[XTX]
MARKETS

November 26, 2018

Mr. Brent Fields
Secretary
Securities and Exchange Commission
100 F Street, NE Washington, DC 20549-1090

Re: Roundtable on Market Data and Market Access; File No. 4-729

Dear Mr. Fields:

XTX Markets LLC is a U.S. broker-dealer and an affiliate of XTX Markets Ltd. (collectively "XTX Markets"), a London-based proprietary trading firm. XTX Markets is a quantitative-driven and regulated electronic market maker with global trading operations. We provide liquidity in Equities, FX, Futures, Commodities, Options, and U.S. Treasuries. XTX Markets executes daily volume of approximately $150 billion across multiple asset classes and geographies. XTX Markets is a strong advocate for fair and transparent markets, and is committed to making markets more efficient and competitive, in part by advocating for policies that reduce barriers to entry. Fair, efficient and transparent markets result in better prices for end investors and reduce the cost of raising capital. We advocate for these principles globally regardless of whether we are a dominant market participant or have only just entered the market. XTX Markets' depth of experience trading global markets and a variety of asset classes provides it with a well-informed view of market structure in general, as well as the challenges presented by each market's microstructure.

The U.S. stock market is the largest cash equity market in the world, processing approximately $250 billion worth of share trades per day. However, industry debates over the past several years about order handling transparency, tick sizes, access fees, best execution, and most recently with respect to the SEC's roundtable, market data fees, indicate the U.S equity market is not as efficient as it could be and that there is a need for change. In most cases, XTX Markets believes the specific issues being debated are symptoms of a larger problem that needs to be addressed, and that problem is Regulation NMS.[1] The U.S. equity market was dramatically different when Regulation NMS was adopted in 2005. The NYSE had 70% market share in its listed securities and largely operated manually, competition between exchanges was nascent, and smart order routers, while common, were less sophisticated than they are today. Today, more than a decade later, the market is fully automated, liquidity is fragmented across 13 exchanges, dozens of dark pools and other off-exchange platforms, and

[1] Exchange Act Release No. 51808 (June 9, 2005), (the "**Final Rules**").

highly sophisticated order routers are available to source liquidity from multiple destinations. One can argue whether Regulation NMS ever served a necessary purpose, but there can be no sensible debate over the fact that there have been unintended negative consequences associated with Regulation NMS. The strict command and control and one-size fits all approach the Commission took towards markets under Regulation NMS has distorted free competition leaving in its wake glaring examples of inefficiencies and leading to a lack of meaningful innovation, the net result of which is worse execution quality for investors and unnecessary increases in the cost of raising capital.

As outlined below, XTX Markets has a series of market structure recommendations that we believe would enhance the transparency and efficiency of the U.S. equity markets. These include:

1. Repealing and amending core components of Regulation NMS
    a. the Order Protection Rule
    b. the Access Fee Cap
    c. the ban on the display of locked/crossed markets
    d. Adopt dynamic tick sizes based on security price and traded volume
2. Enhancing transparency for retail investors
3. Permitting exchanges to experiment with innovations such as asymmetric speed bumps.

Order Protection Rule (OPR)

The SEC policy rationale for OPR as detailed in the Regulation NMS proposing and adopting releases was to strengthen investor confidence by ensuring displayed limit orders do not get traded through, and to provide investors assurance that their orders will be traded at the best available prices.[2] While these goals are laudable, there have been many unintended negative consequences associated with the rigid OPR.

First, OPR has contributed to excessive fragmentation. Among the displayed markets, there are 13 registered exchanges today, predominantly owned by three exchange groups.

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[2] See Exchange Act Release No. 50870 (Dec. 16, 2004), (the "**Reproposing Release**"), Part II: "By strengthening price protection in the NMS for quotations that can be accessed fairly and efficiently, reproposed Rule 611 is designed to further the interests of both investors who submit displayed limit orders and investors who submit marketable orders. Price protection encourages the display of limit orders by increasing the likelihood that they will receive an execution in a timely manner. Limit orders typically establish the best prices for an NMS stock. Greater use of limit orders would increase market depth and liquidity, thereby improving the quality of execution for the large market orders of institutional investors. Moreover, strong intermarket price protection would offer greater assurance, on an order-by-order basis, to investors who submit market orders that their orders in fact will be executed at the best prices, which can be difficult for investors, particularly retail investors, to monitor. Finally, market orders would need to be routed only to quotations that are truly accessible."

