SECURITIES AND EXCHANGE COMMISSION

17 CFR Parts 240 and 242

[Release No. 34–96495; File No. S7–31–22]

RIN 3235–AM57

Order Competition Rule

AGENCY: Securities and Exchange Commission.

ACTION: Proposed rule.

SUMMARY: The Securities and Exchange Commission (''Commission'') is proposing to amend the regulation governing the national market system (''NMS'') under the Securities Exchange Act of 1934 (''Exchange Act'') to add a new rule designed to promote competition as a means to protect the interests of individual investors and to further the objectives of an NMS. The proposed rule would prohibit a restricted competition trading center from internally executing certain orders of individual investors at a price unless the orders are first exposed to competition at that price in a qualified auction operated by an open competition trading center. The proposed rule would also include limited exceptions to this general prohibition. In addition, the Commission is proposing to amend the regulation governing the NMS to add new defined terms included in the proposed rule.

DATES: Comments should be received on or before March 31, 2023.

ADDRESSES: Comments may be submitted by any of the following methods:

Electronic Comments

- Use the Commission's internet comment form (*https://www.sec.gov/rules/submitcomments.htm*); or
- Send an email to *rule-comments@sec.gov*. Please include File Number S7–31–22 on the subject line.

Paper Comments

- Send paper comments to Secretary, Securities and Exchange Commission, 100 F Street NE, Washington, DC 20549–1090.

All submissions should refer to File Number S7–31–22. This file number should be included on the subject line if email is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's website (*http://www.sec.gov/rules/proposed.shtml*). Comments are also available for website viewing and printing in the Commission's Public Reference Room, 100 F Street NE, Washington, DC 20549, on official business days between the hours of 10 a.m. and 3 p.m. Operating conditions may limit access to the Commission's Public Reference Room. All comments received will be posted without change. Persons submitting comments are cautioned that the Commission does not redact or edit personal identifying information from comment submissions. You should submit only information that you wish to make available publicly.

Studies, memoranda, or other substantive items may be added by the Commission or staff to the comment file during this rulemaking. A notification of the inclusion in the comment file of any materials will be made available on the Commission's website. To ensure direct electronic receipt of such notifications, sign up through the ''Stay Connected'' option at *www.sec.gov* to receive notifications by email.

FOR FURTHER INFORMATION CONTACT: Dan Gray, Senior Special Counsel, Jennifer Dodd, Special Counsel, or Stacia Sowerby, Special Counsel, at (202) 551–5500, Office of Market Supervision, Division of Trading and Markets, Securities and Exchange Commission, 100 F Street NE, Washington, DC 20549.

SUPPLEMENTARY INFORMATION: The Commission is proposing for public comment amendments to Regulation NMS [17 CFR 242.600 through 242.614] (''Regulation NMS'') that would add new 17 CFR 242.615 (''Proposed Rule 615''), add new defined terms to 17 CFR 242.600 (''Rule 600'') that are used in Proposed Rule 615, and make conforming amendments to defined terms in 17 CFR 242.602, 17 CFR 242.611, and 17 CFR 242.614; and conforming amendments to defined terms in 17 CFR 240.3a51–1, 17 CFR 240.13h–1, 17 CFR 242.105, 17 CFR 242.201, 17 CFR 242.204, and 17 CFR 242.1000.

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I. Introduction

The Commission is proposing a new rule, Proposed Rule 615 of Regulation NMS, entitled the ''Order Competition Rule,'' to promote a more competitive, transparent, and efficient market structure for NMS stocks, with resulting benefits to investors. Proposed Rule 615 would require that certain orders of individual investors be exposed to competition in fair and open auctions, before such orders could be executed internally by trading centers that restrict order-by-order competition.[1] The Commission believes that the proposal would better advance each of the five Congressional objectives for an NMS set forth in section 11A of the Exchange Act.[2] In particular, Proposed Rule 615 is designed to benefit individual investors by promoting competition and transparency as means to enhance the opportunity for their orders to receive more favorable prices than they receive in the current market structure, as well as to benefit investors generally by giving them an opportunity to interact directly with a large volume of individual investor orders that are mostly inaccessible to them in the current market structure. This section provides an overview of that market structure and how that market structure may impact investors.

As discussed in sections II and VII below, individual investors primarily use market orders and marketable limit orders (collectively known as ''marketable orders'') to trade in NMS stocks. Market participants who use these orders seek to trade immediately at the best available prices in the market. Broker-dealers route more than 90% of marketable orders of individual investors in NMS stocks to a small group of six off-exchange dealers, often referred to as ''wholesalers.''[3] The wholesaling business is highly concentrated, with two firms capturing approximately 66% of the executed share volume of wholesalers as of the first quarter of 2022.[4] The practice of separately identifying and routing the marketable orders of individual investors to wholesalers is a form of ''segmentation.'' The term ''segmentation'' can refer to any practice by which a certain category of orders is identified and treated differently for execution than other categories of orders.

As discussed in the economic analysis in section VII.B.2 below, individual investor orders are segmented because they are ''low-cost'' flow—they impose lower adverse selection costs on liquidity providers than the unsegmented order flow routed to national securities exchanges. ''Adverse selection'' involves situations where buyers and sellers have different information, and specifically for a liquidity provider, refers to the extent to which prices move against it after a trade. For example, if the price of a stock drops right after a liquidity provider buys it, the liquidity provider has suffered from adverse selection. Generally, the more severe the adverse selection, the larger the ''effective spread'' that would be expected for a trade because liquidity providers require a wider effective spread to compensate them for the higher cost of adverse selection.[5] In this respect, the size of effective spreads can be interpreted as a measure of the average adverse selection that liquidity providers expect to suffer when trading with incoming orders. Data analysis conducted for this proposal reveals that the average adverse selection costs of orders routed to wholesalers are far lower than the average adverse selection costs of orders routed to national securities exchanges.[6]

The primary benefit of segmentation for individual investors is that it can provide an opportunity for their low-cost orders to be executed at better prices than those generally available on national securities exchanges, a practice known as ''price improvement.''[7] As discussed in section VII below, wholesalers often provide some price improvement relative to the best publicly quoted prices for round lot sizes on national securities exchanges.[8]

Price improvement, however, is not the same as competitive order execution. Today, the primary business model of wholesalers is to trade bilaterally as principal with individual investor orders (a form of ''internalization''). Typically, the way broker-dealers choose a wholesaler for any particular order is not based on the

[1] ''Order-by-order'' competition in this context means an opportunity to compete to trade with individual investor orders by offering the most favorable price for each order based on the particular characteristics of the order, including the nature of the NMS stock, the size of the order, and market conditions at the time the order is submitted. Section II below provides an overview of the current market structure for NMS stocks, including descriptions of key terms used in this release that readers may find useful to assess and comment on the Commission's proposal. Among many others, these terms include ''individual investors,'' ''trading centers,'' and ''wholesalers.''

[2] 15 U.S.C. 78k–1 (''section 11A''). These objectives are: (1) economically efficient execution of securities transactions; (2) fair competition among brokers and dealers, among exchange markets, and between exchange markets and markets other than exchange markets; (3) the availability to brokers, dealers, and investors of information with respect to quotations for and transactions in securities; (4) the practicability of brokers executing investors' orders in the best market; and (5) an opportunity, consistent with objectives 1 and 4, for investors' orders to be executed without the participation of a dealer. 15 U.S.C. 78k–1(a)(1)(C).

