



Cboe's Vision

Equity  
Market  
Structure  
Reform

January 2020

## Introduction

Cboe Global Markets (Cboe) is a multi-asset exchange holding company, well-versed in the art and science of defining markets – from equities, options, and futures, to global foreign exchange and exchange traded products. This holistic view of the markets motivates us to seek what is fair and beneficial to all participants. We listen to and work with our customers and broader industry participants to create, innovate and develop unique solutions that address their needs.

Our customer-first approach drives us to make markets better through the service we provide, the new initiatives we pursue and the market structure enhancements we seek. We have a vision for the markets that embraces transparency and fairness.

The equities markets are the best they've ever been – they have never been fairer, more cost-effective or more liquid. Cboe strongly believes that proposed structural changes to the markets should, first and foremost, adhere to the “do no harm” principle. Modifications should be made to improve market quality without incurring the risks and complications of a large-scale market structure overhaul.

As a prominent equities exchange operator, Cboe provides robust and resilient markets that bring together buyers and sellers across numerous asset classes. Our four equities exchanges execute about 17% of the total average daily U.S. volume. Cboe's significant experience and insight into the functioning of the U.S. equities markets has focused our recommendations on proposals that will benefit investors, while continuing to foster competition and market efficiency.

## Current Marketplace: Technology and Regulation

Market structure is comprised of many interconnected factors. Technological advancement and several meaningful regulatory changes have had a significant and lasting impact on today's equity markets. Technology has reduced costs, increased the speed and reliability of routing and executing orders, and put sophisticated trading tools into the hands of everyday investors.

Regulation has played an equally important role in shaping today's equities market structure. The most significant regulatory change to affect the equities market was the 2007 implementation of Regulation NMS (Reg NMS).<sup>1</sup> Combined with significant evolutionary technological advancements, Reg NMS addressed serious structural market deficiencies and quickly facilitated changes in the equity markets that advanced innovation, automation and competition, each of which contributed to heightened efficiency and lower trading costs for investors.

### Regulation National Market System

Reg NMS was designed to modernize and strengthen the national market system for equity securities.<sup>2</sup> The principal components of Reg NMS include:

- › **Rule 610** - the Access Rule, which was designed to promote fair and non-discriminatory access to quotations;
- › **Rule 611** - the Order Protection Rule ("OPR"), which was designed to encourage the display of limit orders and facilitate the execution of marketable orders at the best prices available in the market; and
- › **Rule 612** - the Sub-Penny Rule, which was designed to address the practice of "stepping ahead" of displayed limit orders by trivial amounts through the introduction of uniform quoting increments.

Prior to the implementation of Reg NMS in 2007, primary listing markets controlled the vast majority of trading volume. For example, NYSE's share of consolidated volume in NYSE-listed companies was nearly 80% in 2005. Today, no single exchange has more than 18% market share and no exchange group has more than 25%.

Reg NMS has provided choice and fostered innovation across exchanges, however some aspects prevent exchanges from meaningfully competing with off-exchange venues. In 2009, there were approximately 32 Alternative Trading Systems (ATSs), which along with other off-exchange trading venues executed approximately 25% of the consolidated volume.<sup>3</sup> Today, off-exchange volume has expanded to levels often exceeding 40% of total consolidated volume. For thinly traded securities, off-exchange volume growth is even more pronounced, averaging 45% of consolidated volume, and often surpassing 50% for certain securities.<sup>4</sup>

### Cboe's Do No Harm Approach

Advancements in technology and ongoing innovations have created markets that offer choice and a wide range of benefits to investors. Indeed, the investor experience is better than it has ever been as shown in publicly available 605 statistics.<sup>5</sup> Spreads are narrow and execution costs are low. Brokers have ratcheted commission levels lower over the years, with especially notable declines following the implementation of Reg NMS. Recently, several major retail brokers opted to announce zero commission rates.

Accounting for the broad range of advances that have manifested themselves in the U.S. markets, Cboe strongly believes in market enhancements that do not endanger what is already working well. Improvements that can clearly benefit long-term investors and strengthen markets should be explored. Experiments that may result in diminished liquidity, less resilient markets, or burdens for long-term investors should be avoided. Cboe has focused its recommendations on proposals that will benefit investors, while continuing to foster competition and market efficiency.

<sup>1</sup> More recently, the SEC adopted a new Form ATS-N and amendments to Rule 606 of Reg NMS, which increase the transparency of alternative trading systems and the handling of investors' orders by broker-dealers.