See also **Final Rules,** Part II (page 36): "The Order Protection Rule will help assure, on an order-by-order basis, that markets effect trades at the best available prices."

The largest single liquidity pool, Nasdaq's main book, accounts for 17% market share, with the remaining 12 exchanges each having market share from as small as 0.3% to 12%. Because of OPR, there are no incentives for exchange groups to consolidate liquidity on fewer exchanges, even though in most cases, there is little to no discernable value propositions differentiating the exchanges. This is the case because OPR in effect provides every registered exchange with a monopoly on its top of book, or "protected", quotes. This results to varying degrees in market participants being required to maintain costly primary and redundant connectivity to each registered exchange, regardless of size.

The monopoly each exchange enjoys on its top of book quotes creates the potential for exchanges to charge non-competitive fees for market data and access ports. Moreover, we believe OPR has reduced both the ability and the incentive for exchanges to innovate. Today, the primary means of competition between the exchanges has been around where each fix their fees and rebates along the access fee cap spectrum. And any attempts to innovate must contend with the overly rigid requirement that to be covered by the OPR, an exchange's quotes must be immediately and automatically accessible with no pre-programmed delays.

OPR and the resulting fragmentation of liquidity has also been a major contributor to the speed race between market makers in U.S. equities competing to establish queue position with passive orders. Because each exchange's top of book is a protected quote, speed to establish that top of book on each market has become the primary driver of success for a market maker rather than the quality of the liquidity, which is particularly problematic in tick-constrained securities. And that speed race increasingly comes with significant costs, which are borne by the investing community through spread and market impact.

In addition, to avoid leaking signal across the overly fragmented and complex exchanges, brokers seek to source liquidity for institutions in dark over the counter markets before going to exchanges. In combination with most retail orders being sent to wholesale market makers in exchange for payment for order flow and de minimis price improvement, the displayed markets have become increasingly toxic, which hampers price discovery. XTX Markets believes the SEC should enact policies that encourage, but don't force, investor orders to interact on displayed markets and thereby participate in and benefit from the price discovery process.

Finally, OPR has effectively established that under all circumstances, achievement of the best displayed price in the market satisfies a broker-dealer's duty of best execution. Despite repeated statements in the Regulation NMS proposing and approving releases that OPR was not a substitute for best execution[3], it has effectively replaced best execution. Best price is prioritized under OPR above all other factors such as size, certainty of execution, unique characteristics of the security, market conditions, etc.

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[3] See the Final Rules, Part II (page 159): "The Commission continues to emphasize that adoption of Rule 611 in no way lessens a broker-dealer's duty of best execution. A broker-dealer has a legal duty to seek to obtain best execution of customer orders."

XTX Markets does not believe repealing OPR would lead to a material increase in trade throughs. As discussed earlier, today's market is characterized by sophisticated smart order routers that can capably source liquidity from multiple destinations. And, effective enforcement of best execution obligations would limit trade throughs that are not in the best interest of a broker's client. XTX Markets analyzed trade through rates in European equities, which do not have OPR. We found that the trade through rate between August 6, 2018 to November 2, 2018, was less than 1% (using a 50-millisecond buffer to account for race conditions), which is less than we found over the same period in US equities (slightly more than 1%) even with OPR in place. Considering these findings and the above-referenced unintended negative consequences of OPR, XTX Markets believes there are no measurable benefits to retaining OPR.

Access Fees

Once the SEC decided to adopt OPR, it needed to constrain exchange fees to access protected quotes to "preclud[e] the distortive effects of exorbitant fees".[4] By repealing OPR, the SEC could extricate itself from the need to fix rates on what exchanges can charge for access to quotations. Access fees would be subject to competition and would simply be a factor considered by an agency broker in its assessment of best execution, but the SEC would no longer be required to establish caps on those fees. And, without a specific access fee cap, exchanges could experiment with more rational pricing schemes, such as basis point pricing where the fees and rebates bear a direct relationship to the notional size of the risk being transferred. Or, subscription based pricing like that deployed by the Aquis MTF in Europe, where the subscription fee varies as a function of message rates. Current exchange pricing, under Regulation NMS, at a fixed rate per share is distortive because it is dramatically more expensive to invest the same amount of money in a relatively low-priced security than in a relatively high-priced security.

