stock, the range of daily share volume can be as small as hundreds of shares or as large as hundreds of millions of shares. Some companies have enormous research and market-making support; others have almost none. Why must thousands of listed companies that differ in every conceivable respect all trade under the same rules when technology allows a vastly more thoughtful and efficient approach?

As regulators consider changing equity market rules, Nasdaq calls for a top-down review of prescriptive rules that stifle innovation. More flexible rules will unleash innovation and allow fair competition to determine the outcomes. This new framework can create an inclusive market that cultivates capital formation for all issuers and their public shareholders.

To the greatest degree, we have endeavored to focus on what our issuers and their investors are requesting, and what our extensive experience has proven will work. We neither flatly reject ideas that support our business nor avoid those that do not. Nasdaq proposes reforms that will free the markets to innovate and give investors more choices.

More Choice to Better Serve Smaller Publicly-Traded Companies

Permit small to medium enterprises the opportunity to revoke unlisted trading privileges – concentrating their limited liquidity on their home exchange rather than fragmenting it across 13 venues.

As established in Revitalize, smaller, growing companies are staying private longer, relying more on private market liquidity, and providing growth opportunities to private market investors.[6] The result is a widening disparity of wealth in the country, as investors in private companies are, by rule, wealthy individuals or professional investors. Traditionally, public equities markets have created opportunities for smaller retail investors to fund innovative companies that go public and, thereby, fund growth in the economy, and create jobs. Historically, investing in early-stage companies provided retail investors the opportunities to share in their public growth and to use that opportunity to save for homes, education, and retirement.

Among the many reasons companies are staying private longer, market structure clearly plays a role. The one-size-fits-all market model that governs all U.S. trading disproportionally rewards certain types of issuers and segments of the market, widens spreads, and increases the cost of capital for smaller companies. [see chart 3].There is broad recognition that smaller, thinly-traded companies trade differently than large, ultra-liquid stocks. Why, with the vast power of technology to differentiate, must all publicly-traded companies trade under the same set of rules? Nasdaq proposes the following reforms:

- **Issuer Choice/Unlisted Trading Privileges ("UTP") Revocation:** Permit small to medium enterprises the opportunity to revoke unlisted trading privileges. This would concentrate their limited liquidity on their home exchange rather than fragment it across 13 venues. Concentrating liquidity will improve price discovery, reduce market volatility, and lead to better trade prices.
- **Innovation:** Allow exchanges to innovate and tailor their trading rules to the unique way small and medium-sized companies trade. Rigid rules and intense competition have focused the markets on what serves a small group of large, deeply liquid stocks, and largely eliminated the ability for exchanges to introduce new market features that cater to smaller issuers, keeping marketplace competition primarily focused on features that are not always conducive to smaller issuers.

  We should be allowed to encourage market maker sponsorship and to develop new execution alternatives, such as specialized, periodic auctions to gather liquidity and increased price discovery. The industry is much more comfortable with electronic auctions than when UTP was extended to all stocks in 2001 and when a one-size-fits-all regime was adopted.

  Nasdaq supports solutions tailored to serve thinly-traded securities. Much of the trading and routing functionality in use today was designed in response to UTP and the OPR. For issuers that choose to list in a non-UTP structure, much of that complex functionality will no longer be necessary to trade these companies' shares.
- **Protecting Competition:** Competition for listings and preserving over-the-counter trading will continue to discipline the listings process. Additionally, exchanges can be governed appropriately by regulators to ensure that they continue to distribute market data efficiently to support the new market model.

6 The Promise of Market Reform: Reigniting America's Economic Engine, available at https://business.nasdaq.com/media/Nasdaq_Blueprint_to_Revitalize_Capital_Markets_April_2018_tcm5044-43175.pdf.

More Choice for Institutional Investors

Many institutions that manage assets for retail investors –pensions, mutual fund companies, insurers – feel today's markets are not designed for them. Regulation that fails to adapt and evolve adds unneeded cost and complexity, stifling innovation. We have heard from our clients that smaller players feel they are crowded out of the market, and unable to compete with large banks and trading firms that benefit from the current model. To address these concerns, Nasdaq proposes the following reforms:

- **Exclude Small Markets from Order Protection:** Nasdaq proposes to give investors some freedom to choose the small markets in which to trade by excluding the smallest markets from the Order Protection Rule. Instead, give the smaller and new markets the freedom to innovate, create differentiated market models, and compete on a more level playing field with non-exchange, over-the-counter venues.

  Any assessment of OPR must also include a review of the Duty of Best Execution and SEC Rule 605 which, together, provide an important investor protection backstop to OPR. Best Ex and Rule 605 once were primary tools of investor protection, requiring firms to conduct a detailed review of their routing and trading practices and then report relevant information on the execution outcomes obtained for clients. After the Commission adopted OPR, Best Ex shrank in prominence and has become outdated.

  Recall the market that existed before the Commission imposed OPR. Technology had drastically changed how trading and investing was done. While technology had evolved quickly, some of the established players were slow to adopt. As a result, the markets were disconnected in some ways. In crafting a solution, the Commission attempted to balance benefits and costs of different paths. As stated in the release, the Commission had "sought to avoid the extremes of: (1) isolated markets that trade stocks without regard to trading in other markets and thereby fragment the competition among buyers and sellers in that stock; and (2) a totally centralized system that loses the benefits of vigorous competition and innovation among individual markets."[7]

  The Commission also recognized that there were benefits to the technological evolution and that it could encourage change for participants that were slow to adopt. In other words, there was a need to modernize the structure of the National Market System (NMS) and therefore modernize what it meant to be an "exchange". As a result, the Commission focused on order competition.

  What benefits did it bring? The Order Protection Rule favors displayed limit orders with the intention of increasing transparent price discovery. No longer could a specialist have a monopoly in a given stock. They now had to compete with automated market makers, retail limit orders, and institutional limit orders. In fact, that was one of the reasons the Commission wanted to implement the Order Protection Rule — the belief was that the "protection of displayed limit orders would help reward market participants for displaying their trading interest and thereby promote fairer and more vigorous competition among orders seeking to supply liquidity."[8]

Give investors freedom to choose the small markets in which to trade by excluding the smallest markets from the Order Protection Rule.