[3] Table 3, *infra,* section VII.B.2.a.

[4] *See infra* note 372.

[5] As explained in more detail in section II.D below, the ''effective spread'' of a trade is measured as double the difference between the trade's execution price and the midpoint of the national best bid and offer at the time of order receipt. Adverse selection reflects the ''price impact'' of a trade, which is measured as the difference between the midpoint of the national best bid and offer at the time of the trade and the midpoint of the national best bid and offer at a specified time (*e.g.,* one minute or five minutes) after the time of the trade.

[6] Table 7, *infra,* section VII.B.4 (adverse selection costs, as measured by price impact, of marketable orders of individual investors in all NMS stocks are 71% lower at wholesalers (1.26 basis points) than on exchanges (4.40 basis points)).

[7] Section VII.B.4 below discusses an analysis of wholesaler trading data indicating the relationship between segmentation, adverse selection costs, and order execution quality.

[8] Table 5, *infra,* section VII.B.4 (83.17% of marketable orders routed to wholesalers receive price improvement when compared to the best publicly quoted prices for round lot sizes on national securities exchanges, and 8.78% of marketable orders routed to national securities exchanges receive such price improvement). These better prices are due in large part to the ability of wholesalers to offer sub-penny prices that are not permitted on national securities exchanges and other trading centers. The current rules that govern sub-penny trading are discussed in section III.B.2.c below.

price the wholesaler is willing to provide for that order, as wholesalers do not display or otherwise indicate in real-time the prices at which they are willing to trade with individual investor orders. Instead, a wholesaler is often chosen by a formula that depends on past execution quality of the wholesaler, its relationship with the broker-dealer, and other factors. In addition, the bilateral nature of the wholesaler business model not only restricts contemporaneous competition among wholesalers, it also restricts opportunities for other market participants to trade with the low-cost flow. Once a wholesaler receives an individual investor's marketable order, the wholesaler's execution of the order does not face competition at all—the wholesaler typically executes the order internally without providing any opportunity for other market participants, including institutional investors, to compete to provide more favorable prices for the order.[9] This lack of order-by-order competition among market participants is particularly significant in the market for NMS stocks, which is an order-driven market in which a wide range of market participants, including institutional investors, seek to provide liquidity on national securities exchanges by posting orders for the approximately 12,000 NMS stocks. In contrast, the listed options market is a quote-driven market in which professional market makers dominate liquidity provision by displaying quotes in the more than 1,000,000 different options series. In sum, in the current market structure for NMS stocks, individual investor orders are not merely segmented; they also are isolated from order-by-order competition by a wide range of market participants, which, as discussed below, can affect the prices that individual investors receive for their orders.

Data analysis suggests that opening up individual investor orders to order-by-order competition would lead to significantly better prices for those investors. In a fully competitive market, competition among liquidity providers would be expected to drive the amount of price improvement that an order receives to a level commensurate with its adverse selection cost (setting aside other relevant costs). All else equal, the lower an order's expected adverse selection cost, the greater would be the order's expected price improvement. However, as discussed in section VII.C.1.b below, the current isolation of individual investor orders from order-by-order competition results in suboptimal price improvement for such orders. The Commission labels this forgone price improvement ''competitive shortfall.'' Based on an analysis of trading data from the wholesalers and national securities exchanges in the first quarter of 2022, the competitive shortfall is estimated to be approximately 1.08 basis points per dollar traded by wholesalers or 1.08 cents for every $100 traded, with an estimated total annual competitive shortfall of $1.5 billion.[10]

In addition to this competitive shortfall, the isolation of individual investor orders at wholesalers prevents other investors from having an opportunity to trade with this low-cost flow. Institutional investors that currently submit their own marketable orders on national securities exchanges and other trading centers potentially could trade at better prices if given an opportunity to interact with the marketable orders of individual investors in fair and open auctions.[11] For example, data analysis indicates that undisplayed liquidity often is available at trading centers other than wholesalers when a wholesaler executes marketable orders of individual investors at prices less favorable for the individual investor than the prices of the undisplayed liquidity.[12] Moreover, if institutional investors that currently pay a full ''spread'' (that is, the difference between the highest price bid and the lowest price offer) to access liquidity were able instead to interact in auctions with the marketable orders of individual investors that currently are mostly inaccessible to them, these institutional investors could benefit from lower spread costs.[13]

The Commission is proposing Rule 615 to encourage greater competition for individual investor order execution. Proposed Rule 615 generally would require that individual investor orders be exposed to order-by-order competition in fair and open auctions designed to obtain the best prices before such orders could be internalized by wholesalers or any other type of trading center that restricts order-by-order competition. As a result, individual investor orders could continue to receive the benefits of segmentation (*i.e.,* better prices that reflect the low adverse selection costs of those orders), but without the negative effects of those orders being isolated from order-by-order competition (*i.e.,* such better prices not fully reflecting the low adverse selection costs of those orders; and a substantial percentage of those orders seldom being accessible to institutional investors and other market participants). In sum, the auctions required by Proposed Rule 615 are intended to enhance competitive forces as a means to protect the interests of investors in the NMS.

In developing the specific elements of Proposed Rule 615, the Commission has been guided by this goal of benefiting investors by enhancing competition. The overriding objective of these elements of Proposed Rule 615 is to maximize the opportunity for a wide range of market participants to participate in auctions on terms that will promote the best possible prices for the orders of individual investors. In this respect, the Commission has drawn from its experience with the operation of existing auctions for orders in listed options and tailored Proposed Rule 615 to promote fair and open auctions that reflect the particular nature of the market for NMS stocks. As discussed in section IV below, these elements would include the wide dissemination of auction messages in consolidated market data, requirements that any fees and rebates be capped at a low level ($0.0005 per share for auction prices of $1 or more) and be flat across all market participants, and requirements for execution priority of auction responses that give no advantage to the broker-dealer that routed the marketable order of an individual investor to the auction.

In addition, the Commission has limited the scope of Proposed Rule 615 to contexts in which an auction could be most beneficial for individual investors. For example, individual investors that trade many times per day tend to use marketable orders that pose higher adverse selection risk for liquidity providers; hence, their orders would be outside the scope of the rule.[14] In addition, proposed exceptions are provided for orders with a market value of $200,000 or more and for orders with execution prices (including prices constrained by non-marketable limit prices) that are very favorable for individual investors (*i.e.,* the midpoint of the best displayed round lot

[9] As shown in Table 7, *infra,* section VII.B.4, wholesalers execute internally (in ''principal transactions'') 90.44% of the dollar volume of executed marketable orders routed to them. As discussed in section VII.B.2.b below, wholesalers primarily obtain external executions of the remaining volume of the marketable orders in ''riskless principal'' transactions.

[10] Table 18 and Table 19, *infra,* section VII.C.1.b (figures in text are for the CAT rebate base competitive shortfall estimates).

[11] *See, e.g.,* section VII.B.3, *infra,* discussing institutional investor interactions with retail orders.

[12] Table 20, *infra,* section VII.C.1.b.

[13] *See, e.g.,* Section VII.C.1.c, *infra,* discussing potential improved execution quality for institutional investor orders.

[14] *See infra* section IV.B.1; section VII.D.2.c.

quotations or better).[15] These exceptions would not be mandatory, however, which means that broker-dealers could choose whether or not to route orders with these characteristics to an auction.

