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May 21, 2020

Vanessa A. Countryman  
Secretary, Securities and Exchange Commission  
100 F Street NE  
Washington, D.C. 20549-1090  
ELECTRONIC SUBMISSION in reference to File Number S7-03-20

Dear Ms. Countryman:

We applaud the SEC for developing a robust proposal intended to reduce information asymmetry, foster fairness, and increase competition, and we are pleased to have this opportunity to comment on the proposed changes listed in File Number S7-03-20.

BestEx Research is an independent algorithmic trading solutions provider that specializes in minimizing transaction costs for institutional investors via a multi-asset algorithmic trading management system combining execution algorithms, backtesting, and transaction cost analysis with execution consulting services. We provide our algorithmic trading solution directly to buy-side institutions and to sell-side providers who sponsor our solutions for buy-side firms.

We heartily agree with much of the proposal and would like to share our thoughts on five items in particular that we feel are critical to the overall wellness of the US equities market:

- A robust and reliable Securities Information Processors market data feed ("SIP") is absolutely critical to the operation of the US equity marketplace, though it seems to be less popular [in name, but not usage] than direct feeds. Most institutional brokers, trading firms, technology firms, asset managers, retail brokers, and retail investors depend heavily on SIP feeds—directly or indirectly—for execution, evaluation, regulatory reporting, and research. The reforms to the SIP proposed by the Commission will make it even more robust and useful.
- SIP operators have little incentive to provide better content at more competitive prices with lower latency because it may cannibalize their own direct feed business. The Commission's proposal to allow competition among vendors offering the SIP feed is likely to reduce prices, improve quality, and reduce the risk of a single point of failure.

- Given that exchanges have zero competition in providing their own market data feeds, we welcome the Commission's proposed mandate that exchanges provide depth of book information and auction information to competing SIP vendors, thus reducing information asymmetry among market participants. However, we believe that SIP providers should not be required to include that information in their products. Consumers are interested in a variety of market data types, and their demand will create a natural balance of price with information provided. If exchanges are mandated to share the data with SIP providers, the providers should then be able to decide what content to include for their clients.
- The current definition of round-lot size based on number of shares rather than dollars has no economic foundation. Setting the round-lot sized based on a price-dependent dollar volume of \$1,000-\$1,500 will increase available liquidity and tighten spreads. This new definition of lot size will narrow the National Best Bid and Offer (NBBO) for all market participants regardless of the data feeds they use, having a positive impact on investors' execution quality. While not all odd lot quotes would be published as outlined in the current proposal, there would still be a meaningful increase in the information available via SIP feeds regarding what is a large portion of quote and trade activity for highly priced stocks.
- We strongly disagree with the Commission's proposal of separating the NBBO from the Protected Best Bid and Offer (PBBO). We believe that the proposed separation of the NBBO and the PBBO will introduce complexity and confusion, increase the cost of implementation of this proposal drastically, and negate the other positive effects this proposal would create by right-sizing round lots. Hence, we recommend that the Commission consider applying the new round lot definition to both the NBBO and the PBBO.

Additional detail and supportive evidence for our positions are provided in the following sections.

**Despite the claims of many market participants, the SIP is a critical component of US equity market structure and is widely used by institutional broker-dealers.**

The SIP feed is the backbone of US equity market structure, binding together the best quoted prices from thirteen exchanges and trades from more than fifty market centers. Anyone building an algorithmic trading system or analyzing market behavior need only process SIP or historical SIP data for access to top-of-book quotes in every market (excluding odd lots), every trade, opening and closing prints of each stock, and every trading halt indication at the market- or stock-level.

Surprisingly, however, many large broker-dealers claim—at least publicly—that the SIP is not very useful for institutional execution services. Use of the SIP versus direct feeds was not a mainstream topic until two exchange executives quarreled on CNBC over which they use to compare their markets' quotes to those of away markets in 2012. As a result, using direct feeds

became associated with sophistication, and the SIP the opposite. But since that public debate, there have been significant improvements in SIP feeds. Aggregation latencies have been reduced from 6 milliseconds to a fraction of one millisecond, odd lot trade information is now included, and if multiple odd lots aggregate to a round lots those quotes are included as well. In our experience, SIP feeds are also far more resilient than aggregation of direct feeds from thirteen exchanges and trades from all venues into a single stream.