Give the smaller and new markets freedoms to innovate, create differentiated market models, and compete on a more level playing field with non-exchange, over-the-counter venues.

7 See Securities Exchange Act Release No. 51808, 70 FR 37496 37498-99 (June 29, 2005).
8 Id. at 37501.

The Commission also believed that the price protection afforded by the new rules would assure that investors who submit market orders will receive the best prices.[9] Thus, the Order Protection Rule was designed to "promote market efficiency and further the interests of both investors who submit displayed limit orders and investors who submit marketable orders."[10]

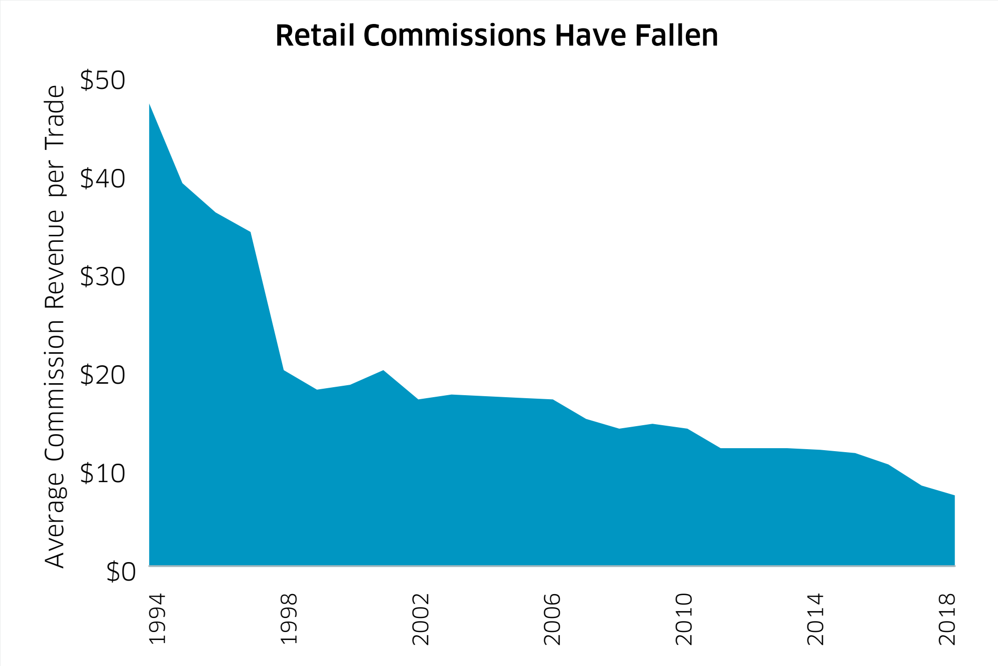
The Commission was right. Markets got far more efficient. No longer were spreads for liquid stocks wide and markets slow. Volume increased as the cost to trade decreased. (see figures below). In other words it became cheaper and easier to execute round-trip stock transactions (i.e. buying 1,000 shares and then selling those shares at some later time).

Protection of limit orders also eased burdens on firms representing limit orders in the market on behalf of their clients. In particular, individual investor limit orders are protected, which makes the fragmented market less of a concern to those individual investors. Brokers no longer receive calls from individual investors asking why another trade occurred at a price that was worse than their limit price. If OPR was eliminated, the confusion would return and many individual investors would be calling their brokers with questions.

In essence this led to a sort of renaissance period for individual retail investors and trading commissions and costs went down.

CHART 4: Retail commissions have fallen over time.

Automation of retail trading has not only allowed retail investors to trade with tighter spreads, but also helped the fixed (commission) costs to fall too.



Source: Multiple data sources spliced together, including AAII Journal, Barclays Capital Equity Research, Company Filings (Schwab, E*Trade, TD Ameritrade)

9 Id.
10 Id. at 37505

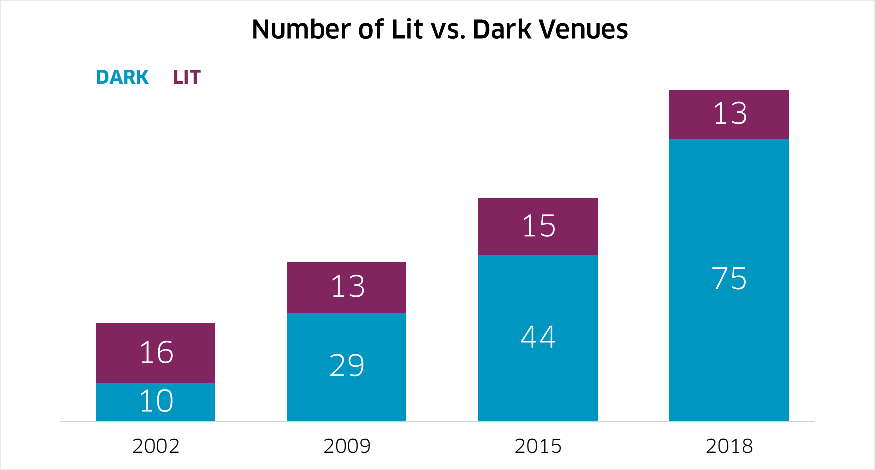
What unintended consequences now exist that should be addressed?

The benefits of OPR have not accrued to all market participants evenly. While some participants find value in protection, others see it as overly prescriptive obligations without commensurate worth. The barrier to entry to start a new displayed market such as an exchange is low. However, if the new market is not offering innovation or value, the burden to connect still exists. With many small markets, participants may feel obligated to connect to each of them although the benefits of connecting to these new markets are not sufficient to warrant becoming a customer. In addition, the one-size-fits-all nature of the rule amplified the importance of speed, making it a key competitive differentiator for displayed markets. Market participants must invest in latency-reducing technology in order to compete effectively. The well-intentioned rule meant to simplify a fragmented market has actually created its current complexity.

Nasdaq believes there is a better way to maintain the benefits of OPR while creating a better balance between value and obligation. Our proposal is to maintain the Order Protection Rule for markets that clearly demonstrate value and contribute to price discovery while exempting smaller markets from protection. No longer would every participant be required to connect to every small exchange. Instead, we would allow free market forces to determine whether there is value in each of these smaller exchanges. Further, any exchange that is not protected under OPR would have greater ability to innovate. For example, without protection, a market will be free of other Regulation NMS requirements (i.e. fair access) that limit the imagination of the exchange operators to find new ways to serve their clients.