As discussed in section VII.D, the Commission assessed several alternatives to Proposed Rule 615, both to the design of the required auctions and to the auction approach itself. The Commission preliminarily considers Proposed Rule 615 to be the best approach for investors. As described throughout this release, and in more detail in section IV, Proposed Rule 615 is designed to maintain the price improvement benefits of the segmentation of individual investor orders and to enhance those benefits through the introduction of order-by-order competition with a wide range of market participants, including institutional investors, through an auction mechanism that is fast, low-cost, transparent, and fair.

The next two sections of this release are intended to provide background information on the current structure and regulation of the market for NMS stocks that will help promote understanding of the details of the Commission's proposal. Section II provides a general overview of the current market structure for NMS stocks, and section III provides background on the statutory and regulatory framework for NMS stocks. Section IV then describes the proposal in detail, and section V consolidates all Commission requests for comment on the proposal.

II. Overview of Market Structure for NMS Stocks

This section provides an overview of the market structure for NMS stocks,[16] particularly focusing on the types of market participants, order types, and trading costs that will be referred to throughout this release.[17] An understanding of the current market structure, particularly the trading costs of different types of market participants, including liquidity takers and liquidity providers, is critically important when assessing the rationale and objectives of Proposed Rule 615.

A. Investors

Section 11A(a)(2) of the Exchange Act[18] provides that the Commission should have due regard for the protection of ''investors'' when facilitating the establishment of an NMS. As used in this release, the term ''individual investor'' will refer to natural persons that trade relatively infrequently for their own or closely related accounts.[19] Individual investors generally trade in relatively small sizes that can be executed against immediately available liquidity.

The term ''institutional investor'' as used in this release refers to investors that trade in much larger sizes and much more frequently than individual investors. Many institutional investors, such as pension funds and mutual funds, operate on behalf of a large number of individuals. Because institutional investors need to trade in large sizes that can exceed immediately available liquidity, their large ''parent'' orders typically will be broken into smaller ''child'' orders. Institutional investors typically are focused primarily on obtaining the best price for their large parent orders as a whole.[20] The child orders will be fed into the market gradually so as to minimize the extent to which market prices move away before the full size of a parent order is executed, which is known as ''slippage.'' One means for institutional investors to minimize slippage is to limit ''information leakage'' concerning the unexecuted portions of their large parent orders by closely controlling the impact of the execution of their child orders on market prices.

B. Trading Centers

Trades in NMS stocks are executed at a number of different types of trading centers.[21] As discussed below, trading centers that currently trade NMS stocks can be divided into five categories: (1) national securities exchanges operating SRO trading facilities;[22] (2) alternative trading systems (''ATSs'') that trade NMS stocks (''NMS Stock ATSs''); (3) exchange market makers; (4) wholesalers; and (5) any other broker-dealer that executes orders internally by trading as principal or crossing orders as agent.[23]

National securities exchanges, among other things, operate SRO trading facilities that bring together purchasers and sellers of NMS stocks and execute their trades, fall within the definition of an exchange in section 3(a)(1) of the Exchange Act,[24] and are required to register under section 6 of the Exchange Act.[25] As discussed further in section III.A below, national securities exchanges are subject to a comprehensive regulatory regime that, among other things, requires that their rules not impose any burden on competition not necessary or appropriate in furtherance of the purposes of the Exchange Act and not be designed to permit unfair discrimination between customers,

[15] As discussed in section IV.B.1 below, a subset of non-marketable limit orders with prices not as favorable for individual investors (*i.e.,* beyond the midpoint of the best displayed round lot quotations) would not qualify for the proposed exceptions.

[16] NMS stocks generally include equity securities other than options that are listed on a national securities exchange. Rule 600(b)(55) of Regulation NMS defines ''NMS stock'' as any NMS security other than an option, and Rule 600(b)(54) defines ''NMS security'' to mean any security or class of securities for which transaction reports are collected, processed, and made available pursuant to an effective transaction reporting plan, or an effective NMS plan for reporting transactions in listed options. The definition of NMS stock does not include securities that are not listed on a national securities exchange, sometimes referred to as ''over-the-counter'' or ''OTC'' securities.

[17] A much more extensive discussion of the ''market microstructure'' of securities markets is provided by treatises on the subject. *See, e.g.,* Larry Harris, Trading and Exchanges: Market Microstructure for Practitioners (Oxford University Press 2003) (''Harris Treatise''); Joel Hasbrouck, Empirical Market Microstructure: The Institutions, Economics, and Econometrics of Securities Trading (Oxford University Press 2007) (''Hasbrouck Treatise'').

[18] 15 U.S.C. 78k–1(a)(2).

[19] For a discussion of the specific orders covered by Proposed Rule 615, *see* Proposed Rule 600(b)(91) (defining the term ''segmented order'') and section IV.B.1 below (discussing the proposed definition of ''segmented order''). As discussed in section IV.B, the Commission is proposing to add definitions to Rule 600(b) of Regulation NMS and adjust the numbering of current definitions accordingly. Throughout this release, unless otherwise noted, references to existing Rule 600(b) definitions are to the definitions as they are currently numbered. References to proposed new definitions are designated with ''Proposed Rule 600(b)'' and reflect the proposed adjusted numbering.

[20] *See, e.g.,* Securities Exchange Act Release No. 61358 (Jan. 14, 2010), 75 FR 3594, 3604–3605 (Jan. 21, 2010) (''Equity Market Structure Concept Release'') (measuring the transaction costs of institutional investors ''can be extremely complex'' because their ''large orders often are broken up into smaller child orders and executed in a series of transactions'' and ''[m]etrics that apply to small order executions may miss how well or poorly the large order traded overall.'').

[21] Rule 600(b)(95) of Regulation NMS defines ''trading center'' as a national securities exchange or national securities association that operates a self-regulatory organization (''SRO'') trading facility, an alternative trading system, an exchange market maker, an OTC market maker, or any other broker or dealer that executes orders internally by trading as principal or crossing orders as agent.

[22] Rule 600(b)(89) of Regulation NMS defines ''SRO trading facility'' as, among other things, a facility operated by a national securities exchange that executes orders in a security.

[23] ''Broker'' is generally defined in section 3(a)(4)(A) of the Exchange Act as any person engaged in the business of effecting transactions in securities for the account of others. 15 U.S.C. 78c(a)(4)(A). ''Dealer,'' in turn, is generally defined in section 3(a)(5)(A) of the Exchange Act as any person engaged in the business of buying and selling securities for such person's own account through a broker or otherwise. 15 U.S.C. 78c(a)(5)(A). The term ''broker-dealer'' is used in this release to encompass all brokers, all dealers, and firms that are both brokers and dealers.

[24] Section 3(a)(1) of the Exchange Act defines ''exchange'' as, among other things, any organization that provides facilities for bringing together purchasers and sellers of securities. 15 U.S.C. 78c(1).