While institutional brokers now prefer to associate themselves with direct feeds to benefit from their perceived sophistication, in our experience this behavior is largely window-dressing. Behind the scenes, they rely heavily on the SIP and often their aggregation of direct feeds is not sophisticated enough to benefit from speed differentials.

Readers can plainly see firms' reliance on the SIP in their required ATS filings, thanks to the SEC's ATS transparency initiative. In our review of ATS filings, we found that all ATS operators—including large broker-dealers—use SIP feeds either as a single source of pricing information, as a supplement in lieu of select direct feeds, as a backstop, for auction information, for market halt information, or some subset of these<sup>1</sup>. More than one third of ATSs use the SIP—exclusively—for pricing trades. In some cases, ATSs use direct feeds for some markets but use the SIP for the primary markets, perhaps due to the high cost associated with those feeds in particular. In other cases, they rely on the SIP to access quotes from exchanges with lower market share and/or for all trade information. These include broker-dealers executing hundreds of millions of shares each day in their dark pools and execution algorithms. Based on these facts, we can hardly call the SIP an “eyeball-only product” or “for main street investors only.”

Broker-dealers who use the SIP in their dark pools are likely also using it in their execution algorithms, since latency is less a concern in an algorithm than a dark pool that prices all of its executions based on the NBBO. As referenced above, when brokers say “we use direct feeds” it does not mean that they do not also use SIP feeds. While order routing software may use direct feeds, the corresponding execution algorithms responsible for most of the decision making—including size, price, and time—often use the SIP. Even within their routing software, providers may use direct feeds for some exchanges and SIP in place of others.

While low latency is important for both high frequency trading (HFT) strategies and algorithmic execution strategies, these use cases for low latency are different. If a low latency HFT strategy experiences an additional 100 microseconds of latency in their systems, profitability may decline dramatically—perhaps even to zero for highly sensitive strategies. That hardly applies to most execution algorithms.

Execution algorithms, on the other hand face a different tradeoff. They must be robust, never overtrade, and be ready to accept all kinds of orders from clients. While an HFT firm may use a variety of short cuts—like minimizing risk checks and running a decentralized system with strategies collocated in each exchange location—they are simply not suitable for the design of most algorithmic execution systems.

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<sup>1</sup> <https://www.sec.gov/divisions/marketreg/form-ats-n-filings.htm>

Most large brokers also run legacy systems with multiple layers of FIX protocols and layers of market data normalization and aggregation by third-party vendors. The added latency algorithms experience is many multiples of the savings from using direct feeds over the SIP. As a result, most providers continue to rely on the SIP, though they may incorporate some use of direct feeds in a limited capacity to bolster perceived sophistication among clients.

Improvements to the SIP are likely to face opposition from exchanges, as they benefit from selling direct feeds. Ironically, the Commission's proposal is also likely to receive little support from institutional broker-dealers since they do not want to be associated with reliance on the SIP. But in our opinion, the proposed improvements to the SIP and competition among providers of SIP data will have a widespread positive impact on investors.

### **Allowing competition among SIP providers will reduce cost and systemic risk.**

The introduction of Protected Best Bid and Offer (PBBO) combined with a fixed, one-cent tick size has incentivized new exchanges to enter the US equity marketplace, growing from a handful to thirteen over the last fifteen years. New exchanges differentiate themselves by creating new access fee schedules, effectively allowing a new bid-offer spread not otherwise available with a fixed minimum tick size<sup>2</sup>. Protection of the best quote makes it easier for incumbent exchanges to garner market share. There is no other reasonable explanation for each of the three large exchange companies (NASDAQ, NYSE and CBOE) owning several exchanges under one umbrella, each with different access fee schedules but very similar order matching rules. Newer exchanges often do not charge for direct feeds as they try to build market share, but that changes quickly when they are later acquired by larger exchanges.

