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VIA ELECTRONIC MAIL

July 22, 2020

Ms. Vanessa Countryman
Secretary
U.S. Securities and Exchange Commission
100 F Street NE
Washington, DC 20549

> Re: **Proposed Rule on Market Data Infrastructure (Release No. 34-88216; File No. S7-03-20, RIN 3235-AM61)**

Dear Ms. Countryman:

The comment period for this Proposed Rule ended weeks ago, yet the concerns expressed by issuers, broker-dealers, academics, and exchanges continue to echo: the rulemaking process that is occurring in the midst of the COVID-19 pandemic is hasty, if not reckless, and the radical revisions to the National Market System that the Commission proposes are unsubstantiated. The record is paper thin, it reveals profound disagreements among stakeholders, it lacks data-driven analysis, and it omits from consideration viable alternative proposals. Nasdaq therefore recommends that the Commission slow down, engage with the industry and conduct further analysis before embarking on changes that could harm Main Street investors and public companies and hinder the operations of the U.S. equity markets.[1]

The Record Is Too Thin and Reflects Profound Disagreement Among Stakeholders.

The industry has not truly engaged on Reg NMS II. This was predictable (and actually predicted) because the comment period ran from March 24th through May 26th, in the middle of a global storm that has cost over 135,000 American lives thus far and 40 million American jobs, and shifted millions more workers into unprecedented work-from-home conditions that took months to settle. The Commission received fifteen separate requests to extend the comment period, from key constituencies such as trading firms (American Securities Association and Securities Traders Association of New York), issuers (National Investor Relations Institute and TechNet), and large ("buy-side") investors (Institutional Traders Advisory Committee). The Commission met each extension request with silence.

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[1]   This letter supplements Nasdaq's comments submitted on May 26, 2020, incorporated by reference herein. See Letter from John A. Zecca, Executive Vice President, Chief Legal and Regulatory Officer, Nasdaq to Vanessa Countryman, Secretary, SEC re Proposed Rule on Market Data Infrastructure (Release No. 34-88216; File No. S7-03-20, RIN 3235-AM61).

As a result, the Commission received a mere 48 substantive comments,[2] and engaged in 37 meetings,[3] on a far-reaching and revolutionary market structure Proposal. At this point in its consideration of the comparable Reg NMS rule-making, the Commission had received over 1,200 comment letters. When the Commission proposed the Transaction Fee Pilot in 2018, it received 150 comment letters and logged 63 meetings with Commissioners and staff — and even that record did not enable the Commission to establish a clear problem or solution sufficient to sustain the Transaction Fee Pilot in federal court. This lack of engagement will hamper the ability of the Commission to meet its "statutory obligation to determine as best it can the economic implications of a proposed rule."[4]

Nasdaq believes that a fundamental failure of the comment period — and the resulting failure of the Proposal — stems from the striking lack of prior public engagement. The Commission largely disregarded the recommendations of its Equity Market Structure Advisory Committee from 2016 and 2017. The Commission held no hearings or roundtables on most major elements of the Proposal, including round lots, order protection, and locked and crossed markets. It held a single market data roundtable in October 2018, but it issued no summary of the proceedings, made no preliminary findings or conclusions, conducted no data analysis drawn from that roundtable or from other sources readily available to it, and held no public follow-up discussions in the ensuing eighteen months.[5] The lack of prior industry engagement is reflected in the dearth of total comment letters, the dearth of substantive analysis in the filed comment letters, and in direct statements of many commenters noting that more discussion of the Proposal and its sub-parts is needed.

If the sheer paucity of comments is not sufficient evidence of the flawed nature of this rulemaking (and we submit it is), the contents of the comments assuredly are: the 48 substantive comments filed to date have rejected portions of the Proposal that are so significant and

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[2]   The Commission has received 61 non-duplicative comment letters to date; 13 of these comment letters are non-substantive. Nine of the 13 solely requested an extension of time. An additional two letters analyzed the 597-page proposal in a single page of text. See Letter from Anthony H. Steinmetz re File No. S7-03-20 (February 17, 2020), available at https://www.sec.gov/comments/s7-03-20/s70320-6830777-208611.htm; Letter from Jared Albert re File No. S7-03-20 (May 26, 2020, available at https://www.sec.gov/comments/s7-03-20/s70320-7228540-217031.htm. The final two non-substantive comment letters simply do not address the Proposal. See Letter from D. Daw (April 18, 2020), available at https://www.sec.gov/comments/s7-03-20/s70320-7090244-215710.htm, Letter from Tom Heffernan, Vice President, Trading Block (June 17, 2020), available at https://www.sec.gov/comments/s7-03-20/s70320-218409.htm.

[3]   The SEC website shows that Commissioners and Commission staff engaged in 37 meetings with market participants. These meetings do not appear to have expanded the discussion, however, as 35 out of the 37 meetings were with parties that had already submitted comment letters.

[4]   See N.Y. Stock Exch. LLC v. SEC, 2020 U.S. App. LEXIS 18860 at *25 (D.C. Cir. June 16, 2020) (quoting Chamber of Commerce of U.S. v. SEC, 412 F.3d 133, 143, 366 U.S. App. D.C. 351 (D.C. Cir. 2005)); see also id. at *24-*25 ("In applying the arbitrary-and-capricious standard of review, we must assure ourselves that an agency has examined the relevant data and articulated a satisfactory explanation for its actions including a rational connection between the facts found and the choice made.").

[5]   The Commission also held market structure roundtables on thinly traded securities and Main Street investor fraud, neither of which is reflected in the Proposal.

interwoven that the Proposal cannot survive. Specifically:

- Just five commenters supported the Commission's proposed treatment of the Order Protection Rule; 24 others opposed it outright.

- Of 31 total comments on the proposed introduction of round lot tiers, fewer than half (14) supported the actual proposal; 11 comments supported a definition different from what the Commission proposed, and 6 opposed it.

- On competing consolidators, over a third (15) of the 41 commenters opposed it. Two entities that have considered launching a competing consolidator expressed serious reservations about their ability to do so under the current proposal. Some commenters expressed concern that the existence of competing consolidators could raise complex compliance issues, or raise costs.

- Just 24 commenters supported adding depth-of-book data to the definition of core data, and the same number supported adding auction data. None of these commenters discussed how to compensate exchanges for the government appropriation of exchange proprietary data and intellectual property.[6]

On this last topic, the commenters — many of whom represent entities with an interest in lowering data fees below the market-clearing price — did not address the likely harm to competition from the Proposal, which denies choice to investors by replacing competition among exchanges for the sale of depth-of-book data with a government-mandated rate-making body that sets the price for five levels of depth-of-book data, effectively requiring investors to take these levels at a fixed price. A more market-based approach would allow for the kind of choice that the Proposal denies investors.[7]

The Record Lacks Data-Driven Analysis.

Any proposed rule, particularly one of the scope and breadth of Reg NMS II, requires data-driven analysis to quantify the costs and benefits of the proposal. As the Commissioners have said themselves,[8] rulemaking must be based on a clear articulation of the market

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[6]   In addition, market participants engaged in public discussions of the NMS II Proposal have commented on its complexity and the need for further public engagement. See, e.g., Financial Information Services Association of SIIA ("FISD") Webinar, Consolidated Market Data: Analyzing Changes from the SEC, (roundtable discussion in which panelists representing a variety of stakeholders commented on the complexity of the NMS II proposal, noting that the Proposal might be significantly improved through greater industry engagement), available at https://webinar-portal.net/recordings/fisd_webinar_200625.mp4.

[7]   Further, the SEC has not engaged in any data-driven analysis to justify its decision to include five levels of data or, indeed, any other aspect of the proposed changes to depth-of-book data. Rather, the Commission relies on data and information from interested parties to justify government intrusion on behalf of a small group of potential beneficiaries.

[8]   See, e.g., Testimony of Chairman Jay Clayton, Hearing before the Committee on Banking, Housing and Urban Affairs, United States Senate on Oversight of the U.S. Securities and Exchange Commission, (September 26, 2017) ("I believe that a thoughtful and methodical, data driven approach to market structure will help us fulfill our

imperfection to be addressed, and the expected economics of the new market infrastructure. The analysis should quantify the costs and benefits to all participants, particularly those who may receive outsize benefits or suffer disproportionate harm, and assess whether the proposal might adversely affect price discovery, market quality, or capital formation. A data-driven analysis of this type is essential for ensuring that the proposal does not harm the market.

The Commission has not itself engaged in this type of data-driven analysis, but rather has disproportionately relied on data presented by one side of the market data debate. For example, the Commission cites a SIFMA estimate that "between 2010 and 2018 data fees charged by some exchanges went up by three orders of magnitude or more."[9] Analyses by disinterested parties, however, suggest that SIFMA's statements are incomplete, inaccurate, and misleading, and that there is not an ongoing problem requiring government intervention. An independent report by Burton-Taylor Consulting, which is unaffiliated with any of the exchanges, suggests that fees have been quite stable over a five year period, reporting that U.S. Equity Market Data revenues in 2019 increased only 1.1% over 2018 levels, with a compound annual growth rate of 3.9 percent since 2014.[10] Reliance on the analyses of interested parties on one side of the debate falls short of the type of reasoned decision-making required by the Exchange Act and the Administrative Procedure Act.[11]

The lack of data-driven analysis by the Commission permeates the Proposal. Consider the Commission's proposal to redefine round lot sizes. Commenters have opined that the round

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mission to protect investors, maintain fair, orderly and efficient markets and facilitate capital formation."), available at https://www.sec.gov/news/testimony/testimony-clayton-2017-09-26; Testimony of Elad Roisman, Hearing before the Committee on Banking, Housing, and Urban Affairs, United States Senate (Senate Hearing 115-349), 115th Congress (July 24, 2018) ("I think cost-benefit analysis is a critical tool for all agencies. It enables them to determine what the costs and benefits of every rule are and then hopefully tailor to maximize benefits and minimize costs."), available at https://www.congress.gov/115/chrg/CHRG-115shrg32320/CHRG-115shrg32320.htm; Hester M. Peirce, "Statement by Commissioner Peirce on Proposed Resource Extraction Rule," Harvard Law School Forum on Corporate Governance (December 21, 2019) ("But what we need is careful, data-driven analysis of how to best balance the risks investors face in these markets with the potential rewards of participation.") available at https://corpgov.law.harvard.edu/2019/12/page/3/; Allison Herren Lee, "Statement on Proposed Amendments to the Exempt Offering Framework," (March 4, 2020) ("We should gather data, and bring critical thought and informed analysis to the relationship between our public and private markets before proceeding with rulemaking, and especially before proceeding with rulemaking that would erode critically important differences between the two markets."), available at https://www.sec.gov/news/public-statement/lee-statement-proposed-amendments-exempt-offering-framework.

[9]   See Securities Exchange Act Release No. 34-88216 (Feb. 14, 2020), 85 FR 16726 (March 24, 2020) (the "Proposal" or the "Proposed Rule"); see also id., 85 FR 16726, 16819 ("Proprietary data fees have increased significantly over the past decade, as suggested by SIFMA estimates that show that, for some broker-dealers, data fees charged by some exchanges went up by three orders of magnitude or more between 2010 and 2018.").

[10]   Burton-Taylor International Consulting, "Information Services Strategies of U.S. Exchange Holding Companies 2020" at 4 (January 2020).

[11]   See Susquehanna Int'l Grp., LLP v. SEC, 866 F.3d 442, 443 (D.C. Cir. 2017) (holding that the Commission's exclusive reliance on an analysis by an interested party "does not represent the kind of reasoned decisionmaking required by either the Exchange Act or the Administrative Procedures Act.").

lot proposal is overly complex, both in the number of different round lot sizes[12] and in the application of order protection to some round lots and not others.[13] The Commission did not undertake the data-driven analysis of the round lot proposal that it claims to want for all proposed rule-makings, and released no independent studies or research dedicated to or supporting its proposal. As a result, the Commission cannot say based upon either its own analysis or the comment letters that the potential costs imposed by the round lots element of the overall Proposal are justified by the benefits the Commission speculates may be created.[14]

There is a similar lack of data-driven analysis addressing the proposal to replace a single National Best Bid and Offer ("NBBO") with multiple NBBOs. On June 22, 2020, Director of the Division of Trading and Markets, Brett Redfearn, apparently responding to criticism of the multiple NBBO proposal, stated that "the idea that there is only one NBBO does not reflect today's reality," commenting that many market participants calculate their own NBBO, which

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[12]　See Letter from Jeffrey T. Brown, Senior Vice President, Charles Schwab & Co., Inc. to Vanessa Countryman, Secretary, SEC re Proposed Rule on Market Data Infrastructure (May 26, 2020), available at https://www.secgov/comments/s7-03-20/s70320-7235180-217089.pdf ("Charles Schwab letter") (commenting that the proposed round lot definition would "lead to unnecessary operational complexity"); Letter from Ellen Green, Managing Director, Equity and Options Market Structure, to Vanessa Countryman, Secretary, SEC, re File No. S7-03-20 (May 26, 2020), available at https://www.sec.gov/comments/s7-03-20/s70320-7235189-217109.pdf ("SIFMA Letter"); Letter from Joseph J. Barry, Senior Vice President, State Street Financial Center, to Vanessa A. Countryman, Secretary, SEC, re Proposed Rule on Market Data Infrastructure (May 26, 2020), available at https://www.sec.gov/comments/s7-03-20/s70320-7235202-217051.pdf (urging the Commission to defer action on adding the new approach to round lots and order protection until it can gather more public input and fully evaluate the implications of the proposed changes).