[25] 15 U.S.C. 78f.

issuers, and broker-dealers. All national securities exchanges publicly display quotations for NMS stocks in consolidated market data and are known as ''lit'' trading centers. As discussed in section III.B.1 below, the best-priced quotations of round lots of national securities exchanges (highest priced bids to buy and lowest priced offers to sell) are included in the consolidated market data feeds currently disseminated by centralized securities information processors (''SIPs''). In the first quarter of 2022, 16 national securities exchanges executed 59.7% of share volume in NMS stocks.[26]

NMS Stock ATSs operate facilities that fall within the definition of an exchange in section 3(a)(1) of the Exchange Act, but, as discussed in section III.B.3.b below, they are exempted from that definition if they register as broker-dealers and otherwise comply with Regulation ATS under the Exchange Act.[27] No NMS Stock ATS currently displays quotations in NMS stocks in consolidated market data. The trading centers that do not display quotations are known as ''dark'' trading centers or ''dark pools.'' An NMS Stock ATS is required to provide fair access to its services if it had 5% or more of the average daily volume with respect to an NMS stock during four of the preceding six calendar months,[28] and as of November 30, 2022, one NMS Stock ATS discloses on its Form ATS–N that it is subject to these fair access requirements for securities that are available for trading on its platform.[29] In the first quarter of 2022, 32 ATSs executed 10.2% of volume in NMS stocks.[30]

An exchange market maker is defined in Rule 600(b)(32) of Regulation NMS as any member of a national securities exchange that is registered as a specialist or market maker pursuant to the rules of such exchange. Exchange rules typically require exchange market makers to provide liquidity by displaying quotations at which they are willing to buy and sell NMS stocks for their own account.[31] In this respect, exchange market makers fall within the definition of a ''dealer'' in section 3(a)(5) of the Exchange Act as buying and selling NMS stocks for their own accounts as part of a regular business. The on-exchange volume of exchange market makers in NMS stocks is included in the volume for national securities exchanges referenced above because it is reported by such exchanges.

Wholesalers fall within the definition of an OTC market maker in Rule 600(b)(64) of Regulation NMS—any dealer that holds itself out as being willing to buy from and sell to its customers, or others, in the United States, an NMS stock for its own account on a regular or continuous basis otherwise than on a national securities exchange in amounts of less than block size. The term ''wholesaler'' is not defined in Regulation NMS, but commonly refers to an OTC market maker that seeks to attract orders from broker-dealers that service the accounts of individual investors,[32] referred to in this release as ''retail brokers.''[33] The public order-routing reports required by 17 CFR 242.606 (''Rule 606'')[34] show that the six largest wholesalers collectively paid retail brokers $235 million in payment for order flow (''PFOF'') in the first quarter of 2022 for orders in NMS stocks.[35] Many retail brokers do not accept PFOF for marketable orders in NMS stocks routed to wholesalers, though the retail brokers that do accept PFOF represent 73.88% of the dollar volume of marketable orders of retail brokers routed to wholesalers.[36]

Wholesalers do not display or otherwise reveal the prices at which they are willing to execute individual investor orders internally. Moreover, as discussed in section III.B.3 below, while they are subject to Commission and SRO requirements as broker-dealers, wholesalers are not subject to a statutory or regulatory requirement to provide fair access. They are not required to provide an opportunity for other market participants, including institutional investors and other exchange market makers, to compete on an order-by-order basis to provide the best prices for the individual investor orders that the wholesalers internalize. Some institutional investors, for example, consider this order flow to be ''inaccessible.''[37] In the first quarter of 2022, six large wholesalers internally executed 23.9% of share volume in NMS stocks.[38]

The fifth and final category of trading center that executes trades in NMS stocks is a catchall category encompassing broker-dealers that execute orders internally by trading as principal or crossing orders as agent. In the first quarter of 2022, over 230 broker-dealers (other than NMS Stock ATSs and OTC market makers) reported trades in NMS stocks, which accounted for the remaining 6.3% of share volume in NMS stocks.[39]

C. Order Types and Trading Costs

When seeking to buy and sell NMS stocks, investors submit orders through the broker-dealers that service their accounts. The order type most frequently used to trade by individual investors is a ''market'' order, which simply instructs a broker-dealer to seek an execution of the order at the best available price in the market. In contrast to market orders, a ''limit order'' specifies a ''limit price''—a price

[26] Table 1, *infra,* section VII.B.1.

[27] 17 CFR 240.3a1–1(a)(2); *see also* Securities Exchange Act Release No. 40760 (Dec. 8, 1998), 63 FR 70844, 70858 (Dec. 22, 1998) (''Regulation ATS Adopting Release'') (stating that the Commission would not consider making an assessment whether a particular system should register as an exchange unless such system exceeded the volume thresholds specified in 17 CFR 240.3a1–1(b): during three of preceding four calendar quarters, the system had (1) 50% or more of the average daily dollar trading volume in any security and 5% or more of the average daily dollar trading volume in any class of security; or (2) 40% or more of the average daily dollar trading volume in any class of securities).

[28] *See* Rule 301(b)(5); *infra* section III.B.3.b (discussing fair access requirements for NMS Stock ATSs).

[29] *See* Dealerweb Inc., Form ATS–N/OFA, Part III, Items 11 (Trading Services, Facilities and Rules) and Item 25 (Fair Access) (filed Oct. 24, 2022), *https://www.sec.gov/Archives/edgar/data/817462/000081746222000015/0000817462-22-000015-index.htm* (disclosing that the NMS Stock ATS is subject to the fair access requirements in symbols SPY and QQQ). This NMS Stock ATS generally limits its eligible subscribers to market makers, banks, broker-dealers, and asset managers with at least $10 under management. *See id.* at Part III, Item 1 (Types of Subscribers) and Item 2 (Eligibility for ATS Services). Access to Form ATS-Ns filed by NMS Stock ATSs are available on the Commission's website at *https://www.sec.gov/divisions/marketreg/form-ats-n-filings.htm.*

[30] Table 1, *infra,* section VII.B.1.

[31] *See, e.g.,* New York Stock Exchange LLC (''NYSE'') Rule 104 (Dealing and Responsibilities of DMMs) (requiring the exchange's Designated Market Makers (''DMMs'') to maintain a continuous two-sided quote for securities in which the DMM unit is registered with the exchange) *available at https://nyseguide.srorules.com/rules.*

[32] Another type of business operated by some OTC market makers is known as a ''single dealer platform,'' which primarily seeks to attract the orders of institutional investors for internal execution. *Infra* section VII.B.3.

[33] As discussed in section VII.B.1.a below, the Commission has identified six firms as wholesalers based on the public order routing disclosures of retail brokers. Retail broker services are discussed in section VII.B.6 below.

[34] Rule 606 is discussed in section III.B.4 below.

[35] *See infra* section VII.B.6.a.

[36] *See* Table 14, *infra* section VII.B.5.c.

[37] *See, e.g.,* Cowen, Inc., ''Cowen Market Structure: Retail Trading—What's going on, what may change, and what can you do about it?'' (Mar. 23, 2021), *available at https://www.cowen.com/insights/retail-trading-whats-going-on-what-may-change-and-what-can-institutional-traders-do-about-it/* (''Market makers print most of these shares internally at their firm, so they trade off-exchange. One way we have for isolating retail volume is to look at the share of volume that trades off-exchange, but not in a dark pool. We refer to this as 'inaccessible liquidity.' This is because most institutional orders—whether they are executed via algos directly or by high touch desks—primarily go to exchanges and dark pools.'').

[38] Table 1, *infra,* section VII.B.1.

[39] Table 1, *infra,* section VII.B.1.

beyond which the investor is not willing to trade. Limit prices reflect an intention to ''buy low and sell high.'' For example, a buy order with a limit price of $20 means the investor would like to buy as soon as possible, but only at a price that is $20 or less. Conversely, a sell order with a limit price of $20 means the investor would like to sell as soon as possible, but only at a price that is $20 or more.

