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Securities and Exchange Commission
100 F St. NW
Washington, DC 20549-9303
Rule-comments@sec.gov

Re: Regulation NMS: Minimum Pricing Increments, Access Fees, and Transparency of Better Priced Orders
File No. S7-30-22, also S7-32-22, S7-31-22, and S7-29-22

Dear SEC:

¹ All opinions are strictly my own and do not necessarily represent those of Georgetown University or anyone else. I am very grateful to Georgetown University for financial support. Over the years I have served as a Visiting Academic Fellow at the NASD (predecessor to FINRA), served on the boards of the EDGX and EDGA stock exchanges, served as Chair of the Nasdaq Economic Advisory Board, and performed consulting work for brokerage firms, stock exchanges, other self-regulatory organizations, market makers, industry associations, and law firms. I am the academic director for the FINRA Certified Regulatory and Compliance Professional (CRCP®) program at Georgetown University. I've also visited over 75 stock and derivative exchanges around the world. As a finance professor, I practice what I preach in terms of diversification and own modest and well-diversified holdings in most public companies, including brokers, asset managers, market makers, and exchanges.

In summary

- The round lot should be abolished.
 - Protected quotes, NBBO, and last sale should be set for fixed dollar, not share, size.
 - Execution quality should be measured against the displayed book.
- Tick sizes should be chosen by issuers. They have the incentive to get it right.
- Access fee transparency is great.
- Get rid of the price controls on exchange fees. Let brokers take fees into account when routing orders.

Introduction

In December 14, 2022, the SEC launched an armada of rule proposals that would greatly change how the equities are traded in the United States. The four proposals are all interrelated and should be analyzed as an integrated whole. This comment letter discusses the proposals on tick size, access fees, and round lots.

Round lots

Once upon a time, long, long ago, in a stock market far removed from today, trades were manually processed by human beings shuffling paper stock certificates. The high fixed marginal cost associated with trading even one share meant that it was uneconomic to handle small transactions. Accordingly, special procedures (along with additional fees) were applied to handling “odd lots” of less than 100 shares. These included shuttling odd lots to a special “odd lot” post. There was even an additional \$1/8 of a share “odd-lot differential” that was added to the cost of each trade on the NYSE.

Technology has changed. Modern automated systems have dropped the cost of processing even a one share trade to miniscule levels. Especially in the past year,

many of the algos that slice up large trades no longer slice orders into round lots, but frequently slice their orders into randomly sized odd lots.

Yet the ancient and obsolete round lot remains enshrined in our obsolete rules. The round lot has four main economic applications in today's world:

1. The round lot defines what quotes are protected. Only quotes greater than the round lot size are protected against trade-throughs.
2. It defines the NBBO and thus provides a general measure of the liquidity available in a stock.
3. It sets a benchmark for measurement of best execution. Quoted, effective, and realized spread measures rely upon the NBBO.
4. It determines the minimum size needed for determining the last sale or closing price for the day.

The round lot is obsolete for all of these applications and should be replaced with better solutions. The major problem with the application of an arbitrary round lot size for these applications is that the monetary value changes with the nominal price of a stock. A mere \$500 order can set a protected quote and define the NBBO for a \$5 stock, yet it takes \$10,000 for a \$100 stock.

Measures of liquidity such as the bid-ask spread, which is based on the National Best Bid and Offer (NBBO), are severely distorted by the arbitrary round lot size. Only \$500 worth of a stock can set the NBBO for a \$5 stock, while it takes \$10,000 to set the NBBO for a \$100 stock. This leads to wider NBBOs for higher priced stocks and more odd-lot trading.

The proposed tinkering with the round lot in the proposed rules recognizes this. However, the current tinkering is just that, tinkering, and does not deal with the fundamental problems with any round lot size. Note that many stock exchanges around the world have eliminated the round lot and trade in quantities as low as one share. Indeed, many brokerages now facilitate trading in fractional quantities less than one share. We can and should eliminate the arbitrary round lot and use better tools for the current uses of the round lot.

Protected quote and last sale should be based on a constant dollar amount.

It is absurd that we “protect” a \$500 order for \$5 stock but not a \$5,000 order for a \$100 stock. To the extent that any quotes should be protected, they should be protected for a similar dollar amount, such as a \$1,000 trade or \$5,000 trade.²³

An Indicative BBO should be based on trading a constant dollar amount.

The current NBBO is often displayed to give investors a sense of the state of liquidity for a stock. However, the current NBBO is for a tiny dollar amount for low-priced stocks and an absurdly high dollar amount for high-priced stocks. It makes sense to construct a general benchmark that shows the price at which one could buy or sell a constant dollar amount such as \$1,000 or \$5,000. The Indicative Best Bid and Offer (IBBO) would be disseminated through standard data feeds.

Investors should be shown the Effective Best Bid or Offer (EBBO) for the exact size of their order.

It is now trivial for a computer to examine the displayed depth of book and calculate what the price would be to trade a given dollar amount against the displayed orders. Such an Effective Best Bid and Offer (EBBO) should be displayed to investors when they place an order. This would tell them with much more precision what price they should be able to achieve.

Execution quality should be measured against the EBBO.

Much of the discussion in the current proposals is around “price improvement.” However, how much of the current “price improvement” is really an improvement over the displayed interest in the market and how much of it is just an artifact of bad quotes that ignore odd lots? Using the EBBO provides a much more precise benchmark for measuring execution quality.

² It is debatable whether there should be a protected quote at all. In a market with very high transparency and strict best execution rules, it would appear to be redundant.

³ A 100-share trade of a \$10 stock is \$1,000, and a 100-share trade of a \$50 stock is \$5,000. This number gathers the range of the dollar size of the round lots for a large fraction of stocks today.