[13]　See Charles Schwab letter ("[d]istinguishing between NBBO and PBBO is needless complexity that will serve little investor protective purpose"); Letter from Thomas M. Merritt, Deputy General Counsel, Virtu Financial, to Vanessa Countryman, Secretary, SEC, re Proposed Rule on Market Data Infrastructure (May 26, 2020), available at https://www.sec.gov/comments/s7-03-20/s70320-7229972-217068.pdf (recommending further study or a pilot before applying the Order Protection Rule to newly defined round lots); Letter from Tyler Gellasch, Executive Director, Healthy Markets Association, to Vanessa Countryman, Secretary, SEC re Market Data Infrastructure (May 26, 2020), available at https://www.sec.gov/comments/s7-03-20/s70320-7235195-217095.pdf; SIFMA letter; Letter from Hubert DeJesus, Managing Director, Global Head of Market Structure and Electronic Trading, BlackRock, to Vanessa Countryman, Secretary, SEC re Market Data Infrastructure (May 26, 2020), available at https://www.sec.gov/comments/s7-03-20/s70320-7229951-217048.pdf (commenting that a separate NBBO and PBBO creates "complexity and confusion"); Letter from Stephen John Berger, Managing Director, Global Head of Government & Regulation Policy, Citadel Securities, to Vanessa Countryman, Secretary, SEC, re Market Data Infrastructure (May 26, 2020), available at https://www.sec.gov/comments/s7-03-20/s70320-7235178-217088.pdf; Letter from Tim Lang, Chief Executive Officer, ACS Execution Services LLC, to Vanessa Countryman, Secretary, SEC, re Market Data Infrastructure (May 26, 2020), available at https://www.sec.gov/comments/s7-03-20/s70320-7246783-217228.pdf; Letter from Dorothy Donohue, Deputy General Counsel, Investment Company Institute, to Vanessa Countryman, Secretary, SEC re Market Data Infrastructure (May 26, 2020), available at https://www.sec.gov/comments/s7-03-20/s70320-7246790-217250.pdf (commenting that proposed OPR changes are likely to cause complexity and confusion).

[14]　Similarly, the Commission proposes that depth-of-book data five price levels below and above the protected bid and protected offer be distributed as core data. See Proposed Rule, 85 FR 16726, 16753. The Commission has released no independent studies or research analyzing the impact of this proposal or addressing the five price level demarcation.

may differ depending on the location of that participant.[15] Respectfully, Director Redfearn is missing the point. Today, each security has a single NBBO emanating from the exclusive SIP for that stock; the existence of multiple consolidated displays at multiple broker-dealers or vendors does not change that fact. The creation of multiple NBBOs from multiple SIPs raises complex compliance and cost issues that are not acknowledged in the Proposed Rule. There is certainly no analysis of the impact of multiple NBBOs on the industry, or the possibility that multiple NBBOs could lead to investor confusion, which may undermine investor confidence in the market.

The Commission should have undertaken — and might still undertake — an alternative approach based on data analysis and consensus-building. As discussed in further detail below, Nasdaq gathered market participants to consider proposals for modernizing minimum quoting requirements. The group used a data-driven approach to evaluate options, and arrived at an Intelligent Tick proposal, which received support from buy-side, retail, market-maker and broker representatives. The Commission should take the same approach to develop the next generation of the National Market System.

Rather than undertake such an approach, however, which would necessarily include an in-depth analysis of the impact of the proposal on competition, the SEC appears to have solicited the Department of Justice ("DOJ" or the "Department") to submit a comment letter on May 26, 2020.[16] That comment letter, however, does not reflect a substantive analysis of competition in the markets in question. Instead, it appears that the SEC simply provided the DOJ with a set of assumptions upon which the DOJ based its letter.

The Department's reliance on the Commission's conclusory assertions is evident throughout the document:

- "*According to the SEC*, the Proposal 'should help ensure that all market participants have ready access to […] market information in order to facilitate participation in today's markets.'"[17]

- "*As the SEC observes*, Prop Data feeds supply information exclusive to the exchange where that data originates, so other data vendors are not able to compete against it for a particular data feed." [18]

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[15]   See https://www.sec.gov/news/speech/clayton-redfearn-modernizing-us-equity-market-structure-2020-06-22.

[16]   See Comments by Makan Delrahim, Assistant Attorney General, Department of Justice, In the Matter of Release No. 34-88216, File No. S7-03-20 Market Data Infrastructure (May 26, 2020) ("DOJ Comment Letter"), available at https://www.sec.gov/comments/s7-03-20/s70320-7228535-217028.pdf.

[17]   See id. at 1 (emphasis added).

[18]   See id. at 4 (emphasis added).

- "*[T]he SEC notes that* Prop Data feeds are more expensive than SIP Data, and indicates that it has identified evidence of increases in data fees for Prop Data that outpace increases in data fees for SIP Data."[19]

- "Because SIPs are not constrained by competition, *the Department agrees with the SEC's statement* that they 'have lower incentives to reduce their costs.'"[20]

- [I]f SIPs faced competition, *the SEC's expectation* that 'competition among competing consolidators would put downward pricing pressure on […] fees' is consistent with the Department's philosophy about antitrust enforcement, i.e., competition typically results in lower prices and higher quality products and services."[21]

DOJ's comment letter, written in reliance on the SEC's assumptions, differs significantly from two prior analyses of competition in the market for exchanges' products and services based on the DOJ's own investigation. First, in 2011, the DOJ analyzed a proposed transaction that would have resulted in a combination of Nasdaq and the New York Stock Exchange ("NYSE") and found that it "would have substantially eliminated competition for . . . real-time proprietary equity data products."[22] Later that same year, in suing to block a possible combination between Deutsche Börse and NYSE Euronext that would have brought Direct Edge within the same exchange group as NYSE, the DOJ cited a threat to competition in the market for real-time equity market data as one of the bases for its action.[23] The DOJ's letter does not explain the reason for taking a different position today.

There are many competitive issues regarding the Proposed Rule that have not been meaningfully analyzed by the Commission to date, including, among others:

- Will the high fixed costs and economies of scale associated with the distribution of market data result in higher overall costs for consumers?

- Will the existence of large-scale self-aggregators shrink the customer base available to competing consolidators to the point that it is not economically viable for potential consolidators to enter the market?

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[19]   See id. at 4 (emphasis added).

[20]   See id. at 5 (emphasis added).

[21]   See id.

[22]   "NASDAQ OMX Group Inc. and Intercontinental Exchange Inc. Abandon Their Proposed Acquisition of NYSE Euronext After Justice Department Threatens Lawsuit" (May 16, 2011) (available at https://www.justice.gov/opa/pr/nasdaq-omx-group-inc-and-intercontinentalexchange-inc-abandon-their-proposed-acquisition-nyse).

[23]   Complaint, United States v. Deutsche Börse AG and NYSE Euronext (Dec. 22, 2011) (available at https://www.justice.gov/atr/case-document/file/494146/download).

- Will product differentiation, coupled with a relatively small number of competing consolidators, allow some firms to charge a supra-competitive price for premium products? In particular, will the fastest data consolidator be able to charge a rent above the exchange fee based on the importance of latency to certain investors?

- Is competition among all trading platforms, including Alternative Trading Systems such as dark pools, a more effective and efficient constraint on market data fees than the public utility-style ratemaking proposed by the Commission?[24] Do the low barriers to entry by new trading platforms, such as the Members Exchange and the Long-Term Stock Exchanges, further constrain fees and the all-in costs incurred by broker-dealers?

- What is the welfare impact of the Proposal on consumers that have no interest in purchasing, for example, depth-of-book data, and thus may be forced either to buy more data than they want or potentially pay more for the limited data they are currently buying?

- Will the Commission's regulatory action diminish incentives to innovate generally, and for market data products in particular, reducing overall competition and harming consumer welfare?

Competition issues such as these have been raised by market data customers. A retail broker-dealer, for example, expressed "concerns surrounding the current competitive model proposal for 'competing consolidators, given the significant unknowns around data quality, availability, reliability and potential for significant additional cost present in such a model that will not fall under the governance of a new Equity Data Plan," commenting that, "on balance, the potential detrimental impacts of the Proposal significantly outweigh any benefits to the retail investor."[25] An institutional broker-dealer stated that the "costs and complexities likely outweigh the potential benefits of multiple consolidators per tape," and that "multiple consolidators per tape should not be expected to decrease underlying exchange market data fees."[26] A potential competing consolidator even stated that it had "not yet formed an opinion" on whether it would actually become a competing consolidator," because "just because one can

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[24] For a discussion of competition among two-sided markets, see U.S. Delegation to the OECD Competition Committee for the Roundtable on Two-Sided Markets, "Two-Sided Markets, Note by the United States" (June 4, 2009), available at https://www.ftc.gov/system/files/attachments/us-submissions-oecd-2000-2009/roundtabletwosided.pdf; see also, e.g., Ohio v. American Express Company, 585 U.S. __, 138 S. Ct. 2274 (2018) (discussing two-sided market in the credit card industry); see also notes 22 & 23, supra.

[25] See Letter from Joseph Kinahan, Managing Director, Client Advocacy and Market Structure, TD Ameritrade, to Vanessa A. Countryman, Secretary, SEC, re Market Data Infrastructure, File No. S7-03-20, Release No. 34-88216 (June 1, 2020), available at https://www.sec.gov/comments/s7-03-20/s70320-7261549-217687.pdf.

[26] See Letter from Stephen John Berger, Managing Director, Global Head of Government & Regulatory Policy, Citadel Securities to Vanessa A. Countryman, Secretary, SEC re Market Data Infrastructure (File No. S7-03-20) (May 26, 2020), available at https://www.sec.gov/comments/s7-03-20/s70320-7235178-217088.pdf.

enter a business does not mean that it's worth entering."[27]

In light of the critical questions presented, a thorough competition analysis is essential. The absence of such an analysis throws into doubt the adequacy of the Commission's consideration of the Proposed Rule, as well as the Commission's ability to demonstrate that it engaged in reasoned decision-making process.[28]

The Commission Fails to Consider Alternative Proposals.

Nasdaq has suggested one data-driven alternative in particular that the Commission should have considered more deeply. One year ago, Nasdaq published TotalMarkets: Blueprint for a Better Tomorrow,[29] which proposed targeted, structural changes to the U.S. equity markets to modernize regulations and improve the trading experience for smaller companies and individual and institutional investors. As hoped and expected, TotalMarkets triggered productive discussions between and among Nasdaq, industry members, and investor representatives on topics ranging from concentrating liquidity, to modifying the order protection rule, to exploring distributed and competing consolidators, and beyond. The deepest discussions centered on Nasdaq's proposal to modernize quoting tick sizes for the markets to better recognize different liquidity characteristics of different stocks, from micro- to mega-cap and from thinly- to actively-traded.

Last fall, Nasdaq gathered sophisticated, thoughtful market participants representing a broad swath of the market to consider alternatives and to develop specific recommendations for the SEC to consider. The group met a dozen times, considered numerous models in use around the world, examined alternative theoretical models, analyzed the data supporting the models, and ultimately reached consensus around a single model. The group released a paper entitled Intelligent Ticks[30] that recommended adopting a market-based approach where no tick would be wider than a stock's average quoted spread. This consensus approach, which obtained buy-in from buy-side, retail, market-maker and broker representatives, ensures that no spread would be forced wider than that at which it currently trades. The goal is to reduce costs for investors through tighter and more stable spreads. Further, as stock trading characteristics change over time, market forces would determine in which of six "Intelligent Tick" size buckets an equity would trade: .5cps, 1cps, 2cps, 5cps, 10cps, 25cps.

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[27]   See Letter from Stephen J. McNeany, Chief Executive Officer, ACTIV Financial Systems, Inc. to Vanessa A. Countryman, Secretary, SEC, re Market Data Infrastructure (File No. S7-03-20) (May 26, 2020), available at https://www.sec.gov/comments/s7-03-20/s70320-7245557-217211.pdf; see also id. ("We are concerned with two aspects of the Proposal: whether Competing Consolidators will be able to compete with the existing SRO SIP operators who are likely to become Competing Consolidators themselves, and the costs of doing so.").

[28]   Cf. Skidmore v. Swift & Co., 323 U.S. 134, 140 (1944) (explaining that the weight accorded to an agency pronouncement depends upon "the thoroughness evident in its consideration, the validity of its reasoning, its consistency with earlier and later pronouncements" and its overall persuasiveness).

[29]   See https://www.nasdaq.com/docs/Nasdaq_TotalMarkets_2019_2.pdf.

[30]   See Nasdaq, Intelligent Ticks, A Blueprint for a Better Tomorrow, available at https://www.nasdaq.com/docs/2019/12/16/Intelligent-Ticks.pdf

Phil Mackintosh, Nasdaq's Chief Economist, who was critical to the development of Intelligent Ticks, has also issued several notes expanding on the data-driven approach and logic of Intelligent Ticks. For example, on January 9, 2020, he published <u>Why Intelligent Ticks Make Sense</u>,[31] which explains how the Intelligent Tick proposal could help address the proliferation of odd lots, the problems of display and non-display, and the resulting impact on queue length. On January 23, 2020, he published <u>A Data Driven Intelligent Ticks Proposal</u>,[32] which focused first on the MiFID tick regime and how it could be modified and simplified to benefit the U.S. market; it also discussed the very different trading characteristics and tick-related problems facing exchange-traded products. These articles built upon earlier work that Mr. Mackintosh published, such as <u>The Data is Already Out There to Design Better Markets</u>,[33] in which he first analyzed the data emanating from the SEC's Tick Pilot Study regarding spreads, price improvement, and odd lots. Mr. Mackintosh continues to think deeply about market mechanics related to odd lots, round lots, and tick sizes, publishing <u>NMS II: An Odd Solution for the Odd Lot Problem</u>.[34]

Nasdaq is submitting <u>Intelligent Ticks</u> and Mr. Mackintosh's supporting materials for the record of this Proposal, and is joining the calls of other market participants for the Commission not to adopt the Proposal in its current form. Rather, the Commission should withdraw the Proposal and engage in the industry dialogue and consensus-building that ordinarily precedes rule-making, including by fostering a dialogue around <u>Intelligent Ticks</u>.