In practice, the likelihood and speed of execution of limit orders can vary greatly depending primarily on the relation between their limit prices and the best-priced quotations that are displayed by national securities exchanges in the consolidated market data feeds. As discussed in section III.B.1 below, these quotations are in ''round lot'' sizes, which currently are 100 shares or more for nearly all NMS stocks. The highest price bid for an NMS stock is known as the national best bid (''NBB''), and the lowest price offer for an NMS stock is known as the national best offer (''NBO''). Collectively, the NBB and NBO are known as the national best bid and offer (''NBBO''). When a limit order to buy has a limit price that is equal to or greater than the NBO, it is known as a ''marketable'' limit order because it can be executed immediately at the best displayed quote to sell. Similarly, a limit order to sell is marketable when it has a limit price that is equal to or less than the NBB.[40]

For example, assume the NBB is $20.00 and the NBO is $20.10. A buy limit order with a price of $20.10 or higher is marketable, and a sell limit order with $20.00 or lower is marketable. Marketable limit orders are similar to market orders with respect to their willingness to trade immediately at the best displayed prices or better and will be referred to collectively in this release as ''marketable orders.''

Investors that use marketable orders to trade immediately at the best available prices are known as ''liquidity takers'' and generally incur a trading cost for the service, known as a ''spread.'' In the example above, when the NBBO is $20.00 and $20.10, the quoted spread is 10 cents. An investor that wished to avoid paying a spread could use a ''non-marketable'' limit order in an attempt to become a ''liquidity provider.'' A non-marketable limit order to buy has a limit price that is less than the NBO, and a non-marketable limit order to sell has a limit price that is greater than the NBB.[41] For example, again using the example when the NBBO is $20.00 and $20.10, an investor could submit a buy limit order with a limit price of $20.00. This buy order is not marketable because it is priced less than the NBO of $20.10 and therefore cannot be executed immediately against the best displayed offer. A non-marketable limit order generally will ''rest'' on the continuous order book of a trading center awaiting the arrival of a contra-side marketable order against which it can execute. In the example, if the resting non-marketable limit order to buy were able to obtain an execution at its limit price of $20.00 (*e.g.,* by interacting with a contra-side marketable order to sell), the investor would have succeeded in trading at a price that was 10 cents lower than if the investor had used a marketable order and traded at the NBO of $20.10. The risk, however, of using a non-marketable limit order is that it may not execute at all if market prices move away from the order (*i.e.,* prices increase for buy orders and decrease for sell orders). If this happens, the investor will incur an opportunity cost by missing a trade.

Using the example of an NBBO of $20.00 and $20.10, assume the investor submitted a non-marketable order to buy with a limit price of $20.00, but did not obtain an execution and the NBBO then rose to $20.15 and $20.25. Seeing that the market was moving away, the investor decided to cancel the unexecuted non-marketable order and replace it with a marketable order to buy, which then was executed at the new NBO price of $20.25. In this case, the investor incurred an opportunity cost of 15 cents—the difference between (1) the original NBO price of $20.10 that the investor likely could have obtained if the investor first had used a marketable order to buy at $20.10 rather than using the non-marketable order in an unsuccessful attempt to buy at $20.00, and (2) the price of $20.25 at which the investor actually obtained an execution.

In sum, an investor's decision of whether to use marketable orders or non-marketable orders to trade can depend on an often complex judgment of whether prices are likely to move in the short-term future. Individual investors, who typically do not follow market prices closely throughout a trading day, often will not feel in the best position to make this judgment and generally choose to be liquidity takers by using marketable orders to obtain the certainty of an immediate execution at a displayed price or better.[42] Accordingly, a key source of trading costs for individual investors are the spreads they pay when using marketable orders. The narrower the spreads, the lower the prices at which they will buy and the higher the prices at which they will sell, which translate into lower trading costs and higher investment returns. Conversely, wider spreads mean higher trading costs and lower investment returns.

The spread costs of individual investors highlight the role played by liquidity providers in determining spreads. Liquidity providers determine spreads by setting the prices at which they are willing to trade with marketable orders as such orders are submitted by liquidity takers. Liquidity providers can include professional market intermediaries, such as exchange market makers and OTC market makers (including wholesalers), as well as investors that use non-marketable limit orders. For example, national securities exchanges, which display the quotations that determine the NBBO, all operate continuous order books. Unexecuted non-marketable orders that have been routed to an exchange rest on its continuous order book awaiting an opportunity for interaction with incoming contra-side orders. Using the NBBO example of $20.00 and $20.10, assume a national securities exchange has displayed limit orders resting on its continuous order book with limit prices that equal the NBBO, but then an institutional investor submits a buy order with a limit price of $20.02 for display on the continuous order book. At this point, there will be a new NBB of $20.02 and the NBBO spread will have been reduced from 10 cents to 8 cents. If an individual investor's market order to sell was routed to the exchange, the order would execute at the new NBB of $20.02, saving the individual investor two cents per share compared to the old NBB of $20.00.

For liquidity providers, the adverse selection costs of trading with a given

[40] Rule 600(b)(47) of Regulation NMS defines a ''marketable limit order'' as any buy order with a limit price equal to or greater than the NBO at the time of order receipt, or any sell order with a limit price equal to or less than the NBB at the time of order receipt.

[41] Rule 600(b)(57) of Regulation NMS defines ''non-marketable limit order'' as any limit order other than a marketable limit order.

[42] Rule 606 order-routing reports reveal that customers of retail brokers used marketable orders for approximately 39–40% of their trades and used ''other'' orders for approximately 26–27% of their trades. Table 3, *infra,* section VII.B.2.a. As presented in Table 2 in section VII.B.2.a below, however, the PFOF rates received from wholesalers for these ''other'' orders almost exactly matched the rates received from wholesalers for marketable limit orders. Accordingly, it is likely that most of these other orders were marketable (*i.e.,* immediately executable at the best available prices), although the orders may have had particular characteristics that led them to be classified as other orders.

marketable order flow are a key factor for determining the prices at which they are willing to trade with such flow, particularly for professional market intermediaries. These market intermediaries generally seek to generate short-term trading profits by buying and selling on a continuous basis and capturing a spread between their buys and sells. Adverse selection costs reflect the extent to which prices move against the liquidity provider in the seconds and minutes after a trade, which increases the difficulty faced by the liquidity provider in successfully capturing a spread between buys and sells.

For example, assume an NBBO of $20.00 and $20.10, and a market maker provides liquidity by trading with a contra-side marketable sell order at the $20.00 NBB. The market maker may hope to profit by quickly providing liquidity to a contra-side marketable buy order at the $20.10 NBO and thereby earning a 10 cent spread. Seconds later, however, and before the market maker is able to liquidate the buy position, the NBBO declines to $19.85 and $19.95. In this case, the market maker has bought immediately prior to a 15 cent decline in the NBBO. This subsequent move in the NBBO is known as ''price impact.'' Instead of earning a 10 cent spread as it hoped by providing liquidity when the NBBO was $20.00 and $20.10, the market maker would realize a loss of 5 cents on its position if it then provided liquidity to a contra-side marketable buy order by selling at the new NBO of $19.95. Therefore, the market maker had an adverse selection cost of 15 cents. Accordingly, market makers assess the potential adverse selection costs of the liquidity-taking order flow with which they are likely to interact when setting the spreads at which they are willing to provide liquidity to such flow. Segmentation of marketable orders with low adverse selection costs is a means for liquidity providers to control such costs. As discussed in section VII,[43] the marketable orders of individual investors routed to wholesalers have adverse selection costs (as measured by price impact) that are approximately 71% lower than the adverse selection costs of orders routed to national securities exchanges. The low adverse selection costs of the segmented marketable orders of individual investors generally enable wholesalers to offer better prices for such orders than would be available for unsegmented orders routed to national securities exchanges.