CHART 5: In recent years the US market has become increasingly fragmented.

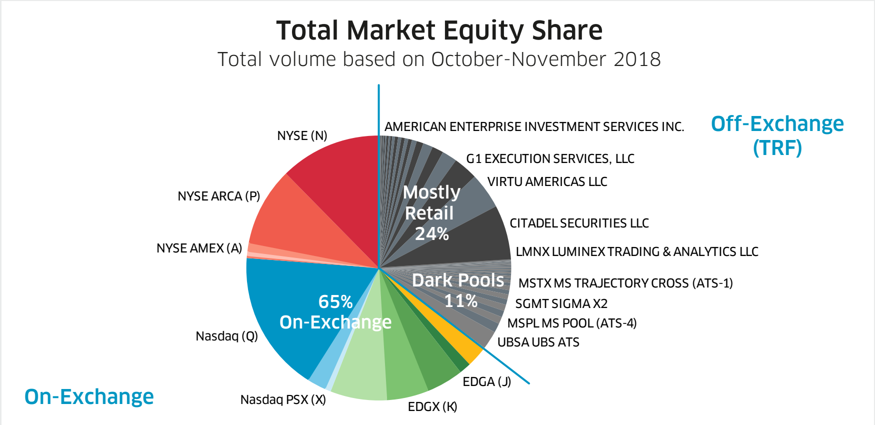
Fragmentation has increased as more off-exchange venues have been created which has led to many more choices and conflicts in routing, as FINRA recently detailed.



Source: Nasdaq Economic Research, Thompson Reuters, Rosenblatt Securities

CHART 6: That has resulted in a market where sourcing liquidity has become more complicated.

Currently, liquidity in US stocks is split between around 88 different sources, with nearly 40% of trading occurring off-exchange. Importantly, thanks to Reg NMS the executions off exchange must be no worse than those prices on-exchange. As a result, dark pool operators leverage the price discovery provided by the lit exchanges, but then siphon orders and executions away from the exchange liquidity pools.



Source: Nasdaq Economic Research, FINRA

Every element of a smarter OPR regime deserves deeper consideration and debate. As a starting point, we recommend considering:

- minimum market share in a single venue of 1.5% of U.S. equities shares traded;
- markets' contribution to price discovery;
- how exempted markets that grow are re-evaluated for OPR consideration; and
- whether and how SIPs display exempted markets' quotes and allocate SIP revenue to them

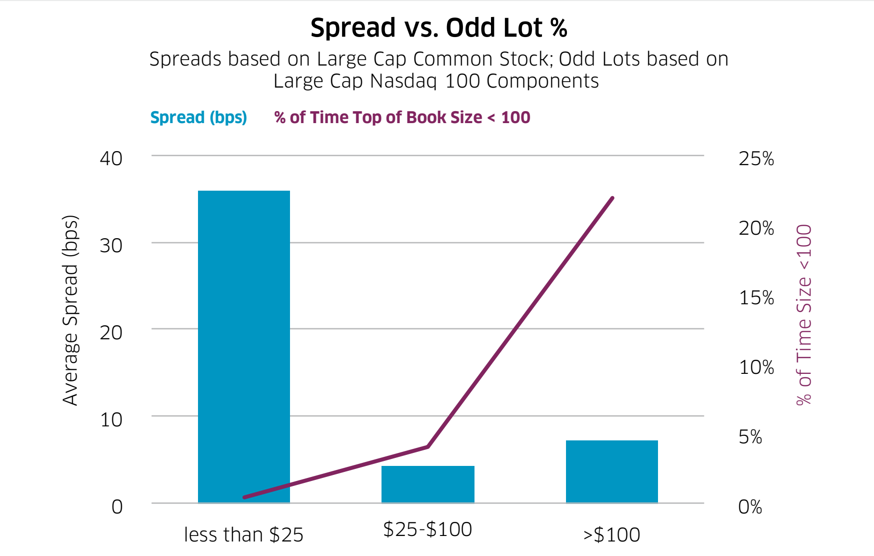
Nasdaq looks forward to engaging the industry on these important aspects of the proposal to move away from today's "one size fits all" rules and towards a better balance between innovation and investor protection.

- **More Intelligent Tick Parameters and Rebates** Nasdaq has called for a more intelligent tick regime that better responds to and supports the wide variations that exist between stocks and trading conditions among publicly-traded companies.[11] There is growing evidence that this one-size-fits-all approach is compromising the tradability of many securities, particularly low- and high-priced publicly traded securities.[12] Nasdaq recognizes that tick size is an important variable in the cost of trading and the investor experience.

  On February 15, 2019, Nasdaq's Chief Economist, Phil Mackintosh, published an article highlighting these concerns and their impact on market quality.[13] We found that too wide a tick size (i.e., tick constrained) results in increased trading costs and does not rightly balance incentives between providers and takers of liquidity. This can lead to long order queues and, as a result, excessive fragmentation.

CHART 7: One-Size Doesn't fit all: Spreads and tradability aren't consistent even for similar liquid stocks

The disadvantages of our one-size-fits-all market are evident looking at spreads and odd lots across stock prices, even for liquid large cap stocks. Spreads (blue bars) are a measure of investor costs, and thanks to the 1-cent market-wide tick, they rise as prices fall. However spreads also rise when prices get too high, partly because traders are more likely to post odd lots (less than 100 shares) inside the market quotes (green line).



Source: Nasdaq Economic Research, Large cap stocks only, spread data from Jan '19, Percentage of odd lots inside the NBBO based on Nasdaq 100 stocks.