<p align="center">*   *   *</p>

The Record is thin, reveals profound disagreements among stakeholders, lacks data-driven analysis, and fails to consider many viable alternatives. It also presents numerous legal infirmities discussed in our previous comment letter. As such, it is not ready for promulgation. Nasdaq believes that a consensus-based approach built around incremental improvements to the National Market System, such as suggested in Nasdaq's <u>TotalMarkets</u> proposal, is the best avenue for improving the National Market System without sacrificing the benefits that the system currently provides. We therefore urge the Commission to set aside the current proposal, and join us and the rest of the industry in a dialogue to research and develop a set of reforms that address the problems of the current system while preserving those aspects of the National Market System that make the U.S. equity markets the envy of the world.

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[31]   See https://www.nasdaq.com/articles/why-intelligent-ticks-make-sense-2020-01-09.

[32]   See https://www.nasdaq.com/articles/a-data-driven-intelligent-ticks-proposal-2020-01-23.

[33]   See https://www.nasdaq.com/articles/the-data-is-already-out-there-to-design-better-markets-2019-02-15.

[34]   See https://www.nasdaq.com/articles/nms-ii%3A-an-odd-solution-for-the-odd-lot-problem-2020-05-07.

Sincerely,

Joan C. Conley
Senior Vice President and Corporate Secretary

cc: Chairman Jay Clayton
       Commissioner Hester M. Peirce
       Commissioner Elad L. Roisman
       Commissioner Allison H. Lee
       Brett Redfearn, Director of the Division of Trading and Markets

Attachments:

       Why Intelligent Ticks Make Sense
       A Data Driven Intelligent Ticks Proposal,
       The Data is Already Out There to Design Better Markets
       NMS II: An Odd Solution for the Odd Lot Problem.

Market Makers

Subscribe now to receive the latest insights and analysis on the transformative forces
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Why Intelligent Ticks Make Sense

Some of you might have seen Nasdaq's recent Intelligent Tick Proposal. We first mentioned intelligent ticks in 2017 as part of our Revitalize Blueprint, and again in 2019 in Total Markets. This newest proposal puts forward a more detailed, data-driven proposal for regulators and the industry to consider.

Two basic questions are: Why do intelligent ticks make sense? And how would they fix market structure?

This topic could sold a number of the issues we examined over the past year: including the fall in stock splits, inverted routing and rebates, and the increasing persistence of odd lot trades.

We've shown that spreads currently form a U shape

You may recall from earlier analysis of spreads and stock prices that we saw that spreads formed into a U shape across all market cap spectrums. That means spreads are more expensive for stocks with prices that are too low (tick-constrained), and also for stocks whose prices are too high (round lot-constrained).

Chart 1: The U shape for spreads is not what it seems when you analyze routing economics
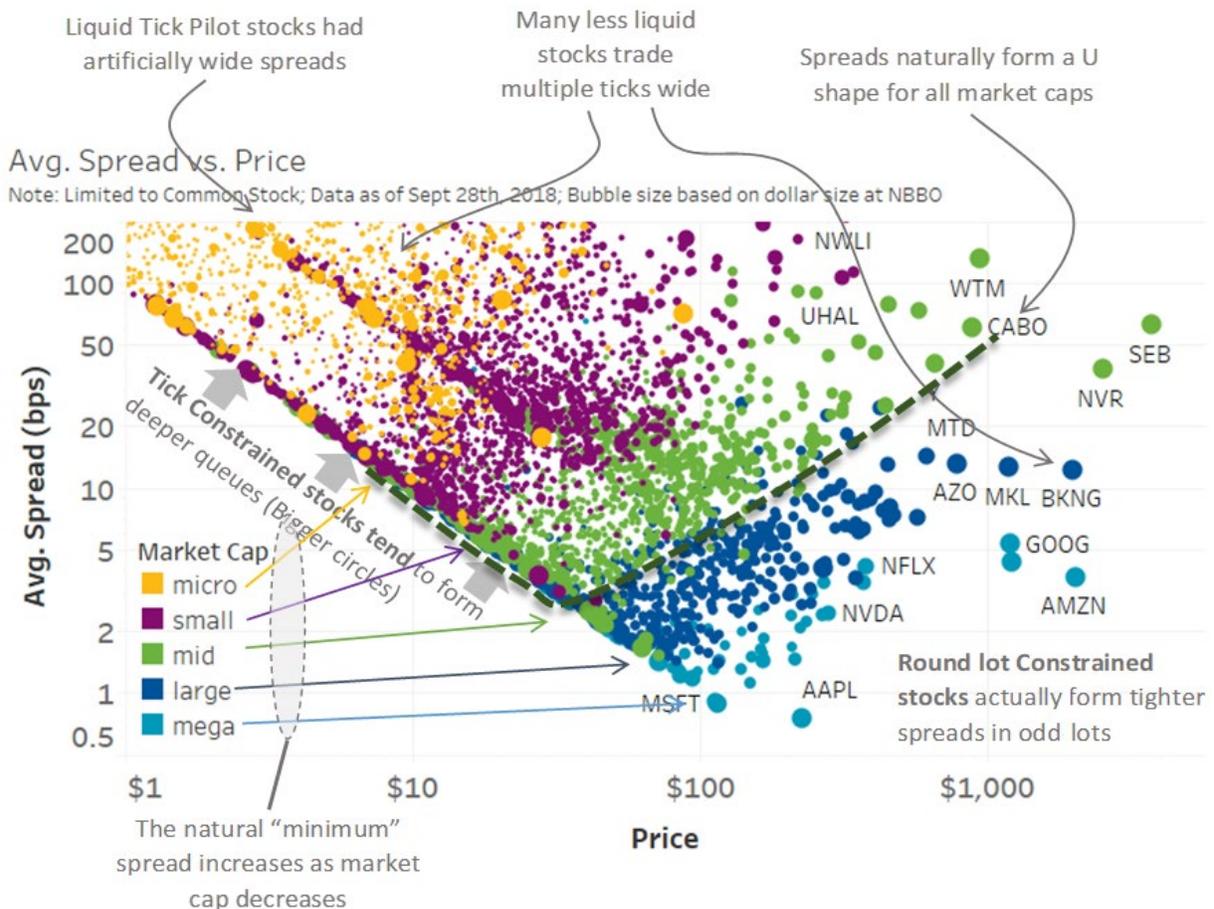
To summarize, what we find is that a one-cent tick size doesn't fit all stocks, because as share prices change, the "return" for capturing spread changes, ultimately becoming economically meaningless as stock prices rise (see Chart 4). This has become a bigger problem over the last decade thanks to the lack of stock splits.

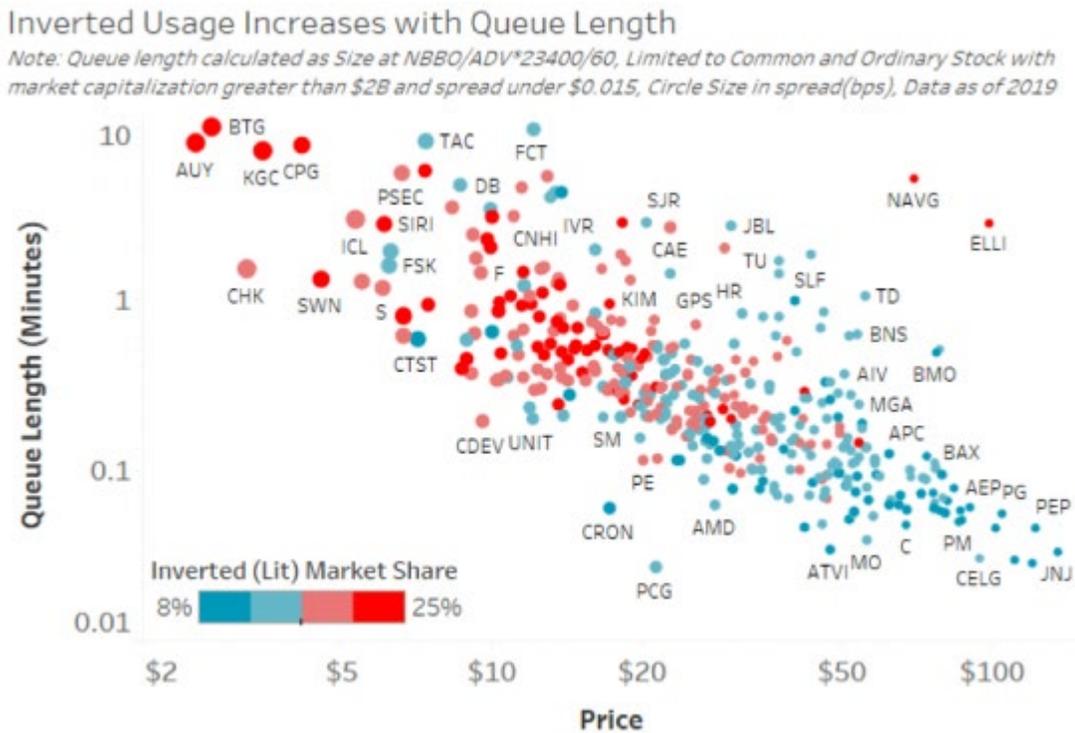## Fragmentation is currently used to solve for the large queue problem

One of the things that tick-constrained stocks cause is long queues, as investors try to minimize spread crossing costs. The downward slope the data in Chart 2 shows that as share price falls (left side of the chart) queues get longer (vertical axis).

However as we've discussed more urgent traders often need to get fills more quickly. The economics of trading allow those traders to pay for queue priority by using inverted venues. While that increases market fragmentation and routing complexity, the data show that inverted market share increases (red color) as queue length rises and price falls. Not surprisingly, these are mostly the "tick-constrained" stocks from Chart 1.

In contrast, many higher priced stocks have queues that average well under 60 seconds and trade far less on inverted venues.

Reducing the tick (or raising the price) of these "tick-constrained" stocks would help them trade more like other stocks, reducing the complexity of queue priority decisions and also fragmentation, and also reducing spread costs for investors. Allowing a half-cent tick is a part of our Intelligent Ticks Proposal.

Chart 2: Inverted market share increases (red color) with queue length (vertical axis)

Inverted Usage Increases with Queue Length

Note: Queue length calculated as Size at NBBO/ADV*23400/60, Limited to Common and Ordinary Stock with market capitalization greater than $2B and spread under $0.015, Circle Size in spread(bps), Data as of 2019

There is an odd (lot) problem right now too

It's interesting that spreads widen (in basis points as well as cents) on higher-priced stocks, causing the U-shaped spread curve in Charts 1 and 4.

This is related to another problem highlighted by the Wall Street Journal and by the SIP committees—odd lots have been increasing. Some have attributed this to algorithms finally becoming agnostic to round lots, a concept developed decades ago to reduce the trades that humans needed to process.

The problem has been accentuated by the lack of stock splits, allowing companies prices to drift much higher than century-long norms. MIDAS data confirms that odd lot trades occur more in high-priced stocks than low-priced stocks. Our own data found that the true NBBO is more likely to be an odd lot as prices rise (Chart 3).

However, in another study, we found that despite the odd-lots on the true NBBO, the average value able to trade was pretty consistent at the true NBBO across all similar stocks.

This indicates these stocks have become "round lot-constrained" on the SIP, with few traders willing to supply "round lot" liquidity at spreads comparable to other stocks (see Chart 5). For example, 100 shares in AMZN is worth close to $200,000, which is "block sized." That's disproportionately large given the average market-wide trade size is below $10,000, representing closer to just five shares of a $2,000 stock (an odd lot).

In short, the industry is starting to ignore the round lot conventions embedded in Reg NMS, but that's not detracting from the inside market size.