The trading examples thus far have assumed that trades occur at the NBBO prices, which are determined by round lot quotations displayed on national securities exchanges. In fact, however, trades can be executed on national securities exchanges at prices that are better than NBBO prices (''NBBO price improvement''). Marketable orders routed to access the NBBO at a national securities exchange can obtain NBBO price improvement in two primary contexts. First, a national securities exchange may have displayed orders on its continuous order book with sizes less than round lots, known as ''odd lot quotations,'' that are priced better than the NBBO. If a contra-side marketable order is routed to a national securities exchange with such an odd lot quotation, the contra-side marketable order will interact with the odd-lot quotation and receive a better price than the NBBO. Second, there may be undisplayed non-marketable limit orders resting on the continuous order book of a national securities exchange with prices that are better than such exchange's displayed quotations. One common example is an NBBO midpoint order. An NBBO midpoint order has an execution price that is pegged to, and accordingly fluctuates with, the midpoint of the NBBO. If the NBBO is $20.00 and $20.10, and an NBBO midpoint order to sell is resting on the continuous order book of a national securities exchange, a marketable order to buy that is routed to such exchange will execute at the NBBO midpoint price of $20.05 rather than the NBO of $20.10. By trading at the NBBO midpoint, the incoming marketable buy order has obtained an immediate execution without paying any spread, and the resting NBBO midpoint order to sell has not earned any spread. Institutional investors may use undisplayed NBBO midpoint orders because they provide an opportunity to trade with contra-sided marketable flow, but without the information leakage (and potential slippage) that could occur if their orders were displayed.

D. Quantitative Measures of Order Execution Quality and Trading Costs

A variety of quantitative measures can be used to assess the quality of order executions that broker-dealers obtain for their individual investor customers, as well as more generally the trading costs of liquidity takers and liquidity providers. 17 CFR 242.605 (''Rule 605'') of Regulation NMS,[44] for example, requires many trading centers, including national securities exchanges and wholesalers, to make data files publicly available on a monthly basis that include detailed measures of execution quality for marketable and non-marketable orders in NMS stocks. This section will describe some of the quantitative measures included in Rule 605 data, as well as provide concrete examples illustrating specifically how the measures are calculated. These quantitative measures are referenced extensively throughout this release to explain the rationale for and the potential economic effects of Proposed Rule 615.

1. Description of Quantitative Measures

The following is a list, with brief descriptions, of quantitative measures of order execution quality and trading costs in NMS stocks that are included in, or can be derived from, Rule 605 data files. Specific examples of how the measures are calculated will be provided in section II.D.2 below.

As stated above, NBBO price improvement is the amount by which the execution price of a marketable order is better than the relevant NBBO quotation at the time a marketable order is received by a trading center.[45] For marketable buy orders, it is the amount by which the buy order received a price lower than the NBO at the time of order receipt. For marketable sell orders, it is the amount by which the sell order received a price higher than the NBB at the time of order receipt.

''NBBO quoted half-spread'' is one-half of the difference between the NBO and NBB, as measured at the time when a marketable order is received by a trading center. The full quoted spread is halved to reflect the spread cost for establishing or liquidating a position (long or short). For example, if an investor uses a marketable order to buy at the NBO (incurring a half-spread to establish a long position), but then is able to use a non-marketable order to sell at the NBO (earning a half-spread to liquidate the long position), the investor would have paid a net spread of 0 cents on the ''round-trip'' transaction.

''Effective half-spread'' is the half-spread actually paid by a marketable order. It is calculated by comparing execution prices with the NBBO midpoint, rather than the relevant NBB or NBO, at the time of order receipt.[46]

[43] *See* Table 7, *infra,* section VII.B.4.

[44] Rule 605 is discussed in section III.B.4 below.

[45] Rule 600(b)(36) of Regulation NMS defines ''executed with price improvement'' as, for buy orders, execution at a price lower than the NBO at the time of order receipt and, for sell orders, execution at a price higher than the NBB at the time of order receipt.

[46] Rule 600(b)(8) of Regulation NMS defines ''average effective spread'' as the share-weighted average of effective spreads for order executions

Accordingly, a trading center's average effective half-spread for marketable orders may be narrower or wider than the NBBO quoted half-spread, depending on the extent to which execution prices at a trading center are inside, at, or outside NBBO prices.

''Price impact'' is the extent to which the NBBO midpoint moves against the liquidity provider for a marketable order in a short time period after the order execution. For Rule 605 reporting, the time period is five minutes after the time of order execution. For the analyses of CAT data provided in section VII.B.4 below, the time period is one minute after the time of order execution.[47] Price impact measures the extent of adverse selection costs faced by a liquidity provider and is closely related to realized half-spread (described next). When price impact and realized half-spread are calculated using the same post-trade time period, the difference between the effective half-spread and the realized half-spread on a trade will equal the price impact of the trade.[48]

''Realized half-spread'' is calculated similarly to the effective half-spread, but, instead of using the NBBO midpoint at the time of order receipt, the realized spread calculation uses the NBBO midpoint a short time period after the execution of a marketable order.[49] For Rule 605 reporting, the time period is five minutes after the time of order execution. For the analyses of CAT data provided in section VII.B.4 below, the time period is one minute after the time of order execution.[50] When deciding to include realized spread statistics in Rule 605 reports, the Commission stated that the smaller the average realized spread, ''the more market prices have moved adversely to the market center's liquidity providers after the order was executed,'' which shrinks the spread ''realized'' by the liquidity providers.[51] The Commission further stated that the average realized spread statistic for market and marketable limit orders potentially could help ''to spur more vigorous competition to provide the best prices to these orders to the benefit of many retail investors.'' [52] In sum, by capturing the extent of adverse selection costs faced by liquidity providers, realized spreads are designed to provide a more accurate measure of the potential profitability of trading for liquidity providers than do effective spreads.[53]

2. Examples of Calculating Measures of Order Execution Quality and Trading Costs

When the execution quality and trading cost measures described above are calculated and averaged for a large volume of orders at different trading centers, the results can reveal important information about the nature of the order execution quality and trading costs across different trading centers. Section VII below, which provides an economic analysis of Proposed Rule 615, makes extensive use of data analyses using these measures.

The following two examples are patterned on those analyses, particularly the empirical finding that the marketable orders of individual investors routed to wholesalers have adverse selection costs (as measured by price impact) that, on average, are approximately 71% lower than the marketable orders routed to national securities exchanges. The examples are intended to illustrate how quantitative measures of order execution quality and trading costs are calculated in these two contexts that are most relevant for understanding the empirical basis for Proposed Rule 615. The examples show how a difference in the adverse selection costs of order flow routed to two different trading centers can result in more price improvement and narrower effective spreads at the trading center with lower adverse selection costs (the wholesaler) than at the trading center with higher adverse selection costs (the exchange), yet still result in wider realized spreads (*i.e.,* spreads realized by the liquidity provider after estimating for adverse selection costs) at the wholesaler than at the exchange.