11 See, e.g., Petition Requesting the Commission Exercise its Exemptive Authority Under Rule 612(c) of Regulation NMS, available at: https://www.sec.gov/spotlight/regnms/jointnmsexemptionrequest043010.pdf

12 The Tick Size pilot that recently ended was well-intentioned but suffered the same "one size fits all" rigidity of OPR, VDR, and Regulation NMS

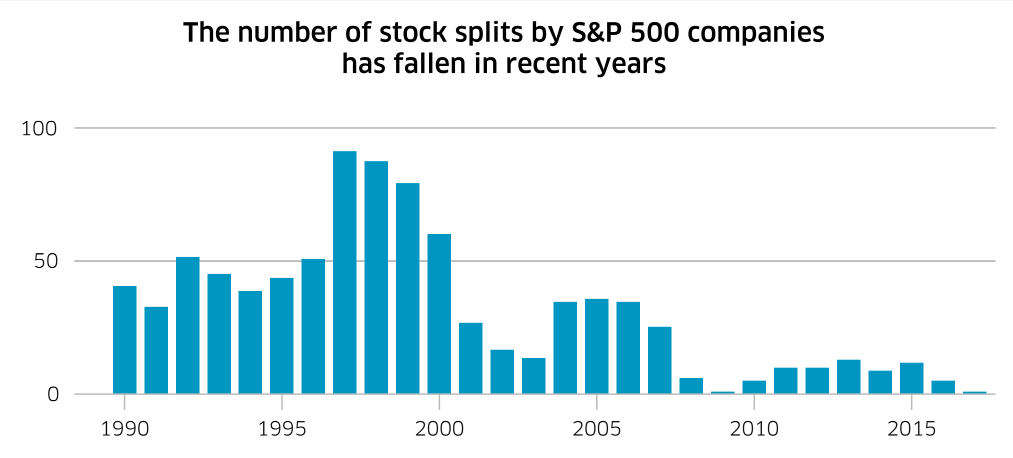
13 See, e.g https://www.nasdaq.com/article/the-data-is-already-out-there-to-design-better-markets-cm1100953

On the other hand, too small of a tick size can result in increased volatility and a reduction in price competition that impairs price discovery, thus once again creating an imbalance between providers and takers of liquidity. Today's one-size-fits-all approach to tick size is particularly suboptimal for small and medium growth companies as it can stunt growth by unnecessarily degrading market quality.

The way companies think about their stock price and whether to split their stock has changed drastically over the last two decades, leading to the recent phenomenon of an increase in high priced stocks. Nasdaq supports a more flexible tick size regime that considers key variables, such as average daily volume and price. If implemented properly, optimal tick sizes has the potential to increase liquidity, promote quote competition, and reduce trading costs – all of which will serve to protect investors by improving market quality.

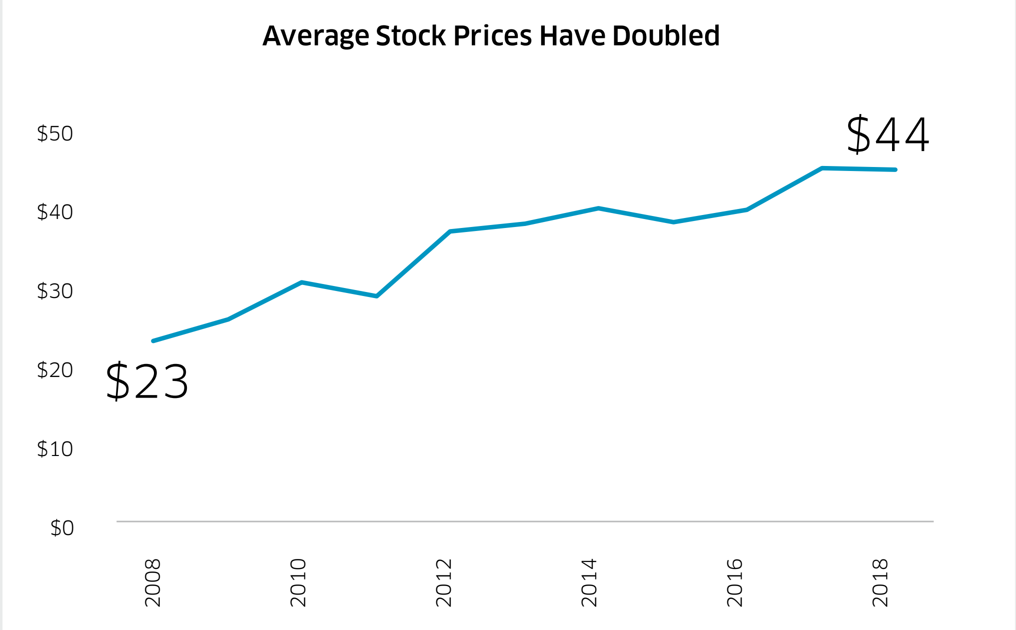
CHART 8: Stock Splits have declined and stock prices are rising.

Data shows that since 2007, stock splits have become far less popular.



Source: Wall St Journal

Since then the average stock price has almost doubled, and the average price of an S&P500 stock is now $119. As we showed in Chart 7, that leads to wider spreads and more odd-lot trading which is decreasing the tradability of stocks which has been shown to increase the costs of capital.



Source: Nasdaq Economic Research, Bloomberg data

Nasdaq supports an intelligent approach to odd-lot display that considers share price, notional value, and other relevant determinants.

A smarter minimum tick size regime will also enable a better path forward for assessing the right level for fees and rebates. Government-mandated caps on transaction fees and related rebates could then be adjusted to align with the different minimum tick sizes. Our collective, primary goal should be to ensure that market incentives are designed to maximize liquidity and price competition while minimizing the potential for market distortions or increasing the perception of conflicts in routing. The current SEC proposal for the access fee pilot strives for important change, but does not properly align pricing and rebates with the costs of capital, thus creating new distortions that could fundamentally harm liquidity and widen spreads even further for smaller companies. Our proposal seeks to create better alignment of interests and costs across the wide spectrum of companies in the public markets.

- **Update Odd-lot Display to Reflect Modern Markets.** As a consequence of the rise in stock prices and the inflexible tick sizes noted above, we have experienced an increase in odd-lots. The prescriptive definition of a 100-share round lot is out of step with today's markets and it has the potential to distort the trading interest and prices investors see. Technology-driven market changes warrant a review of the trading interest eligible to be displayed as part of the national best price, protected in the market, and accessible to investors. [See chart 7 and 8]. Consider three quotations: 2,500 shares of a $10 stock; 250 shares of a $100 stock; and a 25 share of a $1,000 stock. All have a "notional" value of $25,000 but only the first two contribute to price discovery and only the first two are price-protected.