<sup>2</sup> Securities Exchange Act Release 51808 (June 9, 2005), 70 FR 37496 (June 29, 2005) ("Reg NMS Release").

<sup>3</sup> Id. at 15.

<sup>4</sup> See Cboe comment letter responding to SEC's Statement on Market Structure Innovation for Thinly Traded Securities.

<sup>5</sup> Commissioner Elad L. Roisman, Remarks at the March 2019 Investor Advisory Committee Meeting (March 28, 2019).

*I think our equity markets work extremely well today. They are liquid and mature, and it is incumbent on us to continue to ensure that they are fair and efficient. From a retail investor's standpoint, it has never been easier or cheaper to trade. Also, the products, tools, and information available to investors are incredible and constantly improving. Simply put, investors are in a better position, and have more safeguards, than at any other time in the history of our markets and arguably any other capital markets.*

The recommendations set forth below are made with the acknowledgement that our current markets provide an overwhelmingly positive experience to investors, especially long-term retail investors. These recommendations represent targeted, constructive and achievable changes that will increase competition, improve market services and quality without increasing complexity, and thereby ensure that the equities market continues to serve investors well.

## Cboe's Recommendations

*Cboe recommends four key modifications to the current equities market structure:*

- **Round Lots and Odd Lots** - Reduce the standard round lot size from 100 shares to 10 shares or 1 share for high-priced securities, and broaden odd lot transparency by disseminating top-of-book odd lot quotation data through the Securities Information Processors (SIPs). These proposed changes will enhance price discovery, reduce spreads and increase the transparency of limit orders with fewer than 100 shares in high-priced stocks.
- **Distributed SIPs** - Implement SIPs in multiple locations in order to significantly reduce the geographic latency that slows the receipt of consolidated real-time quote and trade information.
- **Tick Size** - Cboe recommends a targeted reduction in tick sizes for securities priced above \$1.
- **Sub-Penny Pricing** - Establish sub-penny pricing standards that permit fair and competitive price-improvement opportunities between exchanges and off-exchange venues.

## Round Lots and Odd Lots: The Increase in High-Priced Stocks

In recent years, the general rise of the stock market coupled with fewer declared stock splits have contributed to a major increase in the average stock price. Almost 600 listed securities, including ones with meaningful retail interest, are now trading above \$100 per share, and the price of an S&P 500 stock now averages approximately \$130 per share, more than tripling from the year 2000.

Stock splits are infrequent and have undergone a steady decline despite steadily rising stock prices. Many issuers, i.e., companies that publicly list their stocks, now opt to let the stock price of their companies continue to rise rather than to split shares. For example, two very actively traded securities, Amazon and Google, trade at more than \$1,000 per share. One round-lot trade of 100 shares priced at \$1,000 would cost a buyer a steep \$100,000.

High-priced stocks, particularly those of considerable interest to individual investors, naturally cause a substantial increase in odd lot trading, as trading fewer shares is more affordable for the everyday person. In addition, limit orders initially entered as round lots often become odd lots as a result of contra-side odd lot order executions against them. All orders, regardless of whether their origination was as a round lot or an odd lot, can lose both displayed representation on the SIPs and the benefit of order protection when their remaining order size is reduced to a quantity below one round lot.

In certain high-priced securities, the majority of open orders exist un-displayed between the round lot national best bid (NBB) and national best offer (NBO). For a \$1,000 per share stock, an individual exchange needs one or more orders with an aggregate notional value of \$100,000 or more at a given price in order to publicly display the quotation and provide trade-through protection to the order.

## Implement Round Lot Size Adjustments

*Cboe recommends the adoption of new round lot sizes, confining adjustments to pre-specified threshold price levels.*

There are currently no established standards or guidelines to adjust round lot sizes when specific price thresholds are reached. As the number of high-priced securities grows, Cboe supports the development of a structured methodology through which round lot sizes would be adjusted downward. This would ensure that these orders are displayed to retail and other investors through the SIPs and extend order protection to a more meaningful percentage of orders in higher-priced securities.

Cboe recommends initially confining round lot adjustments to securities that trade at prices greater than \$500 per

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round lot sizes, even for this small group of securities, would be a significant change for market participants. Current stocks with nonstandard round lot sizes are lightly traded with little retail interest. Changing round lot sizes for actively traded stocks will entail an educational process for brokers, vendors and customers. System changes may also be needed to ensure an understanding of quote sizes.<sup>6</sup>

Based on the experience and analysis of this small group of securities after a 6-month time period, reduced round lot sizes could subsequently be extended to encompass additional securities.<sup>7</sup> Cboe believes that implementing smaller round lot sizes for high-priced securities will, by itself, improve the quality of trading for investors by tightening spreads, increasing transparency and creating more order protection for higher-priced stocks.