Locked or Crossed Markets

The SEC banned the display of locked or crossed markets in Regulation NMS, citing as reasons the desire to avoid investor confusion as well as that crossed markets were inconsistent with the orderly functioning of markets.[5] What resulted from this ban, however,

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[4] See the Final Rules, Part III (page 189): "Moreover, the fee limitation is necessary to further the statutory purpose of enabling broker-dealers to route orders in a manner consistent with the operation of the NMS. To protect limit orders, orders must be routed to those markets displaying the best-priced quotations. This purpose would be thwarted if market participants were allowed to charge exorbitant fees that distort quoted prices."

[5] See the Final Rules, Part III (page 194): "They generally agreed that the practice of displaying quotations that lock or cross previously displayed quotations is inconsistent with fair and orderly markets and detracts from market efficiency. One [the ICI Letter] noted, for example, that locked and crossed markets "can be a sign of an inefficient market structure" and "may create confusion for investors, as it is unclear under such circumstances what is the true trading interest in a stock.""

See also the Final Rules, Part III (page 197): "When two market participants are willing to trade at the same quoted price, giving priority to the first-displayed automated quotation will encourage posting of quotations and contribute to fair and orderly markets. The basic principle underlying the NMS is to

was the development of the most complex order handling logic at the exchanges, as each seeks to avoid having to cancel back an order that would lock or cross another protected quote. The exchanges do this by accepting such orders, and then sliding the displayed prices (and ranked prices if the orders cross a protected quote) to prices that are one tick less aggressive than the locking price. Once the orders are displayable at the original locking prices, the orders will un-slide to those prices. This in turn creates unjustifiable market inefficiencies unintended by Regulation NMS because the markets are, in fact, often locked or crossed but the inability to display that locked or crossed market deprives agency brokers of the ability to target those better prices on behalf of their clients.

This complexity, as well as a particular order type, has in turn created market opportunities for those trading firms sophisticated enough to consume the fastest and most expensive market data feeds to determine when a new price level opens at an exchange before others and gain queue position with a passive order. The order type in question is referred to in the industry as a "Day ISO", which as originally conceived by the SEC under Regulation NMS, was designed to allow a market participant to send an order, for example, to exchange A to execute its inside bid or offer while at the same time sending a passive order to exchange B with time-in-force condition "Day" and marked "ISO", which allows exchange B to accept and display that order even though it may appear from the perspective of exchange B that the order displays at or through exchange A's bid or offer. In practice, the primary users of Day ISO orders are not shipping an order to exchange A. Instead, these users are monitoring the fastest market data feeds and sending Day ISO orders to exchange B when that market data shows the price level at Exchange A has cleared but before most of the market is aware of that information. Because the Day ISO is the order that opened the new price level, it "jumps" over previously booked slid orders and goes to the top of the order book queue, giving Day ISO users an advantage based solely on their capability to pay for and consume the fastest exchange data feeds.

In our experience, a crossed market, if displayed, will be quickly arbitraged away. A locked market is a zero-spread market and the ability to display that lock would enhance market efficiency. XTX Markets analyzed the frequency with which markets were locked or crossed in European equities during the period August 6, 2018 to November 2, 2018, and found that the European markets, which do not ban the display of locked or crossed markets, were locked only 3 seconds per hour on average, and were crossed 0.2 seconds per hour. In contrast, over the same period, we found that the U.S. equity markets were locked 4.6 seconds per hour on average, and crossed 1.75 seconds per hour. Accordingly, XTX Markets believes the SEC should repeal the ban on displaying locked or crossed markets. XTX Markets does not believe displaying locked or crossed markets will result in any investor confusion.

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promote fair competition among markets, but within a system that also promotes interaction between all of the buyers and sellers in a particular NMS stock. Allowing market participants simply to ignore accessible quotations in other markets and routinely display locking and crossing quotations is inconsistent with this principle."

Other than for the most sophisticated investors, brokers are responsible for evaluating the options and making order routing decisions consistent with their best execution obligations.

Tick Sizes

The SEC considered tick sizes in Regulation NMS, ultimately deciding to maintain the minimum tick at $0.01 other than for securities priced below $1.00 where sub-penny tick sizes are allowed.[6] The SEC specifically rejected sub-penny ticks in securities priced at or above $1.00, noting its belief that sub-penny pricing would create disincentives to liquidity providers whose limit orders would be jumped by an economically insignificant amount, and would result in flickering quotes that would make best execution challenging.[7] The SEC did not, as part of Regulation NMS consider increasing the tick size above $0.01 for any securities.