The first example below (''Exchange Example'') presents the execution of an unsegmented marketable order to buy at a national securities exchange at a price that matches the NBBO, and the second example below (''Wholesaler Example'') presents the execution of a segmented marketable order to buy of an individual investor at a wholesaler at a price better than the NBBO. The examples use the calculation methodology prescribed by Rule 605 of Regulation NMS, except that statistics are presented for the half-spread associated with a single buy or sell order rather than the full spread statistics prescribed for Rule 605, which are doubled to reflect estimates of round-trip (offsetting buy and sell) trading costs.[54] Half-spreads are used to more clearly present the calculations for the single order in each of the examples.

The data used for the two examples are labeled as follows: execution price of marketable order (''ExP''), NBB at time of order receipt (''NBB_{t0}''), NBO at time of order receipt (''NBO_{t0}''), NBBO midpoint at time of order receipt (''MP_{t0}''), and NBBO midpoint 5 minutes after time of order execution (''MP_{t5}'').

The execution quality and trading cost measures for the two examples of marketable orders to buy are calculated as follows:

NBBO quoted half-spread: $\frac{1}{2} \times (NBO_{t0} - NBB_{t0})$

NBBO price improvement: $NBO_{t0} - ExP$

Effective half-spread: $ExP - MP_{t0}$

Price impact: $MP_{t5} - MP_{t0}$

Realized half-spread: $ExP - MP_{t5}$

The data and calculations for the two examples are as follows:

calculated, for buy orders, as double the amount of difference between the execution price and the midpoint of the NBB and NBO at the time of order receipt and, for sell orders, as double the amount of difference between the midpoint of the NBB and NBO at the time of order receipt and the execution price.

[47] The analysis in section VII.B.4 below uses one minute to reflect the increase in trading speed in the years since Rule 605 was adopted.

[48] *See, e.g.,* Hasbrouck Treatise at 147 (''The execution cost based on the pretrade bid-ask midpoint (BAM) is also known as the effective cost. Since 2001, the U.S. SEC has required U.S. equity markets to compute effective costs and make summary statistics available on the Web . . . . The rule . . . also requires computation of the realized cost . . . . The difference between effective and realized costs is sometimes used as an estimate of the price impact of the trade. The realized cost can also be interpreted as the revenue of the dealer who sold to the customer . . . and then covered his position at the subsequent BAM.'').

[49] Rule 600(b)(9) of Regulation NMS generally defines ''average realized spread'' as the share-weighted average of realized spreads for order executions calculated, for buy orders, as double the amount of difference between the execution price and the midpoint of the NBB and NBO five minutes after the time of order execution and, for sell orders, as double the amount of difference between the midpoint of the NBB and NBO five minutes after the time of order execution and the execution price.

[50] The analysis in section VII.B.4 below uses a one-minute period to reflect the increase in trading speed in the years since Rule 605 was adopted.

[51] Securities Exchange Act Release No. 43590 (Nov. 17, 2000), 65 FR 75414, 75424 (Dec. 1, 2000).

[52] *Id.*

[53] *See, e.g.,* Harris Treatise at 286 (''Informed traders buy when they think that prices will rise and sell otherwise. If they are correct, they profit, and whoever is on the other side of their trade loses. When dealers trade with informed traders, prices tend to fall after the dealer buys and rise after the dealer sells. These price changes make it difficult for dealers to complete profitable round-trip trades. When dealers trade with informed traders, their realized spreads are often small or negative. Dealers therefore must be very careful when trading with traders they suspect are well informed.'').

[54] The definitions of ''average effective spread'' and ''average realized spread'' provided in Rule 600(b)(8) and (9) of Regulation NMS, which are incorporated in Rule 605, prescribe doubling of the amounts by which an order execution price differs from the NBBO midpoint at the time of order receipt (for effective spreads) and five minutes after the time of order execution (for realized spreads).

	Exchange example	Wholesaler example
EXP	$110.05	$110.04.
NBB_{T0}	$110.00	$110.00.
NBO_{T0}	$110.05	$110.05.
MP_{T0}	$110.025	$110.025.
MP_{T5}	$110.055	$110.035.
NBBO PRICE IMPROVEMENT	0 cents	1 cent.
NBBO QUOTED HALF-SPREAD	2.5 cents	2.5 cents.
EFFECTIVE HALF-SPREAD	2.5 cents	1.5 cents.
PRICE IMPACT	3 cents	1 cent.
REALIZED HALF-SPREAD	<0.5 cents>	0.5 cents.

In the Exchange Example and Wholesaler Example, the NBBO is the same at the time of order receipt for both marketable buy orders, but the national securities exchange in the Exchange Example executes the order at the NBO with no NBBO price improvement, while the wholesaler in the Wholesaler Example executes the marketable buy order with NBBO price improvement of one cent. Consequently, the NBBO quoted half-spread is the same for both trades (2.5 cents), but the effective half-spread is wider for the liquidity provider on the national securities exchange (2.5 cents) than for the wholesaler (1.5 cents) because of the 1 cent NBBO price improvement provided by the wholesaler. The price impact of the order routed to the national securities exchange is 3 cents, while the price impact of the order routed to the wholesaler is only 1 cent. Accordingly, the adverse selection cost for the liquidity provider on the national securities exchange was 3 cents, while the adverse selection cost for the wholesaler was 1 cent.

The difference in adverse selection costs leaves the liquidity provider on the national securities exchange in the Exchange Example with a narrower realized half-spread of negative 0.5 cents, while the wholesaler in the Wholesaler Example preserves a positive realized half-spread of 0.5 cents. Stated another way, the wholesaler provided some NBBO price improvement (1 cent), but its adverse selection cost savings compared to the liquidity provider on the national securities exchange was 2 cents, and as a result the wholesaler was able to capture a realized half-spread that was one cent wider than the liquidity provider on the national securities exchange. If, however, the wholesaler had provided NBBO price improvement that matched its cost savings, the individual investor would have received NBBO price improvement of 2 cents rather than 1 cent. In this case, the realized half-spread for both the wholesaler and the liquidity provider on the national securities exchange would have been the same—negative 0.5 cents.

In this respect, the Exchange Example and Wholesaler Example highlight the key order-by-order competition objective of Proposed Rule 615. As discussed in section VII.C.2.b below, competition among a wide range of liquidity providers on national securities exchanges is intense and results in realized spreads for unsegmented orders that are narrower than the realized spreads captured by wholesalers for the segmented orders of individual investors. Another way of stating the same point is that wholesalers do not provide average NBBO price improvement that matches their savings in average adverse selection costs from securing the opportunity to trade first with the segmented orders of individual investors. Proposed Rule 615 would enable order-by-order competition to provide the best prices to the segmented marketable orders of individual investors. By providing an opportunity for a wide variety of liquidity providers to compete to provide the best prices for the segmented marketable orders of individual investors, Proposed Rule 615 is designed to expand the level of NBBO price improvement currently provided by wholesalers to match the low adverse selection costs of such orders.