Chart 3: Odd lots increase for higher-priced stocks (in conjunction with spreads increasing)

Percentage of time true Nasdaq top of book was less than 100 shares
Note: Based on Nasdaq order data from first week of April, 2019; Limited to S&P 500 Components
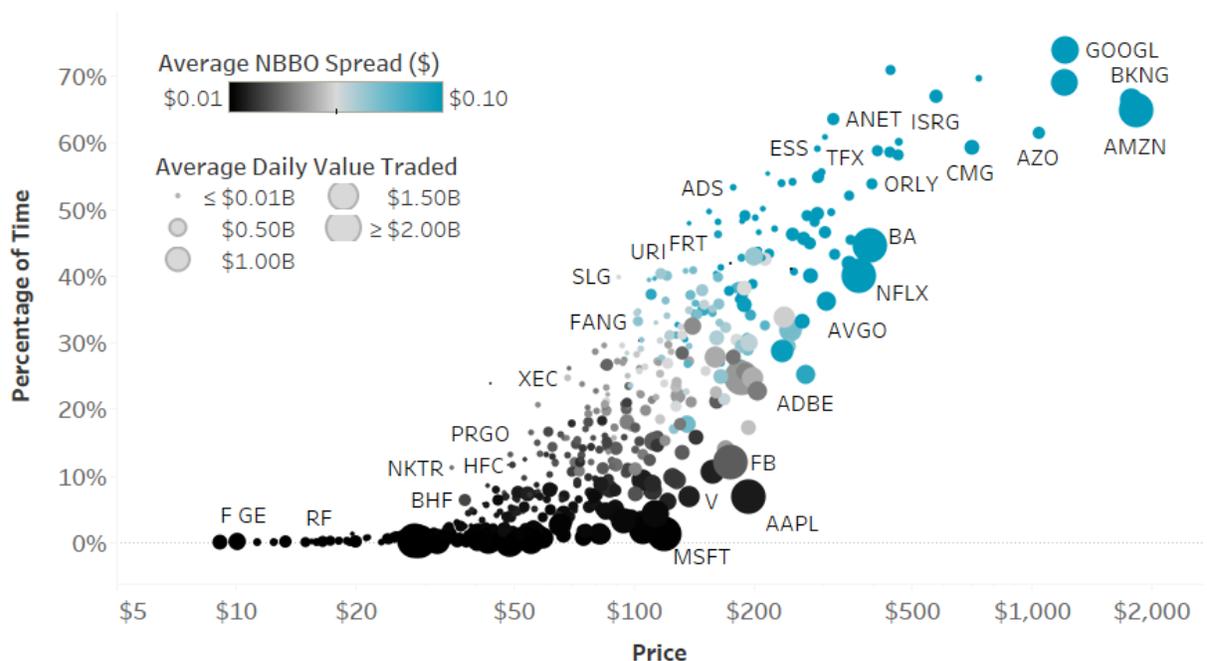
The SIP wants to add odd lots to the tape

The problem with having odd lots inside the NBBO is that not everyone can see the true best bid or offer. It's also possible that some trades are missing the better fills that are available, especially in off-exchange venues which "peg" to the NBBO, as trades at the touch may be crossing much larger spreads than necessary.

One idea from the SIP Operating committee is to add unprotected odd lots quotes to the SIP (remember odd lot trades were added to the SIP back in 2013) as an additional field. However because they would be unprotected, it leaves open the question of whether it will actually fix the problem above. Commenters are clearly torn and raise the following points:

- Adding odd lots is good (because people will know where the true best price is).
- But not protecting them is bad (because people will not be obligated to trade with them).
- Although protecting them is also bad (because there may be immaterial orders making spreads infinitesimally tight (like one share x one share of AMZN just one-cent wide = 0.05bps)
- Which would in turn make best execution metrics for most orders incomparable across stocks and essentially meaningless (Chart 4).

Chart 4: A one-cent tick for all stocks (blue line) creates very different economics as prices change, ultimately representing a meaningless benefit for liquidity providers

Spreads across stock price

Note: Current average spread based on average quoted spread (bps) for large cap companies within each price bucket. Tick spread (bps) represents the average spread if stocks were to trade at the minimum tick across stock price.

Source: Nasdaq Economic Research

This chart also highlights the difference between a tick and a spread:

- A "tick" is the allowable increment for quoting and trading stocks. Currently that's set in NMS Rule 612 at one cent for all stocks, making the value of the tick shrink as prices rise.
- A "spread" is the difference between the bid and offer, which in contrast offers a more consistent return for spread capture (it actually has a U-shape as traders avoid posting round lots at infinitesimally small spreads, instead allowing stocks to quote "multiple ticks" wide).

The Nasdaq Intelligent Tick Proposal

Dynamic tick structures aren't new. They have been used for years by many countries around the world, including all of the European markets, Hong Kong and Japan. Each attempts to ensure that the economic value of a tick is more consistent as stock prices rise. This is usually done by increasing the increment (cents or yen) required between valid bid and offer prices.

Our industry group's Intelligent Tick Proposal differs from those structures in one important way: Rather than define spreads based on stock price or liquidity, we recommend setting ticks based on how each stock trades now. (We will discuss why the group decided to do this in a later post.)

The groupings in the proposal are shown in Chart 5, and range from a half-cent tick to a 25-cent tick. Each dot in the chart represents the current average NBBO spread for the stock (in cents, vertical axis) and the color shows the tick-group that would be assigned. Note that the quoted spread for dots in the half-cent bucket are estimated based on effective spreads we see today (where midpoint fills count as a "halving of the spread").

Importantly all proposed "ticks" are narrower than the current "spread," which means no stock is harmed.

Chart 5: Our proposal sets ticks closer to the natural level of spreads in the market

Illustration of a Market Based Approach

Note: Tick buckets determined by average duration-weighted quoted spread. Illustration based on current quoted spread in the market (2019). Chart is limited to corporate equities priced greater than $2. Data represents an illustration of where we believe stocks might trade after implementing such a proposal.

Source: Nasdaq Economic Research
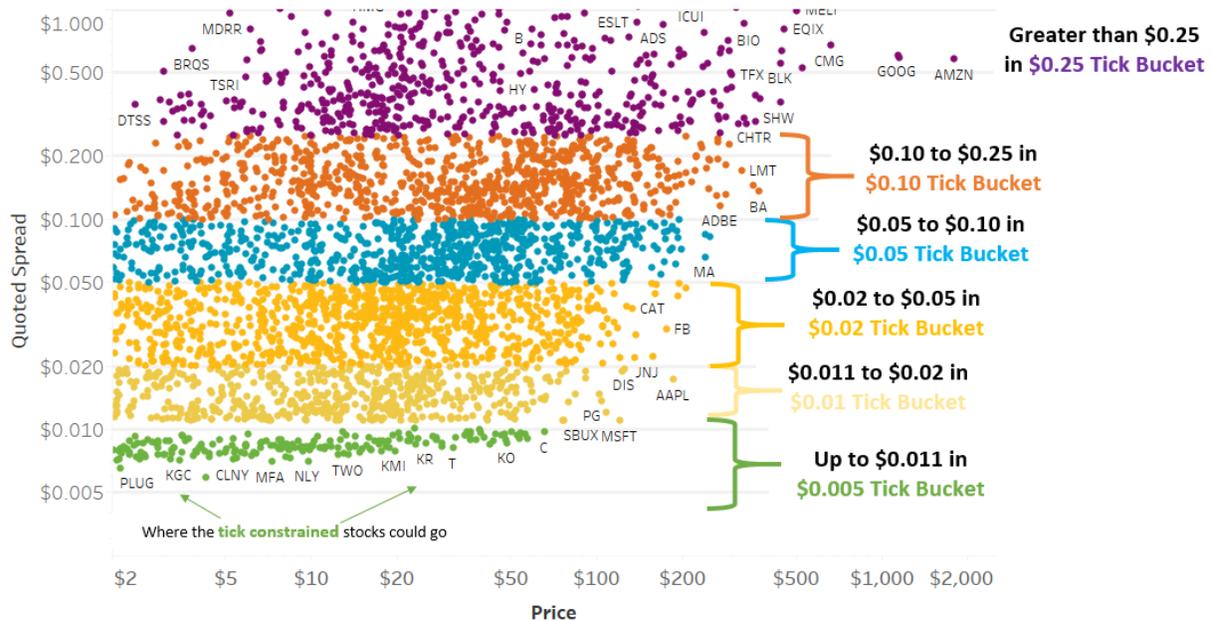
Our Intelligent Ticks Proposal could reduce costs and complexity

The Nasdaq-led industry group's proposal should reduce costs and complexity across the spectrum of stocks:

- First, it would make the economic value of a spread more "equal" across the spectrum of stocks, which in turn should make queues more consistent lengths, simplifying routing and reducing fragmentation.
- Adding a half-cent tick for tick-constrained stocks should allow spreads in those stocks to fall, reducing trading costs for investors.

- There are also some results from the [tick pilot] as well as our own [splits study] that indicate that a wider increment on high priced stocks might stop quotes being "pennied" for uneconomic amounts, which may make the NBBO more competitive, and, in turn, actually make spreads tighter (even though the "tick" is wider than before).

In short, there is data that indicate costs should fall for low- and high-priced stocks, and queue sizes become more consistent, reducing the need to tune routers differently by stock price.

Intelligent Ticks – The Solution to Odd Lot Problem?

Ironically, this proposal might also fix the odd lot problem.

As we found in [V-is-for Volume], the value on the bid and offer is proportionate to the relative spread. Widen the spread and depth increases. Narrow the spread and depth will fall.

Compare [spreads on AMZN to AAPL and MSFT]. All three stocks are very liquid with around $1 trillion market cap. But spreads on AAPL and MSFT are much tighter, at less than 1bps, compared to AMZN which trades over 3bps wide.

Not surprisingly AMZN is one of the stocks that has a [true NBBO that is well inside the SIP] NBBO most of the time. And when we compare the dollar [value of depth on the true NBBO, it's still higher for AMZN] than MSFT, despite being an odd lot.

The problem is that nobody wants odd lots on the NBBO, as AMZN may start to trade one-cent wide but with just a few shares of (meaningless) depth.

However, we can take what we learned in [V-is-for-Volume] to extrapolate how the combination of intelligent ticks and the elimination of round lots might work (see Chart 5).
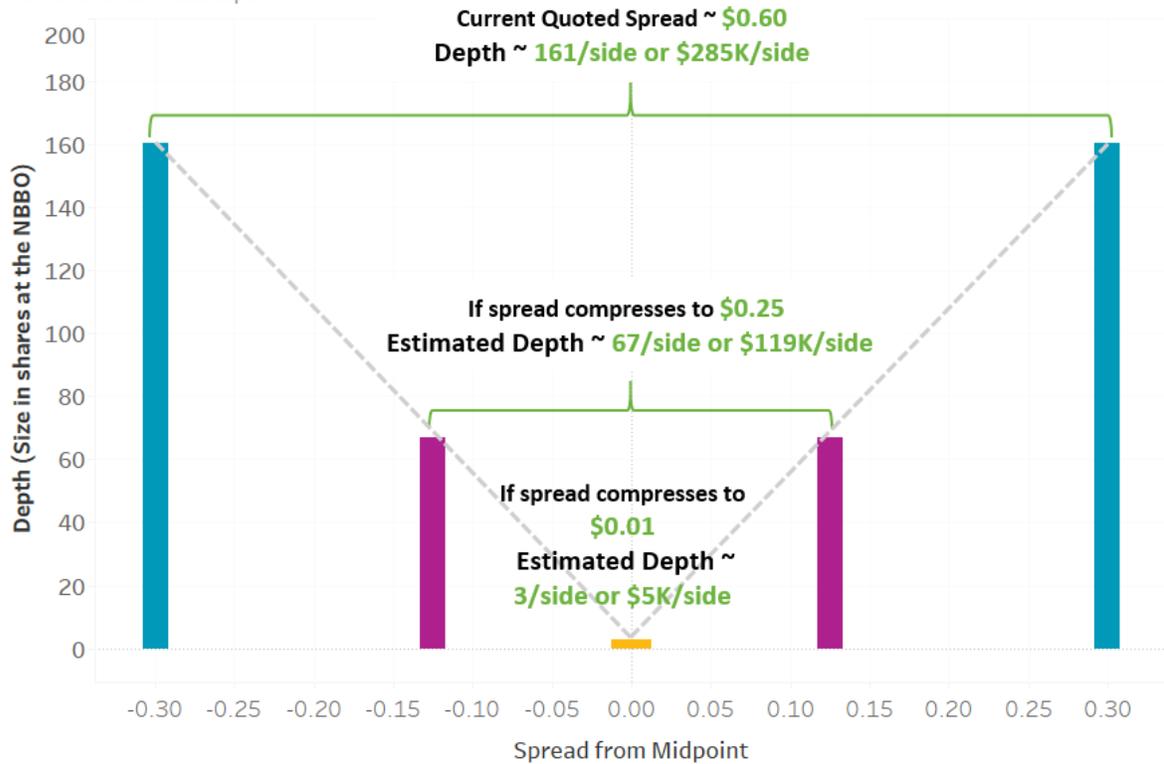
- Right now, the NBBO for AMZN is around 60-cents wide with average notional value of $285,000 on each side of the NBBO.
- However, if all we do is add (and protect) odd lots, then it's likely a one-cent spread will occur some of the time. Our data suggest not only would that represent a meaningless return for spread capture (just 0.05bps), but also the average depth at that spread would be just $5,000.
- In contrast, if we combine intelligent ticks with elimination of round lots, AMZN would have a 25-cent tick. With that minimum spread, the data suggest the odd lots would aggregate to a depth at the inside-quote of around 67 shares or $119,000. That's over 10 times the average trade size and [in line with current depth] across large-cap stocks today.

On that basis, the spread would be worth adding to the SIP NBBO and the value of odd lots would also be worth protecting.

Chart 5: V-shaped supply and demand curve would ensure quotes were "worth protecting"

Estimated AMZN Depth
Note: Current quoted spread and depth based on daily average from September - November, 2019. Please see *V is for Volume* (2019) for more information on estimated depth.

Current Quoted Spread ~ $0.60
Depth ~ 161/side or $285K/side

If spread compresses to $0.25
Estimated Depth ~ 67/side or $119K/side

If spread compresses to
$0.01
Estimated Depth ~
3/side or $5K/side

Source: Nasdaq Economic Research

## How would this affect depth and spreads for all stocks?

We can apply the same math across all stocks. Our estimates of NBBO depth in this new regime show:

- Tick-constrained stocks should see their queues and spreads reduced.
- Wide-spread stocks should see quotes aggregate at levels consistent with how the stock trades now (the dark blue color is roughly horizontal against the vertical notional NBBO size axis).
- High-priced stocks should see enough notional on the new NBBO that odd lots are worth protecting (note AMZN and GOOG are expected to have depth consistent with MSFT and AAPL).
- All stocks should trade with spreads that are attractive to makers while not being a penalty to takers. The blue color shows the minimum tick at around 1bps for all liquid stocks (large circles).