Thus, the U.S. equity markets adhere to a one-size fits all tick regime. This inflexible tick regime creates market inefficiencies, resulting in a minimum price variation that is too big in many cases and too small in other cases. Some symbols trade most of the day with a single tick between the best bid and offer. This fact implies that the $0.01 minimum tick is constraining price discovery and that, contrary to the SEC's policy supposition, meaningful price improvement could be provided if liquidity providers could express interest at smaller increments. This is particularly true for lower priced symbols where the minimum tick is a relatively more material percentage of the transaction price.

Conversely, some symbols trade most of the day with many ticks between the best bid and best offer. This results in exactly the concern the SEC was seeking to prevent in Regulation NMS – excessive "flickering" message activity in small lot sizes at the top of book as it becomes relatively inexpensive for market makers to improve the best bid or offer by a $0.01. This is particularly true of high priced securities where the minimum tick is an insignificant percentage of the transaction price. And this problem is compounded by the fact that some securities popular with retail investors do not engage in stock splits and trade at prices of over $1000 per share (e.g., AMZN, PCLN, GOOG).

In our experience, the optimal natural spread between the best bid and offer is two to four ticks. Markets exhibiting this characteristic tend to allow for material price improvement between the spread when such opportunities arise, while at the same time

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[6] See the Final Rules, Part IV (page 226): "The Commission is adopting the $1.00 threshold as proposed. The Commission agrees with the commenters who believe that sub-penny quotations for very low-priced securities largely represent genuine trading interest rather than unfair stepping ahead."

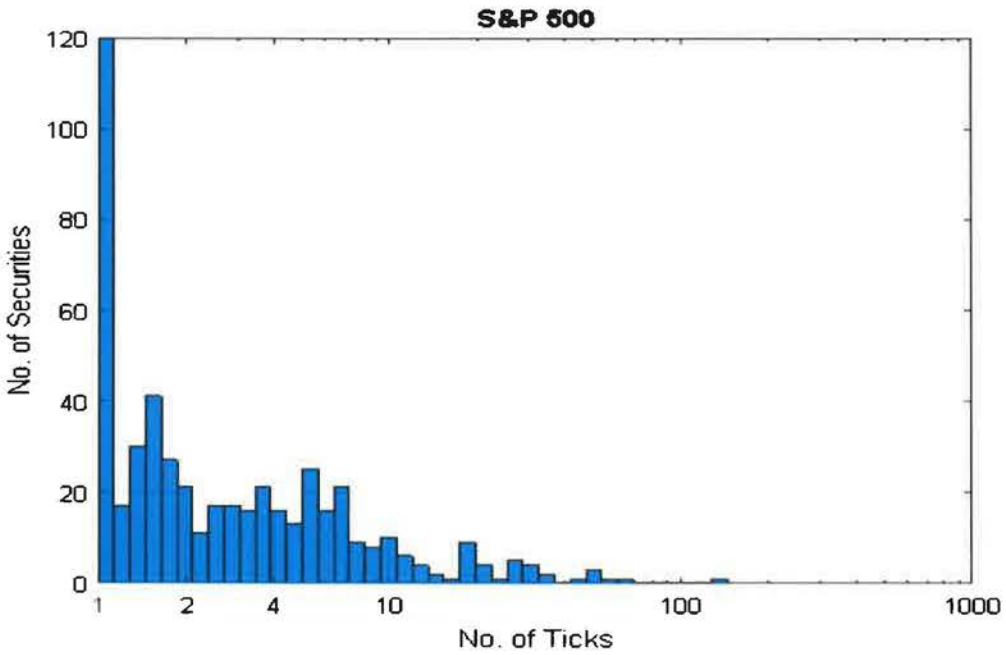
[7] See the Final Rules, Part IV (page 213): "When market participants can gain execution priority for an infinitesimally small amount, important customer protection rules such as exchange priority rules and NASD's Manning rule could be rendered meaningless."

See also the Final Rules, Part IV (page 214): "Flickering quotations that can result from widespread sub-penny pricing could make it more difficult for broker-dealers to satisfy their best execution obligations and other regulatory responsibilities. The best execution obligation requires a broker-dealer to seek for its customer's transaction the most favorable terms reasonably available under the circumstances. This standard is premised on the practical ability of the broker-dealer to determine whether a displayed price is reasonably obtainable under the circumstances."

minimizing the noise associated with price flickering at the top of book because the minimum tick increment in this case is a material percentage of the transaction price.