  Nasdaq supports an intelligent approach that considers share price, notional value, and other relevant determinants. For instance, perhaps whether a quote from a particular market is displayed in the SIP feeds could be based on the notional value of that quote rather than the number of shares it represents.

  Investors are currently able to get more information regarding odd-lots on individual data feeds from the exchanges. Investors would be better served if the SIP and proprietary feeds were harmonized with regards to odd-lots and provided the most accurate reflection of prices.[14] Nasdaq supports adding odd-lots to the NBBO

14 Nasdaq recently updated how it represents multiple instances of odd-lots on the SIPs by aggregating odd-lots into a round lot and displaying the aggregated value as Nasdaq's best price. See Nasdaq Rule 4756(c); see also Securities Exchange Act Release No. 84671 (Nov. 28, 2018), available at https://www.sec.gov/rules/sro/nasdaq/2018/34-84671.pdf and the BBOs of each Exchange, but it must be done smartly to avoid unintended consequence. For instance, does it make equal sense to display and protect 25 shares of a $1 stocks, a $100 stock, and a $1,000 stock? We think it is best to align the display and protection with value represented by the order.

We welcome the opportunity to work with the investor community and regulators to find the best way to reflect true investor buying and selling interest in the SIP monopolies and through the proprietary exchange feeds.

More Choice for Individual Long-Term Investors

Technology has provided retail investors with access to a wealth of data and choice that was unheard of a generation ago. However, outdated and rigid regulations prevent firms and vendors from fully leveraging technology to offer innovative new products and services. A number of straightforward regulatory reforms to update the SIPs can unlock an even greater wave of choice and opportunity for retail and long-term investors to ensure that they can compete on a level playing field in tomorrow's markets.

- **Revisit the SIP** Government's role is rarely to mandate a monopoly. The SIPs are a historical anomaly that runs counter to more than a century of pro-competition, anti-monopoly legislation and judicial precedent. Regulation interfering in natural competitive behavior must be carefully driven by specific policy goals and well-supported, clear outcomes.

  In this case, SIPs were originally created in the 1970s, an era when modern technology was in its infancy. SIPs were created under a Congressional mandate to promote a national market for the trading of equity securities. Over time, the exchanges created three consolidated "tapes" – one for NYSE-listed stocks, another for stocks listed on AMEX and other regional exchanges, and later, a third for over-the-counter stocks that evolved into the SIP for Nasdaq-listed stocks. That created three bureaucratic, government-mandated monopolies, each with arcane rules and governance, designed in a drastically different time in the evolution of exchanges.

  The purpose of the SIPs was to ensure that competition for trading among exchanges could occur without harming the ability for investors to receive the market information that they needed to make an informed investment/trading decision. Therefore, they were created primarily to provide the National Best Bid and Offer and the Consolidated Last Sale across all markets trading the same stocks.

  Almost 15 years ago, as part of the creation of Regulation NMS, the scope of the SIP was examined again in light of new trading rules that were introduced to create even more competition among exchanges and alternative trading venues. At that time, the Order Protection Rule was introduced, and it was purposefully decided that order protection would apply only to the BBO of exchange, rather than the depth of book of each exchange. Had the Commission applied depth of book price protection, the US markets would be burdened by even stronger SIP monopolies.

  Instead, the Commission decided to embrace competition among exchanges and other trading venues. Therefore, it codified into the rules that the SIPs were only required to contain the data needed for firms to comply with the Order Protection Rule – the NBBO, the exchange BBOs, and the Last Sale. It then specifically stated that the exchanges were free to compete to sell their proprietary data on market terms based on competitive forces.[15] Now, almost 40 years since the SIP's inception, it is again time to revisit the SIP.

The SIP monopoly should be reviewed to ensure that it only includes data to meet regulatory mandates.

15 See, e.g., SEC Rule 603(b), 17 CFR 242.603 ("Any national securities exchange, national securities association, broker, or dealer that distributes information with respect to quotations for or transactions in an NMS stock to a securities information processor, broker, dealer, or other persons shall do so on terms that are not unreasonably discriminatory")

- **Remove Extraneous Data from the SIPs.** The SIP monopoly should be reviewed to ensure that it only includes the data needed to meet regulatory mandates, which in turn must match the needs of investors. This means not forcing the industry to process and consume content they neither want nor need, including:

  - Remove Over-the-Counter Bulletin Board ("OTCBB") data from the Nasdaq SIP. OTCBB data was included in the Nasdaq SIP at its inception in 1990, when FINRA operated the SIP and Nasdaq as a single, integrated system. Since that time, the SIP was fully separated from Nasdaq systems in 2002, and Nasdaq registered as an independent exchange in 2006. Additionally, the OTCBB business has substantially declined versus competitors such as OTC Markets Group.

    And yet, OTCBB data remains a part of the Nasdaq UTP Plan and it continues to be earmarked at over six percent of all Nasdaq UTP revenue. In 2008, the Operating Committee for the Nasdaq UTP Plan unanimously supported and formally submitted Amendment 21 to remove OTCBB data, but the Commission never acted on it.[16] A strong case can be made that the revenue allocated to FINRA for OTCBB data should be reallocated to investors. This would enable the Operating Committee to reduce all SIP fees by six percent.

  - Remove "concurrent use" data from the CTA SIP. The CTA Plan contains an idiosyncratic provision that benefits individual stock exchanges rather than serving the purposes of the SIPs. Section XIII of the CTA Plan permits the dissemination of data unrelated to the core mission of the CTA SIP, such as the dissemination of data for corporate bonds and indexes.[17] While the mere presence of this "concurrent use" data does not harm investors, it inappropriately leverages the monopoly power of the CTA SIP and the government mandate that created it. It allows exchanges to grow proprietary businesses on the back of a government mandated distribution vehicle.

    Keeping the SIP true to its purpose of providing only that data that supports a regulatory mandate would continue to exclude data, such as depth of book or auction data, that serves competitive purposes amongst the exchanges, but does not meet a rule-based regulatory requirement.[18] Excluding data that does not serve a clear regulatory mandate would also ensure customers do not pay for more data than they need, such as the current surcharge for OTCBB data.