Chart 6: Our estimated spread and notional depth at the new intelligent ticks with no round-lots

Estimated Notional Depth

Note: Estimated depth based on the pro-rated change in depth implied by a compression of the current quoted spread to the minimum tick as put forth by the Nasdaq Intelligent Tick proposal. Average quoted spread and size based on data averaged over September through November, 2019. Symbols limited to corporate equities. Size of bubbles based on daily value traded. Minimum spread is the minimum proposed tick divided by the current price in basis points.
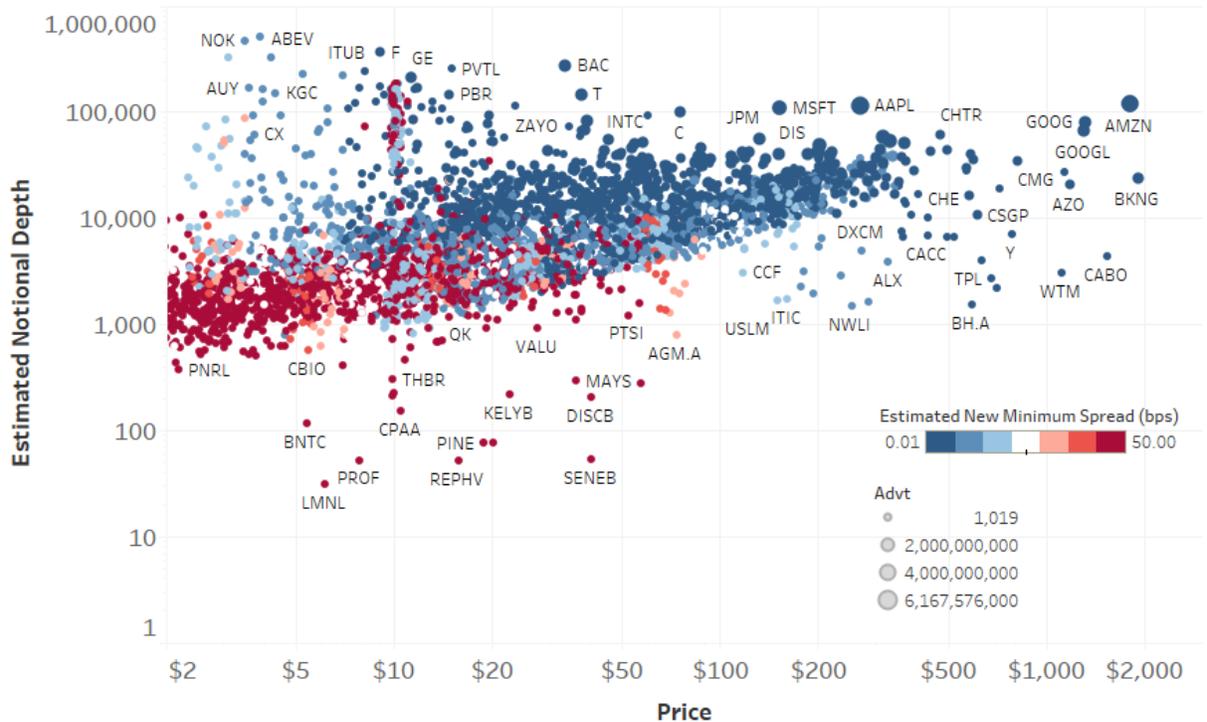
Source: Nasdaq Economic Research

Let's Make Markets Great Again

It's true that stock splits would probably have additional economic benefits:

- Studies suggest corporates could boost valuations and reduce trading costs with stocks splits.
- It would also keep trading even simpler if all stocks were closer to the same price (as more stocks could trade in the one-cent tick).
- It would encourage the removal of other cross-subsidies caused by cents-per-share commissions across disparate stock prices, such as SIRI vs AMZN.
- Companies can set their price at an optimum spread. As we know, each company has its own perfect stock price.

But getting hundreds of companies to split their stocks is hard (and we're not just talking about BRK.A).

The proposals being discussed above would achieve many of the same goals: Equalizing the economics of spread capture, setting queues to more consistent levels, reducing fragmentation and routing conflicts and simplifying the SIP and NBBO, while tightening spreads and reducing the costs of trading.

It would "modernize" the markets. It may even help incentivize corporates to split their stocks back to a one-cent spread.

Let's also remember that we are not the first market to consider relegating round lots to the dustbin of our manual trading history, nor would we be the first to add dynamic ticks.

Many markets already operate with intelligent ticks. We know it's already working. Our markets need to get up to speed.

-end-

Market Makers

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A Data Driven Intelligent Ticks Proposal

Our recent note discussed the merits of our new Intelligent Ticks Proposal.

One of the ways this proposal differs from tick limits set in other countries' markets is to "let the market decide" what tick a stock should have, rather than setting the tick based on changes in a stock's price and/or liquidity.

Today we explain how our industry group came to this idea, and why it works better for all stocks. In addition to Nasdaq participants, this working group included Enrico Cacciatore from Voya Investment Management, John Comerford from Credit Suisse, Chris Iacovella from the American Securities Association (ASA), Mehmet Kinak from T. Rowe Price, Justin Schack from Rosenblatt Securities and Eric Swanson from XTX Markets.

What MiFID does (and doesn't) do well

Recall back when we first analyzed spreads and we suggested the MiFID model seemed to fit where spreads economically "maxed out" in the U.S. market too:

- More liquid stocks could support smaller returns for spread capture than less liquid stocks.
- As prices changed, the tick that was required to equal that return spread also had to change.
- The MiFID matrix of prices, liquidity and ticks creates spreads with a zig-zag pattern that forms a channel where the return for spread capture (in basis points) is roughly the same (Chart 1).
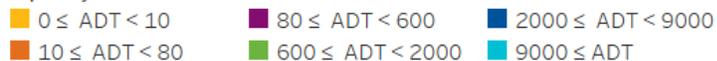
Chart 1: MiFID's tick regime creates a "floor" (in basis points) for spreads that rises as liquidity falls

MiFID Tick Regime
Note: Illustration based on ESMA tick size regime introduced with MiFID II
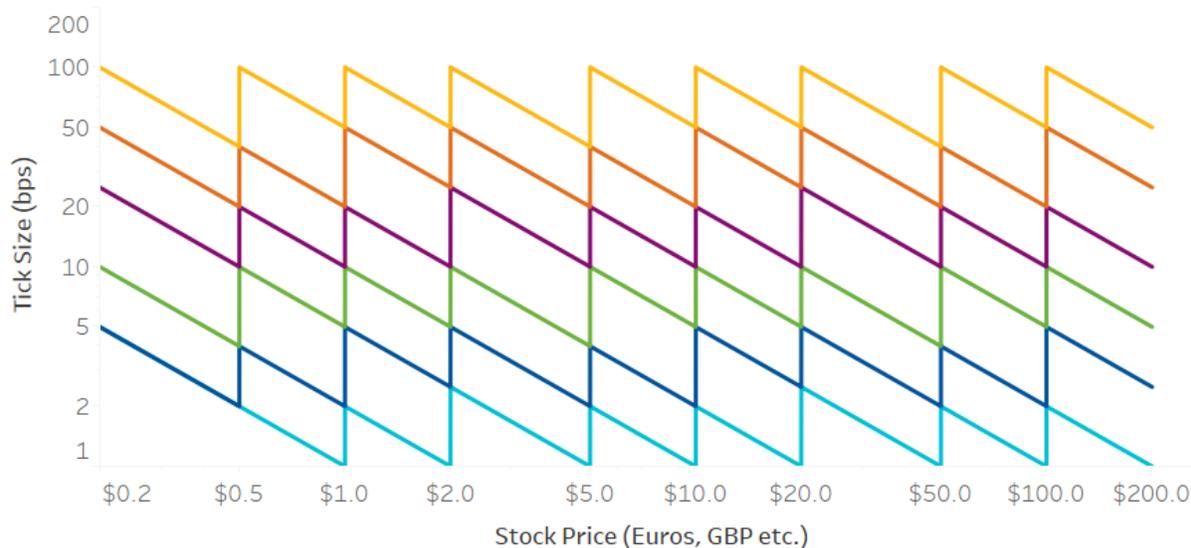
Source: Nasdaq Economic Research

Applying a simplified MiFID in the U.S.

As our group of industry experts contemplated an intelligent tick regime, three important questions were raised:

1. Can we make ours "simpler?"
2. How would it actually work (what spreads would stocks be given)?
3. Are any stocks "worse off?"

To answer the first question we created multiple grids like the one below that simplified the European matrix (Chart 2).

Chart 2: A simplified U.S. intelligent tick regime (in cents)

Hypothetical Tick Proposal
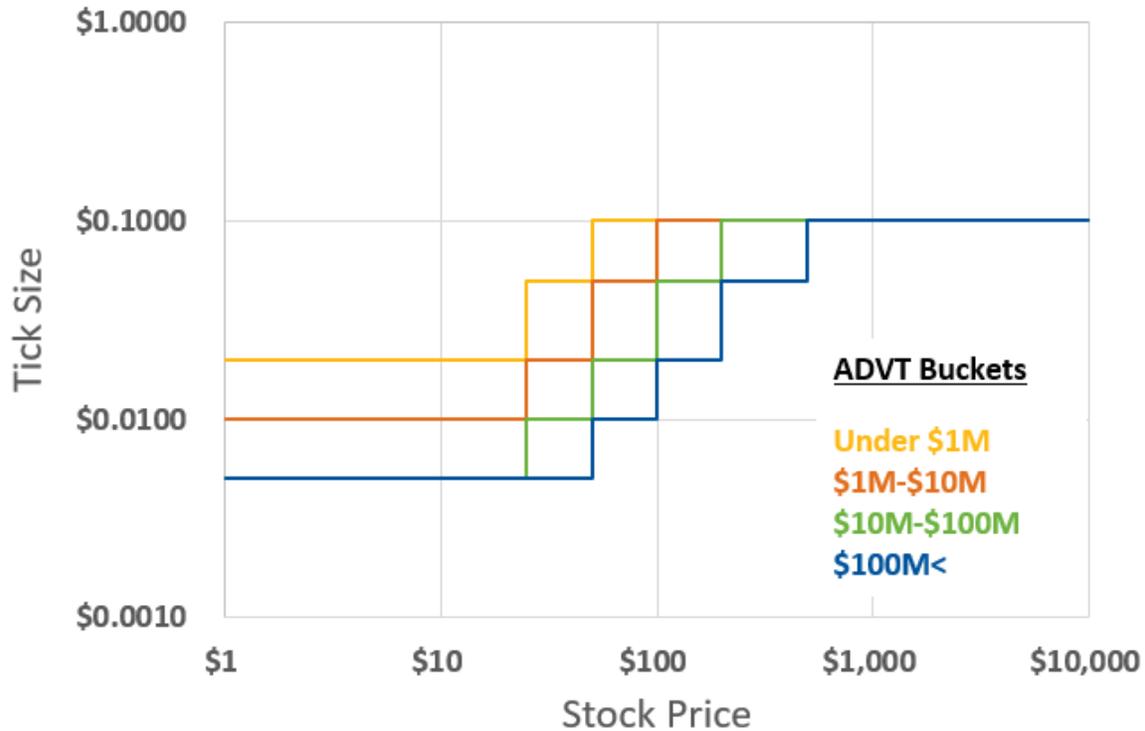
Source: Intelligent Tick Working Group

The data also indicated that notional trading was the measure of liquidity that best described how spreads changed, so we set the target minimum spreads for each group based on those results and ADVT buckets.

How does a MiFID regime work in the U.S.?

What happened when we looked at how U.S. stocks would trade in this regime, however, was interesting.
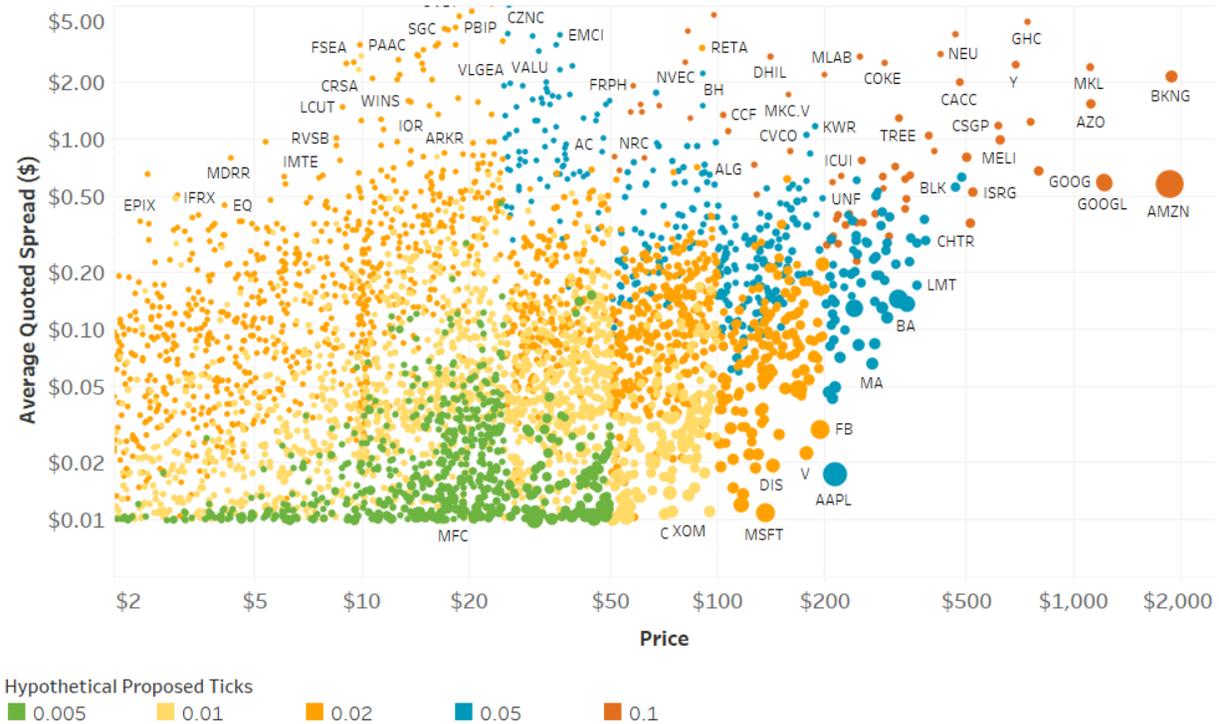
We show the data in Chart 3 for corporate stocks. Each circle represents a ticker, its height represents the spread it trades at now (in cents) and the horizontal axis shows how that changes as prices rise. The expected zig-zag shape is evident from the rough boundaries of colors (although they are downward sloping because this is in cents-per-share (cps) not basis points (bps)).