In our current market structure, exchanges compete heavily on transaction fees because market share moves swiftly to exchanges with reduced fees. But exchanges do not compete on market data fees since each is an exclusive provider of their own, indispensable content. Thankfully, we have SIP feeds to help reduce costs, but SIPs are produced by the same, larger exchange conglomerates with fixed fees on their constituent exchange data. Exchanges have major incentives to produce differentiated content in direct feeds and correspondingly little incentive to improve the content or pricing of SIP feeds that may cannibalize their highly profitable direct feed business.

The Commission rightly recognizes this issue in US equity market structure. The bigger the differences in content between direct data feeds and SIP, the more power exchanges have in setting their own prices for market data. This naturally makes it harder for smaller market makers to survive. If the Commission allows multiple vendors to compete, it will not only equip these firms to provide more content, but it will also drive prices down for both SIP and direct feeds. More affordable market data pricing will allow smaller firms like ours to reposition resources currently devoted to market data for other growth- and development-focused efforts to better serve our customers.

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<sup>2</sup> For example, a tick at an exchange with an access fee of 30 mills is equivalent to 1.6 cents bid-offer spread, while the same tick with a rebate of 10 mills at an inverted exchange is equivalent to a .8 cent bid-offer spread.

Lastly, competition also enhances robustness. The existence of multiple SIP vendors will allow firms to choose the best offering for their purposes and others as backstops, reducing the reliance on a single SIP feed vendor.

**We support the Commission’s proposal to include auction data and depth-of-book data in SIP feeds, but we believe that SIP vendors should be able to choose whether they provide depth of book data to their customers.**

We believe that all data can be useful for execution algorithms’ quantitative trading decisions—depending on usage—but currently, auction and depth data are only available via costly direct feeds. We recommend that the Commission require each exchange to provide content to SIP vendors that is similar to what they include in their direct feeds. While in this proposal, the Commission is not quite this prescriptive, the availability of auction information, depth of book data, and reduction of round lot sizes do shift markets toward that goal.

Based on the current proposal, the Commission will mandate that competing SIP vendors provide access to depth-of-book (DOB) data to their clients, although they can come up with a complimentary product that does not provide DOB data. In the single-vendor environment that exists today it makes sense to mandate this, but in a competitive environment we think the Commission should leave it up to the SIP vendors themselves. Adding DOB information will add complexity and increase latency to data feeds. Abstaining from a mandate here would ensure that those who prefer speed over depth can find satisfactory products, and those who prefer depth of book data over speed can, too. It would also encourage market data vendors to go through the approval process knowing that they do not necessarily need to make DOB information available to clients, thus encouraging competition further and reducing data costs for all consumers. As long as exchanges are required to provide this data to vendors and multiple vendors provide it to market participants, there is no need for the Commission to mandate what each vendor provides.

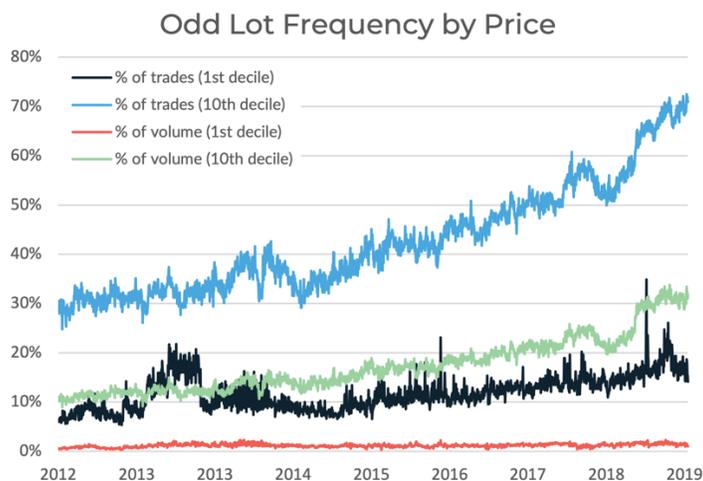
We support the Commission’s effort to strike a balance in determining the amount of DOB data to require, because the amount drives the complexity and latency. However, if there are competing SIP vendors and they have the choice to provide DOB information based on customer demand, natural economic forces will decide how many levels of information are useful. If the Commission makes it optional for a SIP vendor to provide this data, then it could also consider mandating that exchanges provide even more information to SIP vendors than what is outlined.