### **Broaden Odd Lot Transparency**

*Cboe supports the addition of top-of-book odd lot quotation information to the SIPs.*

Odd lot orders currently have no quote representation by the securities information processors (SIPs), meaning that resting odd lot orders have no opportunity to contribute directly to price discovery. Cboe strongly supports the CTA and UTP Operating Committees' proposal for the SIPs to disseminate top-of-book odd lot quotation data.<sup>8</sup> We believe this addition will broaden odd lot transparency and provide a way for investors to view better-priced orders that do not meet the Reg NMS round lot size requirement for order protection.

## **Distributed SIPs**

### **SIPs and the National Market System**

In 1975, Congress recognized that investors were best served by efficient access to the best market prices, and mandated the creation of the National Market System, which assured a single source for investors to gain real-time access to market data for all NMS stocks. The SIPs are the mechanism through which this vision is accomplished. Each SIP processes an exclusive set of securities, with the SEC requiring each national securities exchange to provide all of its trades and top-of-book quotations through two equities SIPs: CTA/CQ for Tape A and Tape B information, and UTP for Tape C information. Real-time consolidated trade and quote information is disseminated for NYSE-listed securities on Tape A, Nasdaq securities on Tape C, and listings from all other national securities exchanges on Tape B. In addition to quote and trade information, the SIPs also disseminate and calculate critical market information that includes the national best bid and offer (NBBO), Limit Up-Limit Down Price Bands, short sale restrictions and regulatory halts.

### **SIP Processor Geographic Latency Reduction**

*Cboe recommends implementing SIPs in diverse geographical locations to optimally serve the interests of investors.*

Provision of market data, which consists mainly of prices and sizes of trades and quotations, is critical to maintaining markets that optimally serve the securities industry. As a result of the consolidation of quote and trade data by the SIPs, public investors in the U.S. already enjoy the benefits of access to real-time trade prices and the national best quotation prices.

Over the past several years, technological advances have dramatically reduced SIP processor latency from several hundred microseconds to tens of microseconds to process both quotes and trades. SIP latency today is mostly caused by geographic latency, which is a function of the inbound distance from a specific market's location to the

<sup>6</sup> Changing round lot sizes would not necessitate amending Reg NMS. However, the SIPs disseminate size using integer values to represent round lots, meaning that a security's round lot size must be known in order to understand the quote size representation.

<sup>7</sup> Currently, approximately 35 securities have prices between \$300 and \$500 per share, and more than 500 securities have prices between \$100 and \$300 per share.

<sup>8</sup> [https://www.ctaplan.com/publicdocs/CTA\\_Odd\\_Lots\\_Proposal.pdf](https://www.ctaplan.com/publicdocs/CTA_Odd_Lots_Proposal.pdf)

single SIP processor location. Additional latency is incurred from the distance outbound disseminated quote and trades travel to reach each recipient.

***SIP latency today is mostly caused by geographic latency, which is a function of the inbound distance from a specific market's location to the single SIP processor location***

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processor by more than an order of magnitude.

Each SIP is located in a single data center, with the CTA processor (Tapes A and B) in Mahwah, NJ, and the UTP processor (Tape C) in Carteret, NJ. Quote and trade data from each exchange must first be sent to the data center, processed and then disseminated to recipients. Cboe's data center in Secaucus, NJ, is roughly equidistant from both SIP data centers but all Cboe quotes and trades encounter significant geographic latency to reach them. Even greater geographic latencies are experienced by Nasdaq to send its quotes and trades in Tape A and B securities to Mahwah and by the NYSE to send its quotes and trades in Tape C securities to Carteret.

Cboe strongly supports the implementation of distributed SIPs, designed to introduce multiple instances of SIP consolidation in strategic data center locations, which will contribute to a major reduction in geographic latency. All SIP subscribers would be offered a choice of locations from which to receive the SIP market information and to achieve the fastest data delivery.

Further, the introduction of multiple instances of the SIPs would provide an important additional level of resiliency. In the rare event of a SIP systems or communications failure, today's architecture sometimes necessitates a full failover to a back-up location. With distributed SIPs, a single SIP point of failure would be backed up automatically by the SIPs already operating in other geographic locations.