However, we found it hard to avoid doing harm to some stocks, giving them ticks wider than their spread now. Remember that data from the tick pilot showed that artificially widening spreads did most of the harm that led to the reported costs to investors. Often it was important stocks like AAPL, FB and JPM which currently trade around one-cent wide that would be put into two-cent or five-cent tick buckets because of their higher prices.

Chart 3: Corporate stocks in a simplified U.S. intelligent tick regime (spread in cents per share)

Average Quoted Spread ($) vs. Price
Note: Based on U.S. corporate stocks under a hypothetical MiFID-like tick proposal.

Hypothetical Proposed Ticks
■ 0.005 ■ 0.01 ■ 0.02 ■ 0.05 ■ 0.1

Source: Nasdaq Economic Research, Intelligent Tick Working Group

ETFs are the bigger problem

However these "outlier" problems got significantly worse when we applied the matrix to ETFs.

The majority of ETF liquidity currently trades with spreads around one-cent wide, even though the majority of ETF tickers are actually "thinly traded" ETFs. Because most thinly traded ETFs can be arbitraged cheaply, data show they also trade at relatively tight spreads too, especially when compared to stocks of comparable liquidity (ADVT).

That means that under the current tick regime:

- Liquid ETFs are often "tick constrained," meaning the one-cent tick adds to costs and fragmentation.
- Illiquid ETFs are trade much better than comparably illiquid stocks. Consequently, the simplified tick structure will make those stocks "worse off" (see Chart 4).

Even worse, tickers like SPY would likely move to a wider two- or five-cent tick thanks to its high stock price, despite currently trading tick constrained at a one-cent tick. Conversely, there are many other tickers currently trading well inside a five-cent spread that would be allocated into five-cent (blue dots) or 10-cent (orange dots) buckets thanks to their low screen liquidity.

Chart 4: Many thinly traded ETFs would be harmed in a simplified MiFID-style intelligent tick regime

Average Quoted Spread vs. Price - ETPs Only

Note: Based on U.S. listed ETPs under a hypotheical, MiFID-like tick proposal. Size based on daily value traded.

Source: Nasdaq Economic Research, Intelligent Tick Working Group

In fact, the results in Chart 4 show that more than one-in-10 ETF tickers would be harmed by being put into a tick group with a wider spread than they trade now.

Let the market decide

As the group realized that a price-based tick regime was almost certain to harm some tickers, we looked for an alternative.

The solution is designed to "make NO stocks worse off." This solution borrows lessons learned from the tick pilot, which found that:

- Forcing spreads artificially wider adds to investors costs.
- Setting ticks closer to the level of wider spread stocks may actually reduce spreads, and should improve market quality metrics like quote stability and depth. The expectation is that a 14-cent stock will round down to a 10-cent spread when liquidity picks up and natural traders search for queue priority, narrowing the trade weighted spreads.

Importantly, this proposal could leverage the "tick group" structure used for the tick pilot, with tickers trading with different spreads depending what "group" (ticker list) they are added to.

Chart 5: What the proposed ticks (colors) look like by stock price and current spread (in basis points), with half-cent spreads estimated using current average effective spreads

Illustration of a Market Based Approach

Note: Tick buckets determined by average duration-weighted quoted spread. Illustration based on current quoted spread in the market (2019). Chart is limited to corporate equities priced greater than $2. Data represents an illustration of where we believe stocks might trade after implementing such a proposal. Size based on daily value traded.
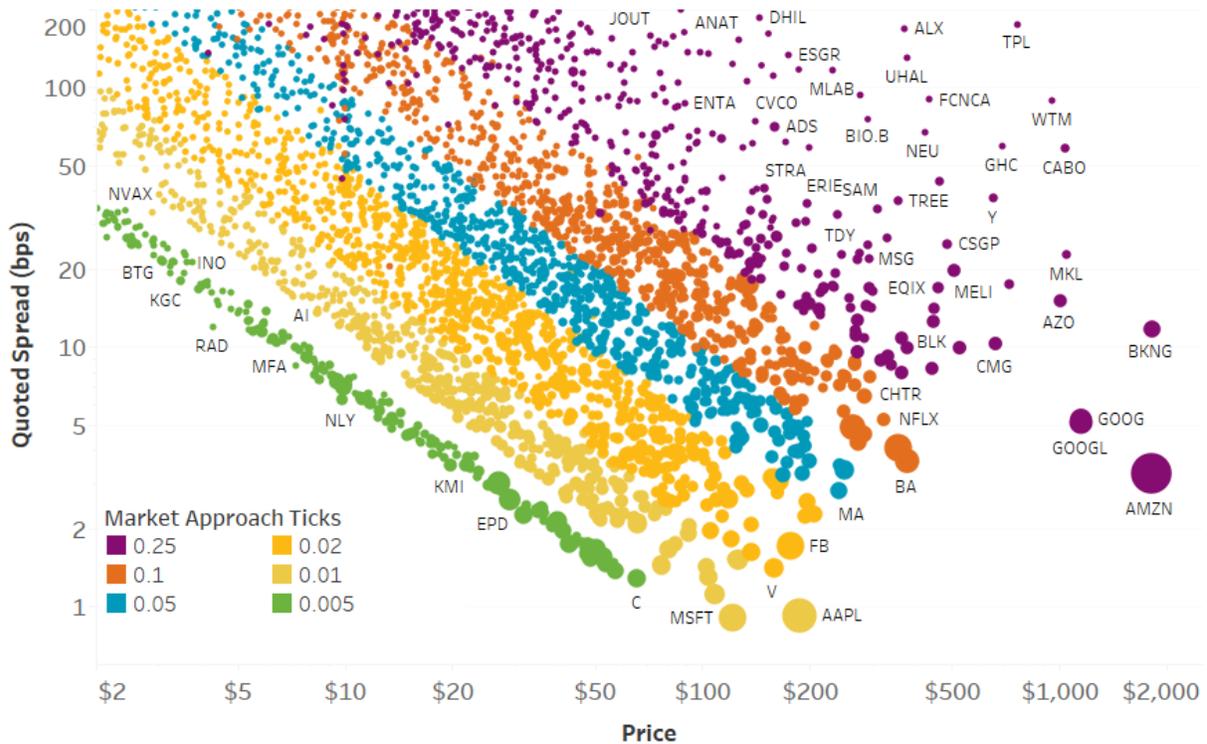
Source: Nasdaq Economic Research, Intelligent Tick Working Group

One benefit of this "market derived" structure is that tickers would be able to migrate (promote or demote) based on changes in their tradability, just as large-, mid- and small-cap indexes work today.

For example, the way we forecast what stocks should be promoted to the ½ cent bucket was to look for stocks with a time-weighted-average-spread of 1.1 cents or better. We then used the effective spreads to estimate likely spread improvements (green circles in Chart 5).

We could use the same 110% level for other buckets, although effective spreads (which account for mid-point fills) or trade weighted spreads (which put emphasis on times when the stock is active) may be an even better way to show stocks that can trade tighter. Although if ticks are too small, NBBO depth will fall. Traders in our working group intuitively felt a one-cent tick, and current NBBO depth, should be the "norm" and this approach fit their intuition better.

Implications for ETFs

We can also use the current spreads to estimate how many tickers would be in each tick group.

Importantly, under this proposal, around 64% of all ETF liquidity would trade in the ½ cent tick bucket. That alone should save investors and hedgers significantly.

However, more than half of the 2,200 ETFs fall into the two-cent bucket or higher, and more than one-third fall into the 10-cent or higher buckets. That sounds bad, but note that it reflects how those ETFs trade now. An issuer could still improve an ETF's tick by improving the trading (effective spreads) so that their tickers qualify for promotion to narrower tick groups over time.

Chart 6: The majority of ETF liquidity would be moved to the ½ cent tick, even though that represents less than 100 ETF tickers

Illustration of a Market Based Approach for ETPs
Note: Buckets based on average duration weighted quoted spreads under a hypothetical market based approach. Limited to U.S. - listed exchange traded products.
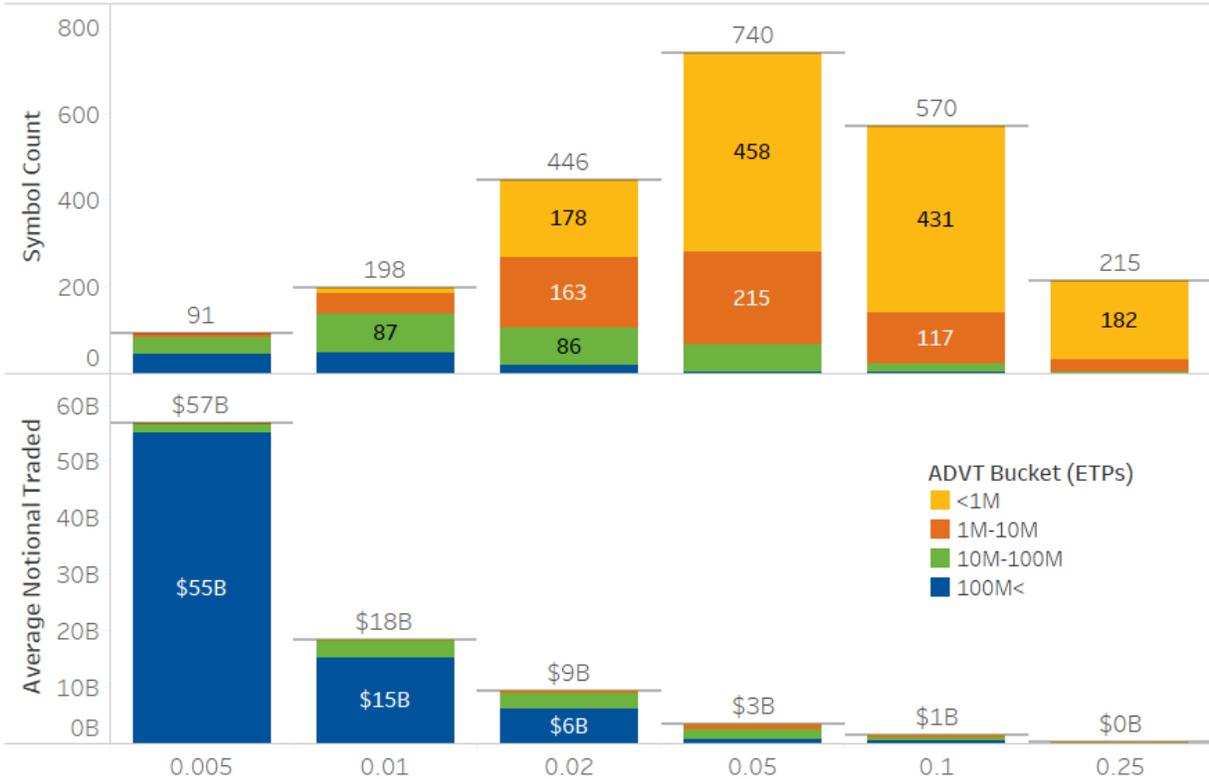
Source: Nasdaq Economic Research, Intelligent Tick Working Group

Market-wide savings of up to $1 billion?

Because these ticks make no spreads worse off, we expect trading spreads and costs to only fall.

Even before including ETFs, we estimated savings of around $1 billion using the following assumptions:

- Spreads compress from current levels 75% toward their optimal spread but can improve no more than the new tick.
- "Takers" are the only ones who benefit from tighter spreads.
- Takers cross the spread a net 20% of the time; consistent with how we found algos work .
- We compared new spread costs to crossing half the current NBBO spread (mid-spread).

The data in Chart 7 shows that each tick constrained stock is likely to be significantly cheaper to trade (bar height) although because there are more stocks in the two- and five-cent buckets (bar width) a material amount of savings come from making their NBBO's more competitive. Importantly, these stocks would also have shorter queues and less routing conflict, consistent with findings in the tick pilot analysis.