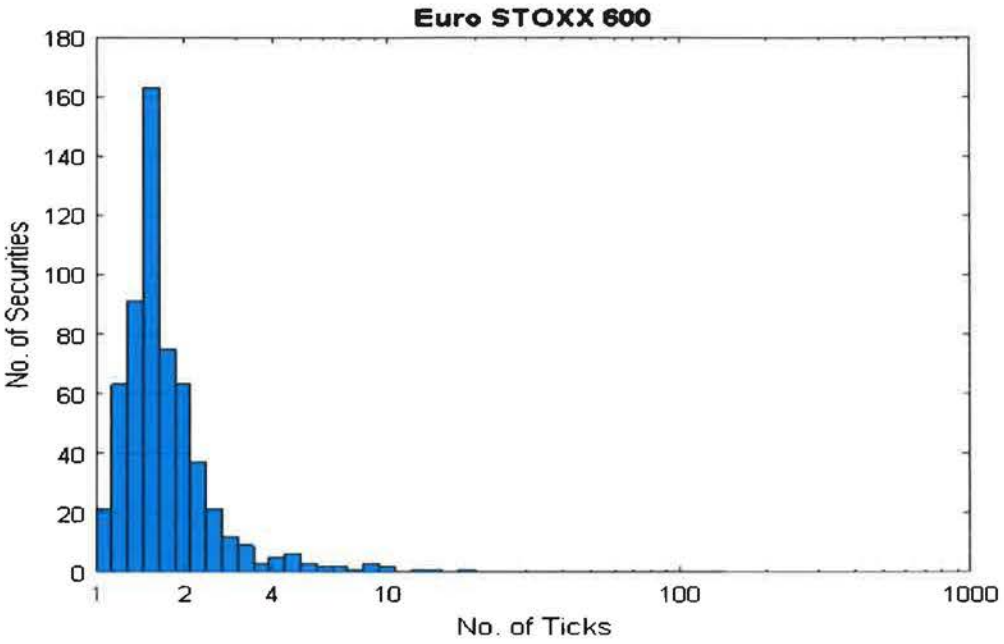
Consequently, we believe the U.S. equity markets would be more efficient if, rather than a one-size fits all tick regime, the market moved to a dynamic tick regime, where the minimum price variation for a security would be determined as a function of its price and average daily volume. The tick regime in Europe under MiFID 2[8] is an example of a dynamic tick regime that functions well.[9]

For example, XTX Markets compared the average spread in the S&P 500 securities and the Euro STOXX 600 over a three-month period in 2018. As illustrated in the following graphs, we found that in the S&P 500, 19.36% of its constituent securities are severely constrained by the tick size regime, trading with 1 tick between the best bid and offer more than 95% of the time, while in the Euro STOXX 600 only 0.34% of its constituent securities are constrained to 1 tick 95% of the time. And, on the other end of the spectrum, we found that in the S&P 500, 10.18% of its constituent securities trade with an average spread of 10 ticks or more, while in the Euro STOXX 600, only 0.68% of the constituent securities trade with an average spread of 10 ticks or more.



8 Article 49(1) of Directive 2014/65/EC of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EC ("MiFID 2"). Available: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014L0065

9 Commission Delegated Regulation (EU) 2017/588 of 14 July 2016 supplementing Directive 2014/65/EU of the European Parliament and of the Council with regard to regulatory technical standards on the tick size regime for shares depository receipts and exchange-traded funds. Available: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32017R0588



While the SEC did experiment with wider tick sizes for certain symbols in what is generally regarded as a failed tick size pilot, that pilot was testing a different hypothesis than that put forward by XTX Markets here.[10] The tick size pilot was targeted exclusively at less liquid securities to determine whether a wider tick increment would enhance displayed liquidity. That pilot did not tailor the tick size to both the price and average daily volume, which XTX Markets believes is critical to generating an optimal trading outcome.

Retail Investor Order Handling Transparency

XTX Markets commends the SEC's recent approval of rules designed to standardize and enhance the disclosure of institutional order handling practices, and to enhance the disclosure of retail broker-dealer disclosures.[11] With respect to the latter, however, XTX Markets believes the SEC has not gone far enough to meaningfully enhance disclosure available to retail investors. For example, we support changes to the disclosure regime around Rules 605 and 606 that would make it possible for retail investors to compare execution quality between different brokers, which is functionally impossible to do today.