16 Amendment 21, which the Operating Committee unanimously approved and filed with the Commission, was published for comment and remains pending today, nearly nine years later. See https://www.sec.gov/rules/sro/nms/2010/34-62021.pdf .

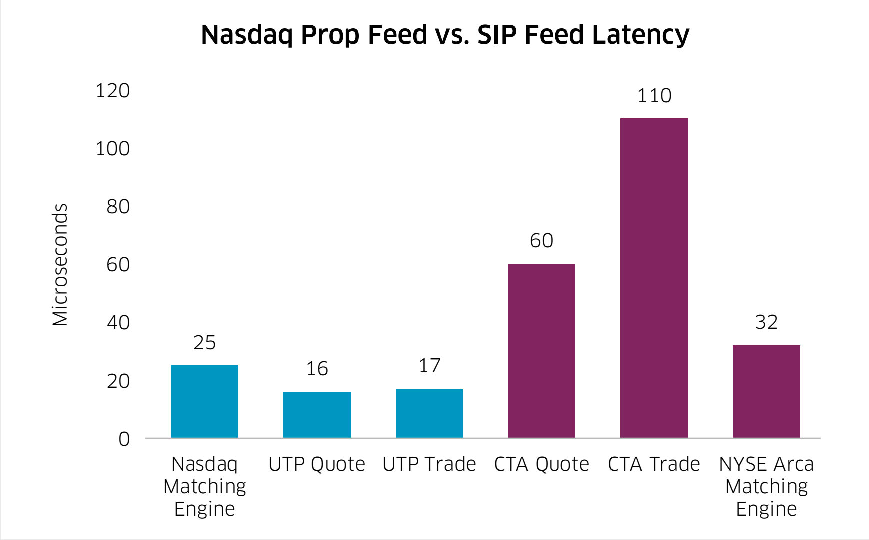
17 Available at https://www.nyse.com/publicdocs/ctaplan/notifications/trader-update/CTA%20Plan%20-%20Composite%20as%20of%20August%2027,%202018.pdf.

18 Nasdaq recognizes that there are divergent, strongly-held views about adding depth-of-book data to the SIP and on a Trade At rule. We should respect both positions in the market structure of tomorrow.

Distribute the SIPs, and Consolidate the Plans that govern them: The Nasdaq SIP runs on state-of-the art technology, requiring just 16 microseconds of processing time (on par with Nasdaq's proprietary exchange feeds), and provides retail investors with inexpensive, easily accessed, valuable data.[19] Nonetheless, there exists a perception, real or not, that investors are disadvantaged by the cost or location of the SIP.

CHART 9: SIP now processes quote data much faster than the time it takes to transmit around the network, and well inside the timeframe the SEC's defined as "de-minimis".

Technological improvements have sped all aspects of the market. The SIP's are not slow. In fact, the UTP SIP now publishes an NBBO in less time than the Nasdaq matching engine can match and order and return a fill, both of which are much faster than the time it takes for orders to travel from other venues to the SIP.



Source: Nasdaq Economic Research, UTP Plan, CTA Plan

To address this perception, Nasdaq supports:

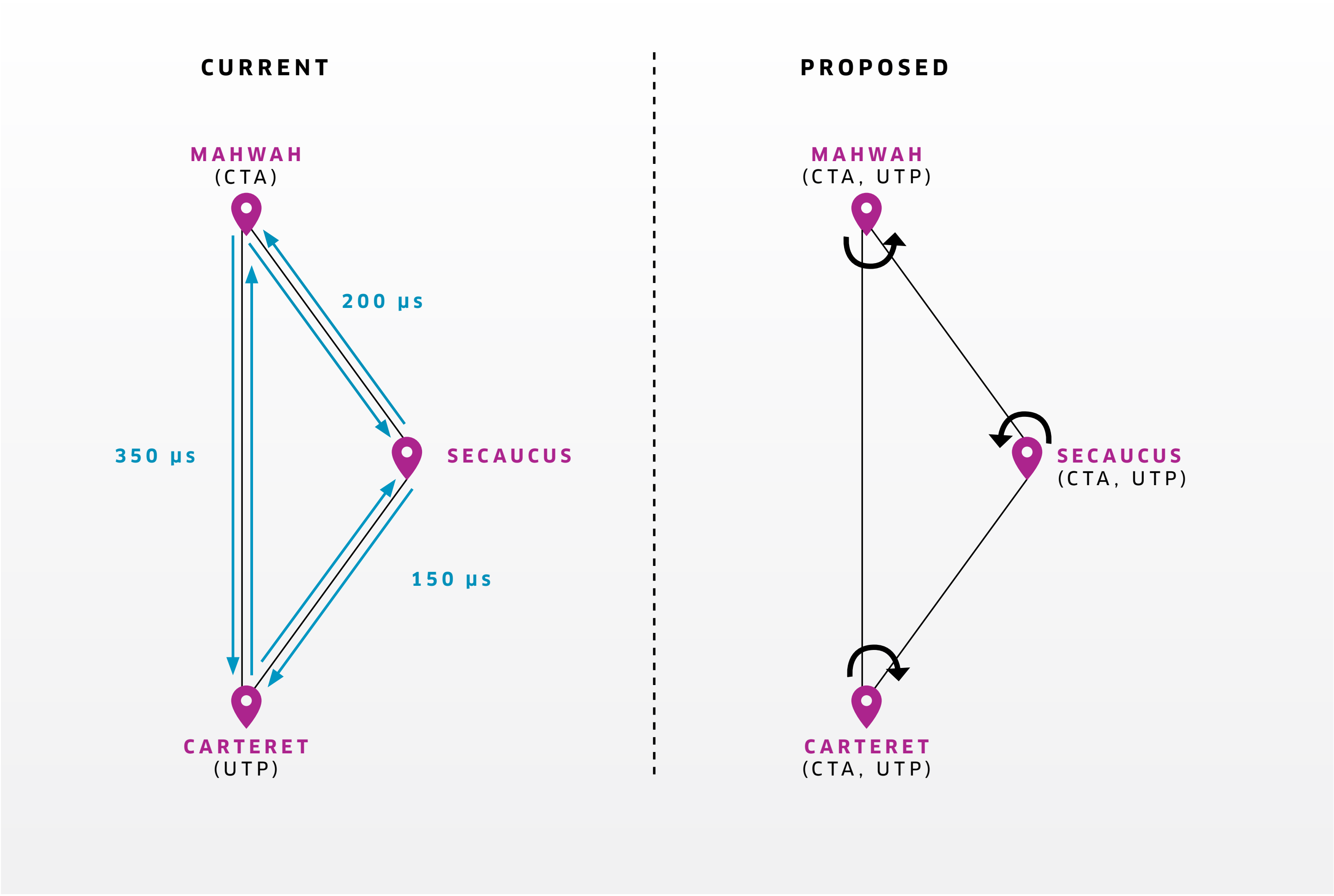
- **Establishing Distributed SIPs.** The SIP Operating Committees are developing plans to replicate the current SIP technology in multiple, major data centers, including Mahwah, Carteret, Secaucus, and potentially Chicago. Exchanges would then send their regulatory data to each instance of the SIPs, and each SIP would calculate a National Best Bid and Offer (NBBO). Due to physics of speed/latency and specific physical configurations within each data center, the NBBO calculation at any given microsecond would differ slightly coming from each data center. These slight differences would require adaptation of Commission rules, such as the rules governing national market system plans and the calculation of the NBBO, as well as updated guidance on the Duty of Best Execution.