Chart 7: Estimated trading savings per corporate stock with bar-width showing count of symbols in each group (excludes ETFs)

Estimated Savings Per Symbol

Note: Based on U.S. corporate equities estimated to have some form of cost savings under Nasdaq Intelligent Tick Proposal. Chart value represents median estimated savings for symbols within each proposed tick bucket. Stocks currently trading in $0.01 tick bucket assumed to experience no savings.
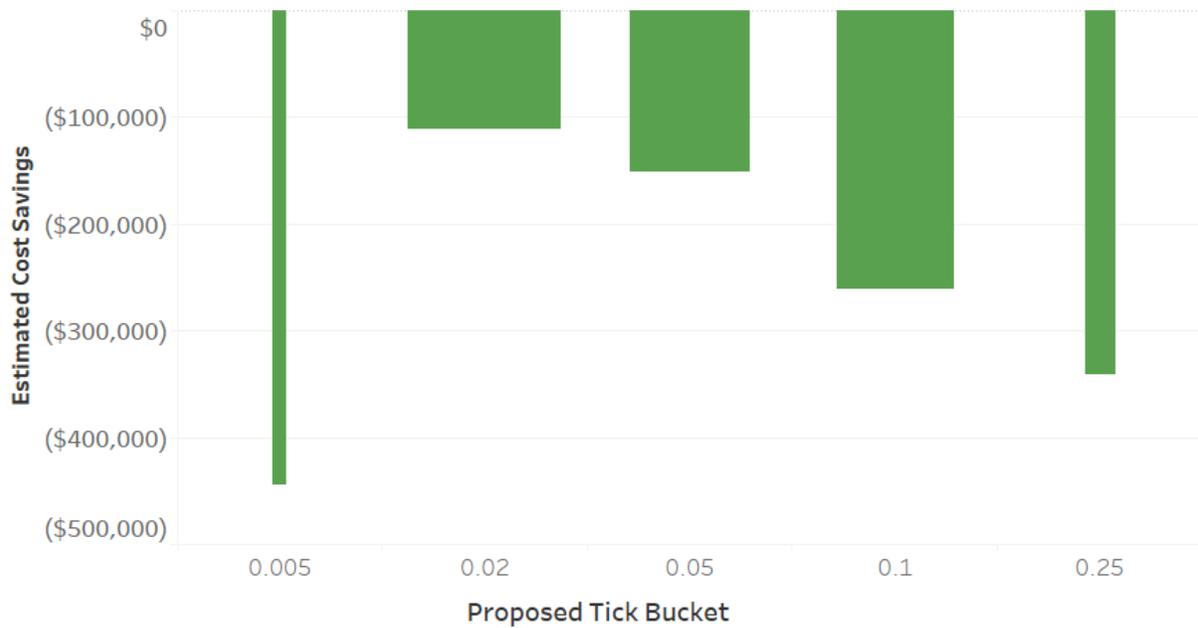
Source: Nasdaq Economic Research

Overall, the data supports this market-driven solution and the cost benefit seems compelling. Although different ticks sounds complex, by making spread economics more consistent (in basis points), queues and routing should be simplified and quotes more stable.

At least that's what the data seem to show.

-end-

The Data is Already Out There to Design Better Markets

February 15, 2019, 03:21:52 PM EDT By Phil Mackintosh

Adobe stock

Phil Mackintosh

Nasdaq Chief Economist

Data collection is no justification for increasing investor costs

There are plenty who call for the industry to be more "data driven" with market structure reform. But ever since SEC Chair Mary Jo White started to talk about this, what we've seen is data collection rather than analysis.

The SECs **Tick Pilot** is a case in point. Designed to **deepen liquidity** on the NBBO by **widening spreads**, the pilot was widely regarded as a costly failure. That's mostly because artificially widening spreads added costs to investors, estimated at $300 million to $900 million, despite the pilot impacting just 2.5% of market liquidity.

But alas, before the tick pilot data has even finished being collected, we have a new **Access Fee Pilot** – which is also expected to **widen effective spreads and reduce liquidity at the NBBO.** What that should prove is that data collection alone doesn't help design better pilots.

Golden Rule: Do No Harm

U.S. Equity markets are the cheapest, most efficient and also most transparent in the world. Our primary focus should be to protect those advantages—and do no harm.

Thanks to that transparency, we could start by using the data we already have. Did you see that FINRA recently boasted that it collected an all-time high of 135 billion records in just one day? Even more impressive, FINRA recently used that data to compute opportunity cost, something we recently said was lacking from the Access Fee Pilot proposal.

This is important as it confirms we do already have the data required to identify routing conflicts and quantify opportunity costs. Sadly the final Access Fee Pilot ruling did not quantify any benefits—although it does quantify costs—if you're interested, start at page 222.

What the Market Tells us about Tick Sizes

Even simple data can tell us a lot about trading economics.

Let's start by plotting all corporate stocks across **price**, **spread**, **depth** and **market cap** (Chart 1) and see what we can learn.

Chart 1: Spreads naturally widen as market cap and liquidity fall
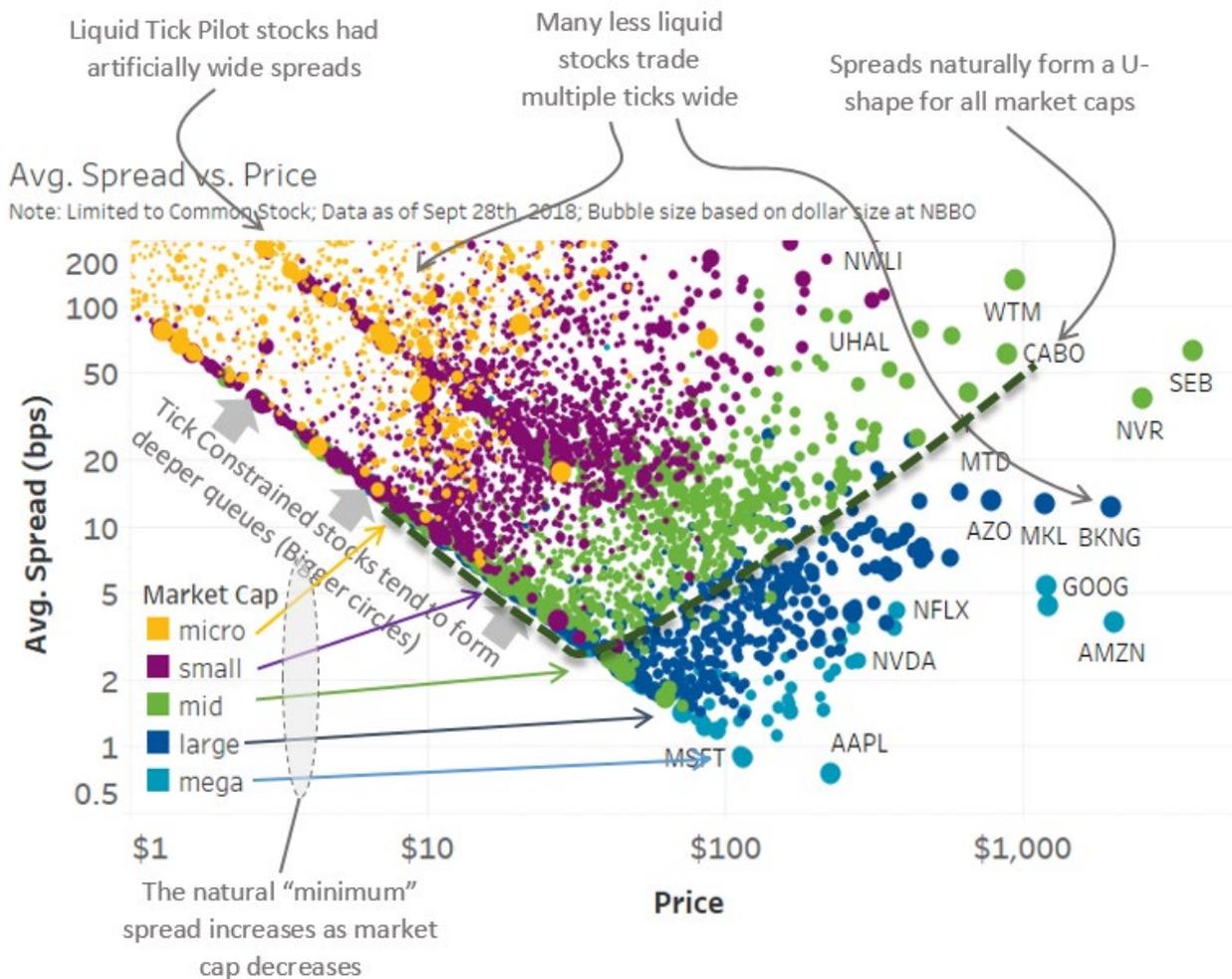
Source: Nasdaq Economic Research (Based on the final rules and data from Sept 2018)

Artificially wide spreads increase queue size

The upward sloping diagonal line shows how the 1-penny tick forces spreads wider as price falls. Note that the largest circles (depth of the NBBO or queue length) generally sit on this line. This shows that once spreads are capped, the trade-off between the cost of crossing a spread and the cost of waiting swings in favor of waiting—leading to longer queues and time to fill. These spreads are "artificially expensive" or "tick constrained."

The second diagonal line supports this conclusion. Those are stocks in the tick pilot (the pilot ended on Sept 28, 2018), where a 5-cent spread was "artificially expensive," incentivizing rational traders to capture spreads regardless of the longer queues that created. Note that these are the same stocks that cost investors between $300 million and $900 million above.

Artificially high prices have worse spreads, too

Higher stock prices reduces the "cost" of a 1-cent tick (in % cost). But data shows that having a stock price that is so high that your stock is no longer "tick constrained" isn't optimal either.

In fact, what you see is that once that stocks lift off the 1-cent spread (diagonal) line, spreads in basis points actually start to **rise**. For example, tickers like AMZN and GOOG, despite their incredible liquidity, trade with notably wider spreads than other mega-cap stocks priced closer to $100, like MSFT.

This U-shaped curve would seem to indicate that stocks that "just" trade 1-tick wide have the best tradability. If the tick is too small, or too wide, spreads (and trading costs) actually increase.

Liquidity affects the "optimal" spread size

The chart above is also colored by market cap. This shows that market cap tends to cluster around a stock price range. But the more revealing pattern is that the U-shaped pattern persists across each group.

We'd also highlight that the optimal (minimum) spread in basis points rises as market cap falls for:

- **Mega caps** the minimum spread is around **1bps**, for a stocks priced around $100
- **Mid-caps** that increases to around **5bps**, which happens for stocks priced around $40
- **Small caps** it is around **5bps**, which happens for stocks priced around $20
- While for **micro caps**, the minimum spread is closer to **20bps**.

This is mostly because liquidity falls as market cap falls—because smaller companies are smaller, they have less capital (and usually shares) to trade.

Liquidity also varies within market cap, which largely explains why stocks trade above the diagonal line (but that's a chart for another day).

Can existing data tell us about optimum tick sizes?

Using data like this we proposed adopting intelligent tick sizes and intelligent rebates to improve markets and reduce investor costs over a year ago.

We weren't the only ones thinking this way. One of the data-driven innovations implemented in Europe was an intelligent tick regime. As the chart below shows, it changes the tick size as both price and liquidity change. That results in:

- A consistent minimum spread, in basis points, for all similarly liquid stocks
- Which just happens to fall at levels consistent with those seen in our US data too (we've aligned both color schemes)

Chart 2: MiFID introduced a data driven tick regime that looks surprisingly similar to how US spreads naturally work

Source: Nasdaq Economic Research, ESMA

There is much more data out there. The trick is using it.

Maybe then we can change markets for the better, or at least be pretty sure we do no harm.

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NMS II: An odd solution for the odd lot problem

As we recently discussed, the SEC has a number of significant rule change proposals on the slate right now.

One of those proposals involves splitting the old National Best Bid and Offer (NBBO) into two new kinds of BBO. That's not as simple as it sounds, nor does it completely fix many problems.

What the BBO is going on?

Currently, when you are trading, the SIP shows you an NBBO. That's the best of the best buyer and seller regardless of which exchange they're waiting in, although it needs to be for at least a "round lot" (usually 100 shares). If you're trying to capture spread, that round lot also ensures you have a "protected" quote, meaning you won't miss fills if a large trade causes worse prices to trade at other venues (be "traded through"). It's also the same prices that Rule 605 uses to monitor investors' execution quality and protect them from bad fills.

However, the U.S. market has an "odd lot problem." That's because 100 shares of AMZN (for example), at over $200,000 not only qualifies for block size but is multiples larger than the average trade or best bid value. So what tends to happen is that algos and individual investors bid for smaller values of AMZN, creating an "insiders" market at better prices than the NBBO shows.

One problem with this is that investors and brokers using the SIP won't know that there are small buyers and sellers at slightly better prices in the market.

But there is a good reason to have round lots in a stock like GE, where 100 shares represents around $700. Considering the average trade is around $7,000, the public, protected best-ex quote should represent enough shares to fill the average trade.