## **A More Level Playing Field for Exchange and Off-Exchange Markets**

In 2001, as part of the conversion of equities market quotations from fractions to decimals, a minimum price variation (MPV) of \$0.01 for quotations in equity securities was established for the marketplace.<sup>9</sup> Subsequently, the Reg NMS Sub-Penny Rule prohibited trading venues and broker-dealers from displaying, ranking or accepting orders in sub-pennies for all securities priced at \$1 or more per share. Stocks under \$1 per share can be quoted in increments of \$0.0001 or larger.

### **Tick Sizes**

*Cboe recommends a targeted reduction in tick sizes for securities priced above \$1.*

Cboe believes that permitting smaller tick sizes for highly liquid securities with narrow spreads would reduce transaction costs, promote competition between on- and off-exchange venues and foster the efficiency that public transparent markets are designed to achieve.

The spread of a stock's quote is a key contributor to the frictional cost of trading. Securities that generally trade with a penny spread reflect the presence of significant liquidity on both sides of the market. A persistent one-cent spread is indicative of a quote spread that could be narrowed and thus reduce a key trading cost for investors. Artificially wide penny spreads may cause broker-dealers to choose off-exchange trading centers to receive more granular price-improved executions.

Overall, Reg NMS has been highly successful in fostering competition, which has directly contributed to consistently narrow spreads for active securities, given the one-cent MPV restriction for all NMS securities priced at or above \$1 per share. Cboe thinks the time has come to reduce the MPV for an appropriate subset of securities in which

<sup>9</sup> Id.

investors would often realize meaningful savings from executions conducted in an environment with narrower spreads. The criteria for establishing narrower quote increments should be based on a combination of a security's price, volume and liquidity.

### **The criteria for establishing narrower quote increments should be based on a combination of a security's price, volume and liquidity**

Based on a recent Cboe analysis of listed securities, approximately 2,400 stocks currently have prices between \$1 and \$20 per share. More than 400 of those securities have an average daily consolidated volume in excess of one

million shares, and almost 300 of the stocks in the above-mentioned price and volume ranges have an average spread of less than 1.1 cents. As a starting point, Cboe supports selecting 50 securities from this group to begin trading with a half-cent MPV rather than with today's required one cent MPV.

### **Sub-Penny Pricing**

*Cboe recommends an SEC revision to its regulatory framework to enable exchanges to compete fairly with off-exchange venues.*

Currently, exchanges cannot accept, rank or display orders in sub-penny increments for stocks priced at or above \$1 per share. As a result, executions are largely confined to either full penny or half-penny midpoint prices, while principal off-exchange venues may provide more granular execution prices. Cboe believes that permitting exchanges to accept orders and quote in sub-penny prices would enhance executions in the public markets and lead to better price discovery and formation.

The Sub-Penny Rule restricts publicly displayed quotes to a minimum one-cent spread on even pennies. Although exchanges are permitted to accept midpoint-peg orders that may execute at the national best bid and offer (NBBO) midpoint, where contra-side orders are permitted to rest, exchanges are otherwise generally unable to execute at sub-penny prices. Since price-matching of buy and sell orders cannot occur at price points at which orders cannot rest on an exchange's order book, exchange executions are confined to either full penny or half-penny prices.

In contrast, off-exchange venues that trade in a principal capacity have the latitude to execute orders in finer price increments, and have experienced significant growth, with off-exchange trading not including Registered ATSS now accounting for approximately 23 percent of the total market volume.<sup>10</sup> Since investors have choice, orders may be directed to such venues for enhanced executions that can be achieved with trading increments unavailable in the public markets. It is important to recognize that since price discovery occurs based on public market quotes, the market place would benefit from the ability to display narrower trading increments in lit markets. In its May 2000 Report Concerning Display of Customer Limit Orders, the Commission emphasized the importance of displaying limit orders in the public market with the concern that spreads may widen and that the failure to display in the public market may raise fair competition concerns.<sup>11</sup> These concerns are even more relevant today.

The 1975 amendments to the Exchange Act set forth five objectives of the U.S. national market system, including "fair competition among brokers and dealers, among exchange markets, and between exchange markets and markets other than exchange markets." The Sub-Penny Rule has created a consistent gap in execution capabilities between exchanges and off-exchange principal dealing venues, and should therefore be revisited by the Commission consistent with Congress's objectives for the national market system.

## **Conclusion**

Cboe believes its recommendations will improve the overall trading environment for investors without causing harm to what is already functioning well. We look forward to discussing our proposals with interested participants.

<sup>10</sup> Treasury Report – A Financial System that Creates Economic Opportunities

<sup>11</sup> <https://www.sec.gov/news/studies/limitorder.htm>