**The Commission’s newly proposed round lot definition is economically meaningful and will increase liquidity.**

We support the Commission’s proposal to reduce the mandated round lot size, updating the round lot size to a smaller quantity for higher price stocks and making lots nearly equivalent in dollar value. The existing 100-share lot size across stocks does not have a meaningful economic purpose; investors and other market participants make investment decisions in dollars rather than targeting a specific number of shares. Even stock prices themselves have little economic

significance independently of the total market capitalization of a firm, serving neither as a proxy for liquidity in the stock nor the total value of a company.

A strange implication of the current market structure is that as a stock's price increases, the amount of liquidity needed to form the NBBO increases, and as a result the protected bid-offer spread increases as well. The figure below illustrates that as stock price increases, market participants are not willing to trade the full dollar value of a round lot and trade in odd lots as a result. By the end of 2019, odd lots had grown to more than 70% of trades and 30% of the total market volume for highly priced stocks (10<sup>th</sup> decile). Unfortunately, with odd lots tied to NBBO construction, this has major implications for investors.



We support the Commission's proposal to move toward a round lot size of approximately \$1,000-\$1,500. Although the Commission recognizes that some algorithmic providers may be able to see a tighter bid-offer spread as a result of this change and provide better execution, there are additional benefits of right-sizing the round lot. A smaller round lot will directly impact the calculation of the NBBO, tightening spreads for highly priced stocks and increasing published depth. Many market participants utilize "pegged" order types at exchanges—pegged to the NBBO and its midpoint—and that liquidity will automatically shift inside of the current NBBO, making more liquidity available at exchanges. Similarly, off-exchange liquidity will be available at tighter bid-offer spread. Off-exchange liquidity is almost 40% of the overall liquidity in the US equity marketplace. Irrespective of their usage of direct feeds or SIP, dark pool operators and market makers price liquidity in terms of the NBB, NBO, and their midpoint. A tighter NBBO will reduce execution costs for all market participants—both retail and institutional investors—no matter where executions take place.

**We believe the PBBO should remain aligned with the NBBO, as separation will create unnecessary complexity, increase costs, and negate the effects of a smaller round lot size.**

One NBBO across 13 competing exchanges and dozens of non-exchange venues makes the US equity market both highly complex and highly evolved, and right-sizing the round lot will evolve our market structure even further. In addition, a single NBBO makes implementation of

automated trading software (ATSs), exchanges, user interfaces, regulatory software, and transaction cost reporting relatively simple in spite of market fragmentation.

But the Commission is proposing a protected bid and offer (PBBO) based on a 100-share lot size that is distinct from the NBBO based on newly defined, price-appropriate lot sizes. In other words, Rule 611 which prohibits trade throughs or locked/cross markets will now be based on a different price (PBBO) than the NBBO itself. The Commission proposed that best execution will be determined based on the NBBO, but the PBBO is what will be absolutely protected under the trade through rule. That also implies that the NBBO could become locked or crossed during the course of normal trading.

We strongly disagree with the Commission on this specific implementation. This part of Commission's proposal will make market structure unnecessarily complex and delay the positive effects created by right-sizing round lots.

To start, trading systems will now have two choices: 1) choose between NBBO and PBBO or 2) add extra fields and look at both for different purposes. Below, we provide additional examples of the confusion and complexity a separate NBBO and PBBO will create for a variety of market participants.

#### **ATS / Dark Pool Operators (Midpoint Execution)**

Currently, many ATSs use direct data feeds for running dark pool operations. Thus, they have the ability to calculate the NBBO based on odd lots, but they create NBBO following SIP rules to more easily illustrate their regulatory compliance. In the event of NBBO and PBBO separation, ATSs must decide whether to use the NBBO or the PBBO for execution or to provide their users an option. If they use the NBBO, they must prepare to handle scenarios related to locked or crossed markets, which will likely become common. To avoid handling the variety of idiosyncrasies related to locked or crossed markets, they may choose to completely switch to the PBBO rather than NBBO.