Chart 1: Currently an investor is protected at the NBBO but odd lots can exist at better prices

SIP Qualifying BBO vs. Protected Quote vs. Minimum Quote
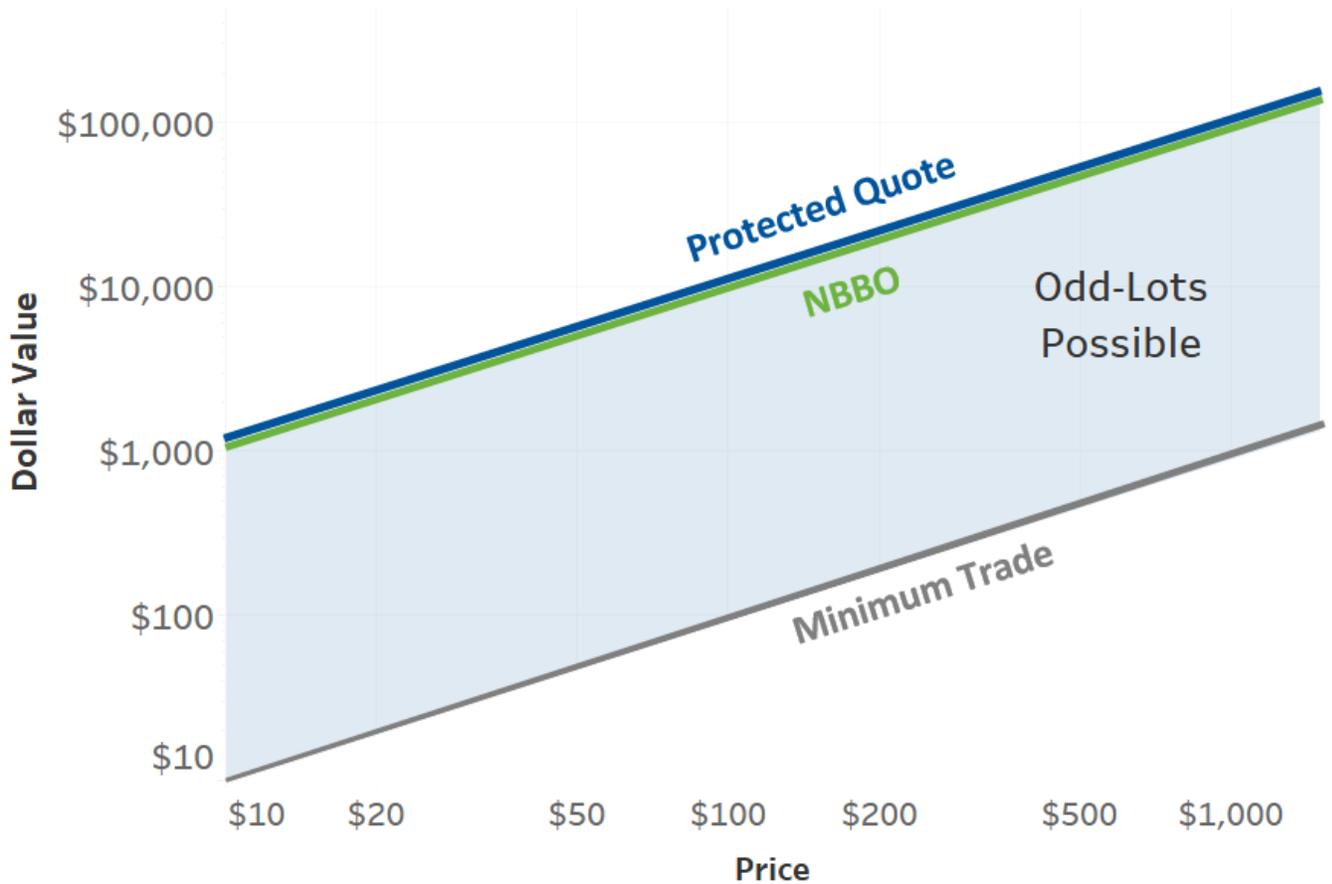
Source: Nasdaq Economic Research

Dynamic round lots to fix…well not much really

In their Valentine's Day NMS-II filing, the SEC proposed a solution to the odd lot problem that creates smaller round lots as stock prices rise (see Table 1).

Table 1: New round lot sizes to be used for SIP NBBO but not protected quotes

Stock price	Current round lot	New round lot	% of value traded
Up to $50.00	100 shares	100 shares	32%
$50.01 to $100.00	100 shares	20 shares	21%
$100.01 to $500.00	100 shares	10 shares	43%
$500.01 to $1,000.00	100 shares	2 shares	1%
$1,000.01	100 shares	1 share	3%

Source: SEC

The proposal results in an NBBO that has a more consistent value (green line in Chart 2). Our data suggests this will also significantly tighten displayed quotes for higher-priced stocks. However, there are three consequences that traders might not like:

1. With the size of a round lot between $1,000 and $5,000 (for almost all stocks), the official NBBO might represent a smaller quote than almost all spread-crossing trades that will be benchmarked against it.
2. It's possible that a stock like AMZN could be BID and OFFERED for one share at a one-cent spread. That's not the kind of size or spread capture that many think is good for liquidity and price discovery.
3. There are still odd lots.

But that might not matter, because the new NBBO is also no longer protected, so sophisticated investors don't need to trade with those quotes even if they are at better prices.

An odd solution to the odd lot problem

Instead, protected quotes will remain pretty much as before, defined as orders for 100 shares or more, creating a new "PBBO" (Protected Best Bid and Offer) that is much larger than the NBBO, especially for very high-priced stocks.

That leaves a complicated scenario where:

- Protected bids and offers are different than the best bids and offers.
- Odd lots will still exist, so the "true BBO" could still be an odd lot at a better price than both the PBBO and the NBBO.
- The NBBO is capped at $5,000, smaller than most trade sizes.
- Even though the NBBO is public, it doesn't guarantee you a fill.
- The PBBO still represents a very large trade for high-priced stocks.
- Trade throughs are allowed between the NBBO and the PBBO (which means investors could miss fills despite being the best price).

We show how this new rule set works for different stock prices in Chart 2 below. The orange zone shows where trade throughs would now be allowed, while the blue zone shows where better prices will still be hidden from investors buying the SIP.

Chart 2: Under the new rules, the NBBO will be different to the protected quotes (PBBO) while odd lots may still rest at better prices inside the NBBO

SIP Qualifying BBO vs. Protected Quote vs. Minimum Quote
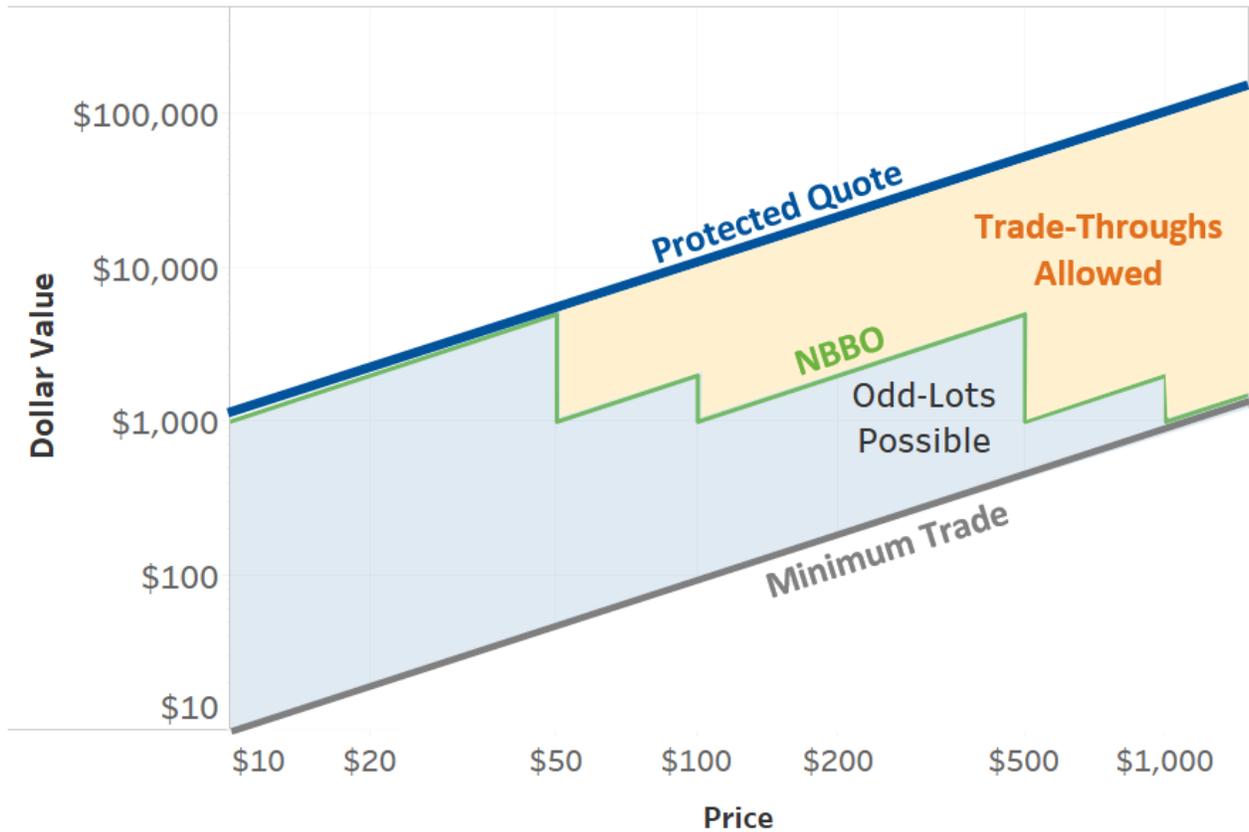
Source: Nasdaq Economic Research

A more subtle problem with the NMS-II proposal is how to aggregate the odd lots from all the fragmented venues in the market. Currently for high priced stocks, quotes from all 13 venues typically form at random prices inside the NBBO (blue in Chart 3). Under the new NMS-II proposal, for AAPL, with a price between $100 and $500, 10 shares on one exchange would represent the NBBO, even if there was a combination of 8 + 6 + 9 = 25 shares at slightly better prices across three other venues. Moreover, if one exchange had multiple odd lots inside the NBBO, only their "best odd lot" would be collected under this proposal.

Chart 3: Example of how the NBBO and PBBO vs. intelligent tick and odd lots could work
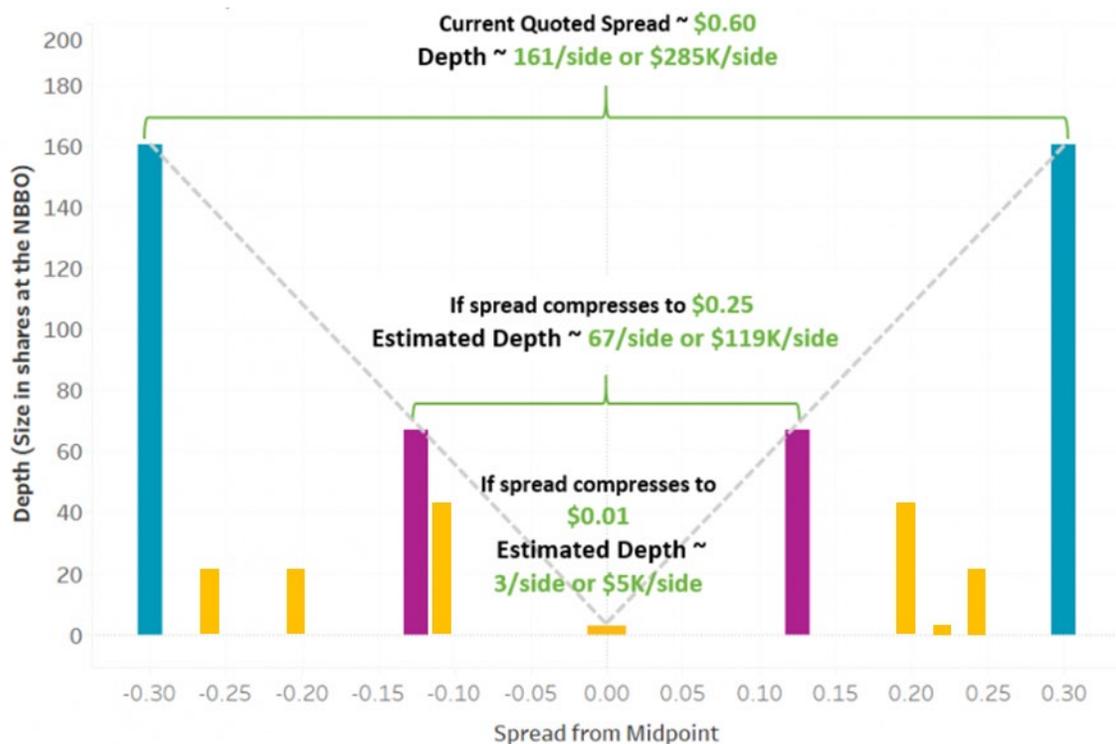
Source: Nasdaq Economic Research

An even better solution to the odd lot problem

In other developed markets, the solution to the odd lot problem has been to eliminate the distinction between round lots and odd lots.

Allowing trades in any whole number of shares in turn makes all quotes equal. It also ensures that the true best bid and offer is displayed for all to see.

The downside, as we've noted before, is that nobody wants to be benchmarked against one-share quotes.

Throughout most of the world, markets have adjusted for that by modifying spreads so that they represent consistent returns for liquidity provision. Using Chart 3 again, what that does is force all the yellow bids and offers into the purple queues.

We recently proposed a similar solution for the U.S., using intelligent ticks combined with the elimination of round lots. Based on our analysis, if spreads are set right, the data suggest the notional depth of stocks will also be consistent across stock price.

Data also shows that if you widen the increments, depth at each tick should increase, allowing us to control the value at the NBBO. Our estimates show that what tends to happen is $30,000 worth of shares accumulates at the NBBO, regardless of how many shares that takes.

There are a lot of odd and conflicting aspects of NMS-II. But it would be sad to make wholesale changes that don't even fix the problems.

Table 2: Changing NMS is complex; it's easy to do more harm than good

Problem	Now	NMS-II proposal	Intelligent ticks
Eliminate the odd lots problem	✘	✘	✔
SIP shows the true BBO	✘	✘	✔
NBBO greater than average trade size	✔	✘	✔
Tighten spreads	✘	✔	✔*
A protected "best quote"	✔	✘	✔
Equal price time priority for all orders	✘	✘	✔
Minimize missed fills from not being at the true inside	✘	✔*	✔
Minimize trade throughs	✔	✘	✔
Make trading more consistent	✘	✘	✔

Source: Nasdaq Economic Research (*: likely better than now)

Two things we should all agree on is that U.S. markets are the best in the world and we all benefit if we can keep them that way.

Without a data-driven-solution it is easy to do more harm than good.

-end-