  Distributed SIPs would reduce time spent transmitting quote information between an exchange (and firms) located in one data center and a SIP (and other firms) located in a different data center. Some investor advocates claim – wrongly in Nasdaq's view - this transmission time creates an unfair disparity between consolidated data feeds and proprietary exchange feeds. Others claim firms would spend less money on connectivity, potentially pooling their resources in one data center rather than maintaining trading infrastructure at multiple data centers.

  Regardless of the rationale, investors have claimed the right to choose where to obtain consolidated data. Nasdaq believes investors should have that choice, too. The SIPs will remain a government-mandated monopoly, but a distributed SIP is an important first step in the direction of choice.

19 The CTA SIP that governs the data for NYSE- and AMEX-listed stocks, on the other hand, currently operates with over 100 microseconds of latency, which is not up to the standard that investors have come to expect in the modern markets.

The diagram below demonstrates that some market participants would save between 400 and 700 microseconds of data transmission time if each major colocation center included an instance of the SIP technology. For example, SIP data recipients located in Secaucus currently receive Tape B quote updates on BZX only after it has travelled to Mahwah, been processed by SIAC, and returned to Secaucus. This takes ~480 microseconds, ~400 of which are due to travel time. If instead a SIAC instance were located in Secaucus, the market data update would be subject to the 80 microsecond processing time. Participants currently transmitting data between Mahwah and Carteret would save 700 of the 720 microseconds that round-trip currently takes; between Carteret and Secaucus, the time savings would be 500 of the 520 microseconds of total transmission time.



Nasdaq recommends charging customers based on actually using the data in a manner consistent with the category, rather than by whether the person works for a bank, brokerage or advisory company.

- **Combining the SIP processors and administrators into a single SIP.** Nasdaq supports the SIP Operating Committee's ongoing work on Distributed SIPs and will become a more vocal advocate for it. However, while that work is being completed, Nasdaq recommends that serious consideration be given over the long term to consolidating the national market system plans and network processors to create a single consolidated data feed for all U.S. equities.

  When the Commission originally fashioned the National Market System, each SIP was created and registered separately. As a result, there were three consolidated data feeds: one for stocks listed on the New York Stock Exchange, one for the American Stock Exchange (and all regional exchanges), and a third for Nasdaq. NYSE and Amex are commonly-owned, and all exchanges trade all exchange-listed stocks, the same three consolidated feeds still exist, though their governance has been harmonized somewhat.

  Nasdaq supports considering a single consolidated tape for all exchange-listed equities. Now that all exchanges trade all listed stocks, there no longer exists a rational basis for maintaining separate network processors and administrators based on historical listings decisions. It is time to remove this historical anomaly. Nasdaq generally prefers to reduce the power of the monopoly SIPs; we especially object to preserving duplicative, inefficient, costly monopoly SIPs.

  By consolidating the tapes, we can harmonize the technology infrastructure that supports the SIPs and more can be aligned. The markets will become simpler, and investors and firms will save money.

- **Redefine Professional and Non-Professional Users.** For many years, market data fees have differed for various categories of users. Exchanges have argued and the Commission has accepted that it is equitable to allocate market data costs across a diverse group of users by distinguishing between them based upon their ability to pay for the data (professional versus non-professional), the value they extract from the data (displayed on a screen versus non-displayed usage by a server), and the volume of data they purchase (tiers and enterprise caps), among others.

  While these distinctions add flexibility for firms consuming data, each line we draw, each distinction we make complicates market data administration and adds costs, especially for retail brokerage firms managing millions of investor accounts. Exchanges and firms enter into lengthy contracts, negotiate detailed customer reporting regimes, draft complicated policies, and deploy complex technological solutions to support this flexibility. This often leads to ambiguity and disputes. The greatest difficulties have arisen from the distinction between "professional" and "non-professional" data users.

  The definition of pro and non-pro is outdated and must be redefined to better reflect the status of industry professionals versus retail non-professionals.

  Nasdaq recommends charging customers based on actually using the data in a manner consistent with the category, rather than by whether the person works for a bank, brokerage or advisory company. A custodial or administrative employee shouldn't be considered a professional user simply because he or she works at a major bank; likewise, a person trading hundreds of thousands of dollars daily at a home office shouldn't be considered a non-professional retail investor. For example, if a person owns a plumbing service in the legal form of a limited liability company or LLC and attempts to register that LLC as a market data customer, she will be charged a professional price even if the LLC has no connection with trading. It is time to eliminate these disparities. Finding the right balance in the definition will be important. We are prepared to modernize the definition for the benefit of Main Street investors and the brokers who serve them.

- **Reward Transparency:** Prior to 2005, revenue attributable to consolidated data sales was distributed among the exchanges according to the trades and shares each exchange executed as a percentage of the whole. No market data revenue was allocated based on quotations displayed on the exchanges. In Regulation NMS, the Commission determined that such market data revenue should be used to encourage and reward the public display of quotations. [20] To accomplish this, the Commission determined market data revenue should no longer be completely determined according to trade executions; it was to be evenly split between trade executions and displayed quotations.