Tick Size

Issuers have the incentive to get the tick size right. Let them pick.

The tick size can be too large or too small. The current proposal only deals with ticks that are too large.

There is broad agreement that the current tick size of \$0.01 for stocks greater than \$1.00 is not optimal for all stocks. Low-priced stocks become “tick constrained” with very large queues on the bid and offer. High-priced stocks suffer from a tick that is too small relative to the stock price. This leads to a paucity of liquidity at the quote and excessive quote flickering and pennyng, traders jumping ahead of the current quote at a trivial increment.

There are various ways that markets have addressed this problem. Some have a formula based solely on price. Others assign stocks to various buckets based on their liquidity. The SEC proposes reducing the tick size for stocks considered tick constrained, with updates every quarter based on the previous quarter of trading. This adds considerable complexity to market operations.

There is considerable debate over the tick size, but not enough over who chooses the tick. Any formula will of necessity be crude and unlikely to be optimal for all of the stocks in a particular bucket. Instead of a top-down one-size-fits-all formula, the issuers should be permitted to choose the tick size for their own securities. They have the incentive to get it right to maximize the liquidity and thus the value of their stock.

Some of my fellow market-structure observers claim that issuers are not sophisticated enough to make such a decision. I disagree. Issuers make many complex technical and financial decisions, and know where to go for expert advice when needed. They should be given the right.

The Tick Size Pilot was not designed for the majority of NMS stocks.

The proposing release leans heavily on the Tick Size Pilot (TSP). However, the TSP was specifically designed to address less liquid small-cap stocks, not large cap stocks. This makes extrapolating the results to the larger stocks quite problematic.

The results of the TSP were similar to studies of other tick size changes in the US and other countries. Larger ticks resulted in wider bid-ask spreads and smaller ticks in smaller spreads. However, there is a tradeoff, in that there is generally less displayed liquidity and more quote flicker with smaller ticks.

There are other issues with the Economic Analysis. In particular, there was no real analysis on the rationale for choosing to maintain the current net capture rate for the exchanges, nor was there any real analysis on the proposed changes for stocks priced less than \$1.00.

The proposal calls for too many ticks.

The proposal calls for tick sizes as low as one-tenth of a cent based on the time-weighted-average quote (TWAQ) in the prior quarter. There could be as many as eight ticks between the bid and offer. This is probably too many ticks. Recent research on the optimal tick size indicates that liquidity is optimized when the bid-ask spread is about two ticks.⁴

However, just because a reduction in the tick size from five cents to one cent reduced spreads for the low-cap stocks in the tick pilot, that does not mean that reducing spreads from one cent to as low as one tenth of a cent will result in an improvement for all stocks. Life is not linear, and there is broad agreement that the tick can be too small. Otherwise, why not go with a tick of \$.0001 or less?

Any changes should be phased in gradually with control groups.

If the Commission does go forward with the tick size rule changes, it should do so gradually and not go too small too fast. Any changes should be done one step at a time, with well-designed control groups. There should be enough time in between phases to conduct orderly studies of any change, with adequate public information available.

⁴ For some excellent empirical work on the optimal tick size, see Phil Mackintosh, 2022, "Getting Ticks Right Improves Valuation," <https://www.nasdaq.com/articles/getting-ticks-right-improves-valuations>. For theoretical models of tick size, see Angel, James J. "Tick size, share prices, and stock splits." *The Journal of Finance* 52.2 (1997): 655-681, Kyle, Albert S., and Anna A. Obizhaeva. "Dimensional analysis and market microstructure invariance." (May 27, 2016) (2016). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2823630, and Li, Sida, and Mao Ye. "Discrete Price, Discrete Quantity, and the Optimal Nominal Price of a Stock." Available at <https://www.aeaweb.org/conference/2023/program/paper/aeGED9GA>.

Access Fees

The price controls on access fees should be abolished.

Making tick sizes as small as proposed causes another problem. The cap on access fees under current SEC Rule 610 would be larger than the tick size, so the rule proposal calls for a reduction in the prices exchanges are allowed to charge.

Instead of tinkering, the Commission should ask why it is in the price setting business in a market as competitive as the US equity order matching market. With three major exchange groups, several smaller entrants bent on expanding market share, and intense competition with off-exchange providers, there is no shortage of strong competition in the market for matching U.S. equities. There should be no need for price controls in such a competitive market.

Exchanges typically charge the market orders that “take” liquidity from an exchange and pay rebates to the resting limit orders that “make” liquidity, a fee structure known as “maker-taker.” The take fee is generally limited by the SEC Rule 610 to \$0.0030 per share, or 30 cents per 100 shares.

In general, price controls are a last resort when there is some kind of market failure. What is the market failure here? It is based on SEC rules. In the words of the SEC:

“...current Regulation NMS rules dictate that marketable orders be routed to venues with the best nominal quoted prices without regard to what the net proceeds may be.”⁵

In other words, brokers have to pay whatever an exchange charges and cannot take that into consideration when routing orders. Thus, exchanges have an incentive to charge as much as possible. As long as an exchange has a limit order on its book that is the best price in the market, brokers seeking best execution have to trade with that order no matter what the access fee is.

The solution is to let brokers take the fees into consideration in their order routing. If brokers can take fees into consideration and route to the market with the best all-in costs, there would be no need for the SEC to get into the price control business. Whether and how the brokers pass on fees and rebates must be clearly disclosed in their disclosures of order routing practices.

⁵ Proposal, page 303.

Ex-ante fee transparency is long overdue.

In order for brokers to make proper routing decisions, they need to know the all-in price charged by the various market venues. The proposal to require this is a great step forward and long overdue.

Respectfully submitted,

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