Under current regulatory requirements, trading centers, including wholesalers and exchanges, publish monthly Rule 605 reports disclosing a variety of execution quality metrics for the aggregate of the market centers' executions over the prior month. Brokers, in turn, publish quarterly Rule 606 reports disclosing the percentages of orders routed to each market center they access, and any material relationships with those market centers, such as

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10 See Exchange Act Release No. 74892 (May 6, 2015).

11 See Exchange Act Release No. 84528 (November 2, 2018).

ownership interests, as well as the amount per share, if any, received in payment for order flow.

While this is valuable information, it does not enable a retail investor to do a comparison between brokers to assess the extent to which one broker receives better execution quality on its orders from a given market center than another broker. So, for example, the question of whether a broker with a material relationship with a market center, or one who accepts payment for order flow from a market center, receives worse execution from that market center than another broker who doesn't have a material relationship, doesn't accept payment for order flow, or accepts relatively less payment for order flow, is unanswerable.

We believe this is a material gap in the information available for retail investors to make informed decisions about their broker and that it would be relatively simple for the SEC to close this gap through non-controversial rule-making.

Latency Arbitrage and Asymmetrical Speed Bumps

XTX Markets believes that the race for speed in trading has reached an inflection point where the marginal cost of gaining an edge over other market participants, now measured in microseconds and nanoseconds, is harming investors. This can best be illustrated by the practice of latency arbitrage, which in today's market means using dedicated microwave towers to transmit order information from one location to another to trade the same or correlated financial instrument based on information that is a mere few milliseconds away from becoming available to all market participants.

The cost of that dedicated microwave tower network is materially greater than the cost of slightly slower commoditized fiber networks, and that greater cost is passed on directly to investors. Market makers providing liquidity need to price to the average of the toxicity of the order flow they interact with, and to the extent that they are being adversely selected by latency arbitrage strategies, they must widen their spreads to account for that possibility, which in turn increases the costs of trading for all investors accessing that market, and increases the costs of raising capital. Moreover, attempts to compete on speed at these levels create a meaningful barrier to new entrants into market making who may have unique pricing, as well as time horizon and risk absorption capabilities.

For this reason, XTX Markets advocates for latency floors, or asymmetric speed bumps, that equal the playing field between market makers and price takers engaged in latency arbitrage by imposing a few milliseconds delay on orders to remove resting liquidity. Asymmetric speed bumps enable market makers to post better prices at larger size because traders engaged in latency arbitrage are effectively unable to deploy that strategy on such a market. Other investors continue to experience high fill rates because their trading is not correlated to a price change in an instrument trading on a geographically disperse exchange.

TSX Alpha in Canada deploys an asymmetric speed bump on an unprotected quote. Alpha has demonstrated its value to investors, routinely capturing 8% - 10% of Canadian market share during continuous trading. In Europe, multi-lateral trading facility Aquis, while

not deploying an asymmetric speed bump, implemented rules in 2016 that prevent proprietary trading firms from removing liquidity on the venue. That rule set serves the same purpose as an asymmetric speed bump – removing latency arbitrage strategies from the market. Since implementing this rule change, Aquis has also demonstrated the value of its low impact liquidity to investors, doubling in size to more than 4% of European equity volumes and growing.

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XTX Markets appreciates the opportunity to share its views on U.S. equity market structure with the SEC. As noted above, we believe after more than a decade since Regulation NMS went into effect, market participants have adapted to this regulatory regime to exploit the inefficiencies inherent in the rules and that that exploitation has resulted in a degradation of market quality. XTX Markets is advocating for a wholesale roll-back of much of Regulation NMS, which we believe will enhance the efficiency and competitiveness of the markets resulting in demonstrably improved market quality for all investors, and a decrease in the costs of raising capital.

Sincerely,

Dr. Alex Gerko, co-CEO, XTX Markets Ltd

Dr. Zar Amrolia, co-CEO, XTX Markets Ltd

Eric Swanson, CEO, XTX Markets LLC

Cc: The Honorable Jay Clayton
The Honorable Kara M. Stein
The Honorable Robert J. Jackson Jr.
The Honorable Hester M. Peirce
The Honorable Elad L. Roisman
Brett Redfearn, Director, Division of Trading and Markets
David Shillman, Associate Director, Division of Trading and Markets
John Roeser, Associate Director, Division of Trading and Markets