  The reallocation of market data revenue has worked well, but needs improvement. Over time, certain exchanges skewed the expected allocation of revenue by attracting displayed quotations without executing a commensurate number of trades. In essence, the revised SIP revenue allocation formula now rewards displayed quotes that add little to no value compared to other displayed quotations.

  Nasdaq recommends the SIP revenue allocation formula be modified to reward displayed quotes where investors receive an execution. If the goal of consolidated data is to improve market quality, the revenue allocation formula should aim to improve the quality of quotes on public exchanges, where available liquidity is always on display and an execution can be accomplished. All quotes are important but quotes that are actually executed add more information and value to the market in the form of price discovery and transparency. The revenue allocation formula should be adjusted to reflect this.

  Nasdaq would welcome a dialogue with the industry to understand how best to identify displayed quotations that actually lead to trade executions, and also to determine whether more revenue should be allocated to displayed quotations.

- **Clarify the Vendor Display Rule:** Nasdaq, on behalf of the industry, has been asking Commission staff for the last four years to clarify the Vendor Display Rule because a No Action Letter in 2015 created ambiguity and confusion.[21] Nasdaq believes the No Action Letter misstates the rule and contradicts clear statements the Commission made when liberalizing the rule in Regulation NMS. In the absence of further clarity from the Commission, firms serving Main Street clients have been left in the dark. We estimate this has cost Main Street investors tens of millions of dollars in incremental data costs over the last four years, as well as underscores the rule's complexity, rigidity, and intrusiveness.

- **Expand SIP Voting Rights:** Nasdaq shares the securities industry's view that, as a public good, the SIP should be governed by a partnership between the exchanges and the industry, with appropriate government oversight and extensive public transparency. This partnership must recognize the exchanges' unique regulatory responsibilities and ensure that exchanges can fulfill them.

  Today, under Regulation NMS, all voting rights are held by exchanges and FINRA, with advisory input from the industry.[22] The Operating Committee selects six non-voting Advisors.[23] Advisors may submit their views on Plan matters prior to a decision by the Operating Committee on such matters; they do not have the right to vote on those matters.

If the goal of consolidated data is to improve market quality, the revenue allocation formula should aim to improve the quality of quotes on public exchanges, rewarding displayed quotes where investors receive an execution.

20 See Reg NMS Approval Order, supra at n. 7.

21 See Denial of No-Action Request under Rule 603(c) of Regulation NMS (July 22, 2015), available st https://www.sec.gov/divisions/marketreg/mr-noaction/2015/bats-one-072215-vendor-display.pdf Whereas Rule 603(c) restricts the VDR to contexts were trading decisions can be "implemented", the No Action Letter applies it to contexts when trading decisions can be "made", which contradicts the plain language of the rule and expands its application substantially.

22 See 17 CFR 242.608.

23 Each SRO also has the right to select one member of the Advisory Committee that is not employed by or affiliated with any participant or its affiliates or facilities. Nasdaq does not recommend granting voting rights to these SRO-selected Advisors.

Nasdaq recommends two non-exchange votes for members of the brokerage, institutional and investor community.[24] Under Nasdaq's proposal, the two Advisor votes would be apportioned equally among the six Advisors, meaning each Advisor would have one-third of a vote. Advisors would vote on any new or modified product, fee, contract, or pilot program that is offered or used pursuant to the Plan, but not on Plan amendments that require unanimous support as that could undermine the exchanges' ability to fulfill their regulatory obligations. Advisors would also vote along with the exchanges to select new, replacement advisors.

Allowing non-exchange voting rights will significantly impact how SIP Operating Committees conduct business. In order to cast informed votes, non-exchange advisors will need access to relevant information, some of which has previously been withheld as confidential. Additionally, non-exchange advisors will be called upon to view Plan matters through a regulatory lens, as much Plan business involves regulatory responsibilities that have previously been administered only by exchanges.

These changes will require Operating Committees to build on recent improvements in Plan transparency by further enhancing policies governing conflicts of interest and confidentiality. Voting Advisors will be required to adhere to existing conflicts of interest and confidentiality policies, such as those that require exchanges and their affiliates to recuse themselves when they might receive a unique benefit not shared with other exchanges.

Conclusion

Nasdaq was founded as the world's first electronic stock market nearly half a century ago on the conviction that technology could create markets that are fast, efficient, and fair. Today, our public markets have evolved and advanced in ways unthinkable just a few years ago; yet the rules and regulations that govern markets have failed to keep pace. This failure impacts nearly every market participant: retail investors, institutional investor, and publicly-traded companies.

We can do better – and for the sake of our markets and our economy, we must.

Nasdaq recognizes some of the proposals we offer will spark robust debate. We welcome this. Free markets flourish when buyers and sellers with various perspectives and investment strategies come together on equal footing in the process we call price discovery. Price discovery does not anoint outright winners and losers; rather, it ensures a consensus view of value somewhere in the middle. We believe the much-needed reforms in market regulation would benefit from something akin to the price discovery process in which many ideas come together to find common ground. We encourage all participants to join us in an exchange of views we believe will ultimately lead to new market structures that better serve all parties.

We also consider this to be an ongoing project. With this report as our foundation, we will expand on our thinking with a series of detailed proposals we will share with regulators, elected officials, investors, issuing companies, and market participants. As market conditions evolve, we will provide new perspectives. As we did with Revitalize in 2017, Nasdaq seeks to transform our proposals into action. Over the coming months, we will call for technology-powered improvements for public investors, especially Main Street investors and retail-facing institutions, and for issuers of all size and type. Some will call on Congress, others the Commission, and still others will be intended to launch a dialogue with investors.

Together, we will shape the equity markets of the future.

24 This exceeds the recommendation of the Trading Venues Regulation Subcommittee of the Commission's Equity Market Structure Advisory Committee, which did not recommend even a single vote for non-SROs. Recommendation available at: https://www.sec.gov/spotlight/emsac/recommendations-enhanced-industry-participation-sro-reg-matters.pdf.

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