#### **Algorithmic Trading Providers**

Algorithmic providers are most likely to use the NBBO, but will have to plan for the possibility of frequently locked and crossed markets. Typically, a locked or crossed NBBO in the US equity market indicates that one of the underlying feeds is stale or experiencing a technical issue. Our systems create "critical" alerts when the NBBO is locked or crossed for more than a few seconds. With the new proposal, algorithms must expect locked and crossed markets, as well as zero or negative spreads, and create alerts pertaining to the newly separate PBBO to detect any technical issues in their feeds.

#### **Exchanges**

Most exchanges run a brokerage operation to route orders to alternate exchanges in compliance with Rule 611, whether they use the SIP or direct feeds for a view of other markets. Even if they have knowledge of the odd lots inside the NBBO in an away market, they do not route to those venues. Going forward, they would have to determine rules related to three types of orders—odd lots (based on the new definition of round lots), orders between the new round lot size and 100 shares, and orders larger than 100 shares. Likely,

they will use the PBBO rather than NBBO to reduce complexity. On the other hand, it would make sense to set pegging order types to the NBBO—meaning that exchanges may need to calculate both the NBBO and PBBO continuously, further increasing complexity.

### **Firms' Regulatory Reporting**

Since best execution reports are based on the NBBO, firms record the NBBO. But if a firm utilizes intermarket-sweep orders (ISO), they would also need to record the PBBO. That means firms' historical databases would need to change as well to record both the NBBO and PBBO as reporting information is stored going forward.

### **Market Data Providers and Consumers**

Trading systems do not often use market data directly; rather, market data travels through a series of “normalizations” before trading software receives it. For example, firms like Redline, Bloomberg, Activ Financials, and Refinitiv normalize the SIP feed and provide the normalized data via API to their clients. Trading firms often create their own API around vendor APIs so they can change underlying vendors seamlessly as needed, and their trading systems use this API to consume the market data.

If algorithmic trading software requires either the PBBO or NBBO, the change will be more straightforward, but if both are required for the operation of the software then the change could mean months of coordination among vendors and teams to add the necessary fields. The larger the broker-dealer, the more potential vendors, and the more complicated these changes will be.

### **Electronic Market Makers (EMMs)**

Most marketable retail flow is routed to electronic market makers (EMMs, e.g. Virtu, Citadel, Citi, UBS) in exchange for payment via order flow. Unlike broker-run dark pools that cross only customer orders, EMM venues trade their own interest and thus will be hurt tremendously by smaller round lots' narrowing of the spread. The same set of firms also provide access to institutional brokers and reduce their cost to route orders to exchanges. Many HFT market making firms provide liquidity in the dark pools themselves and represent a significant portion of the volume in dark pools. Each of these market participants is less incentivized by the NBBO and will likely lobby brokers to use PBBO. While arguments can be made that Rule 611 both helps and hurts institutional investors, there is no doubt that it helps retail investors—who often receive no assurance of best execution—tremendously. Allowing market making firms to use the PBBO (with a wider spread) will reduce the benefits RegNMS creates for retail investors.

This part of the Commission's proposal seems to be based on the controversy regarding the Rule 611, which divides the industry in its helpfulness / harmfulness. Proponents believe it creates a guarantee that the investor's worst-case scenario is the NBBO for orders smaller than the liquidity available at the NBBO. Opponents believe it is overly prescriptive and has created excessive fragmentation, excess complexity, and exotic order types to work around locked and crossed markets. While repealing Rule 611 may be too large a decision or too controversial, we recommend the Commission not separate the NBBO and PBBO. The arguments made against Rule 611 will only be exacerbated by this change. It would be relatively simple for the

marketplace to adopt a consistent change in round lot size for both the NBBO and the PBBO, which we think is a very sound, much needed change as described above. In fact, most systems would require no change at all. We suggest the Commission change the definition of lot size while keeping the PBBO and NBBO aligned.

Thank you for this opportunity to share our thoughts on the proposed changes to RegNMS regarding collection, consolidation, and dissemination of quote data. We believe the proposed changes will reduce information asymmetry, improve pricing of market data, improve liquidity, and make the US equity markets more robust. In addition to the current proposal, we recommend the Commission provide competing SIP vendors flexibility on what data they provide to their clients and retain alignment of the NBBO and PBBO.

Sincerely,

**Hitesh Mittal**

Founder & CEO | BestEx Research