III. Statutory and Regulatory Background

The development of today's market structure for NMS stocks has been guided by the Congressional determination set forth in section 11A of the Exchange Act that the United States should have an NMS in which multiple competing markets are linked together through communications and data processing facilities. This section III first will discuss the Exchange Act framework for an NMS. It then will summarize the rules that the Commission has adopted over the years to facilitate the development of an NMS, with particular focus on rules that address the handling and execution of investor orders in NMS stocks. Many aspects of Proposed Rule 615, as described in section IV below, are designed to build on the existing statutory framework and Commission rules discussed in this section III.

A. Statutory Framework for an NMS

Section 11A of the Exchange Act, enacted as part of the Securities Acts Amendments of 1975,[55] sets forth the statutory framework for an NMS. Section 11A(a)(2) directs the Commission, having due regard for the public interest, the protection of investors, and the maintenance of fair and orderly markets, to use its authority under the Exchange Act to facilitate the establishment of an NMS for securities in accordance with the Congressional findings and objectives set forth in section 11A(a)(1) of the Exchange Act.[56] Section 11A(a)(1)(C) sets forth the finding of Congress that it is in the public interest and appropriate for the protection of investors and the maintenance of fair and orderly markets to assure five objectives:

(1) economically efficient execution of securities transactions;

(2) fair competition among brokers and dealers, among exchange markets, and between exchange markets and markets other than exchange markets;

(3) the availability to brokers, dealers, and investors of information with respect to quotations for and transactions in securities;

(4) the practicability of brokers executing investors' orders in the best market; and

(5) an opportunity, consistent with the foregoing objectives of efficient execution of securities transactions and practicability of brokers executing investors' orders in the best market, for investors' orders to be executed without the participation of a dealer.[57]

A variety of Exchange Act provisions grant the Commission specific

[55] Public Law 94–29, 89 Stat. 97 (1975).

[56] Section 11A(a)(3)(B) also provides the Commission the authority to require the SROs, by rule or order, ''to act jointly . . . in planning, developing, operating, or regulating [an NMS] (or a subsystem thereof).''

[57] Section 11A(a)(1) of the Exchange Act.

rulemaking authority in different contexts to fulfill its responsibility to facilitate the establishment of an NMS that assures the five objectives. Three of these Exchange Act authorizations are particularly relevant in the context of rules to address the handling and execution of investor orders in NMS stocks.

First, section 11A(c)(1)(E) addresses the routing of orders by broker-dealers. It authorizes the Commission to prescribe rules, as necessary or appropriate in the public interest, for the protection of investors, or otherwise in furtherance of the Exchange Act to assure that all exchange members and brokers-dealers transmit and direct orders for the purchase or sale of NMS stocks in a manner consistent with the establishment and operation of an NMS.[58]

Second, section 11A(c)(1)(F) grants rulemaking authority to assure equal regulation of all markets for NMS stocks, as well as of all exchange members and broker-dealers effecting transactions in NMS stocks.[59] The meaning of the term ''equal regulation'' is specified in section 3(b)(36), which provides that a class of persons or markets is subject to equal regulation if no member of the class has a competitive advantage over any other member thereof resulting from a disparity in their regulation under the Exchange Act which the Commission determines is unfair and not necessary or appropriate in furtherance of the purposes of the Exchange Act.

Third, section 15(c)(5) addresses the practices of dealers, such as wholesalers. It authorizes the Commission to prescribe rules setting forth specified and appropriate standards with respect to dealing for dealers (other than specialists registered on a national securities exchange) acting in the capacity of a market maker or otherwise that are necessary or appropriate in the public interest and for the protection of investors, to maintain fair and orderly markets, or to remove impediments to and perfect the mechanism of an NMS.[60]

In addition to these grants of rulemaking authority to facilitate the development of an NMS, section 6 of the Exchange Act[61] specifically addresses the types of access to trading services that one type of market—a national securities exchange—is required to provide to broker-dealers and market participants. Access to the trading services of a market is essential for that market to be linked together with other markets in an NMS.

First, section 6(b)(2) requires that, subject to the provisions of section 6(c) relating to statutory disqualification and other concerns, the rules of the exchange must provide that any registered broker-dealer may become a member of such exchange.[62] Broker-dealers generally need to become exchange members, as an initial matter, to obtain access to many of the trading services of an exchange.

Second, section 6(b)(4) requires that the rules of the exchange provide for the equitable allocation of reasonable dues, fees, and other charges among its members and issuers and other persons using its facilities.[63] This provision recognizes that the opportunity for different market participants to access trading services at a market can be greatly affected by the charges for those services.

Third, section 6(b)(5) requires that the rules of the exchange are designed to, among other things, ''remove impediments to and perfect the mechanism of a free and open market and [an NMS], and, in general, to protect investors and the public interest.''[64] Section 6(b)(5) further requires that the rules of the exchange are not designed ''to permit unfair discrimination between customers, issuers, brokers, or dealers.''[65] These provisions broadly help ensure fair and efficient access to the trading services of national securities exchanges, both by requiring them to act affirmatively to promote high quality markets and by prohibiting them from acting negatively by unfairly discriminating between customers, issuers, or broker-dealers.

Finally, section 6(b)(8) requires that ''the rules of the exchange do not impose any burden on competition not necessary or appropriate in furtherance of the purposes'' of the Exchange Act.[66] This provision further restricts a national securities exchange's ability to limit access to its trading services in an anti-competitive manner.

To help ensure that national securities exchanges operate according to rules consistent with their statutory obligations, section 19(b)(1) of the Exchange Act[67] requires SROs,[68] including national securities exchanges, to file with the Commission any proposed rule change.[69] The Commission publishes for public comment all SRO proposed rule changes.[70] For new or materially modified trading services, a proposed rule change generally cannot become effective, and the national securities exchange cannot implement such rule change, until the Commission has approved it as consistent with the requirements of the Exchange Act.[71]

Section 15A of the Exchange Act[72] includes many requirements for the rules of a national securities association that are analogous to those prescribed for national securities exchanges. FINRA is currently the only registered national securities association. Broker-dealers that handle customer orders in NMS stocks or trade NMS stocks in the off-exchange market generally must become FINRA members.[73] Section 15A does not, however, impose fair access requirements on the broker-dealer members of FINRA. Accordingly, broker-dealers that trade internally are not subject to the statutory access requirements that apply to national securities exchanges under section 6 of the Exchange Act.

B. Current Regulatory Components of the NMS for NMS Stocks

Over the years since 1975, the Commission has used its Exchange Act

[58] 15 U.S.C. 78k–1(c)(1)(E).

[59] 15 U.S.C. 78k–1(c)(1)(F).

[60] 15 U.S.C. 78*o*(c)(5).

[61] 15 U.S.C. 78f.

[62] 15 U.S.C. 78f(b)(2).

[63] 15 U.S.C. 78f(b)(4).

[64] 15 U.S.C. 78f(b)(5).

[65] *Id.*

[66] 15 U.S.C. 78f(b)(8).

[67] 15 U.S.C. 78s(b)(1).

[68] *See* 15 U.S.C. 78c(b)(26) (defining ''self-regulatory organization'' to include, among other things, any national securities exchange or registered securities association).

[69] Section 19(b)(1) of the Exchange Act defines a ''proposed rule change'' to be any proposed change in, addition to, or deletion from the rules of an SRO. 15 U.S.C. 78s(b)(1). Section 3(a)(27) of the Exchange Act generally defines ''rules'' to include the constitution, articles of incorporation, bylaws, and rules, or instruments corresponding to the foregoing and the stated policies, practices, and interpretations of an exchange, association, or clearing agency as the Commission, by rule, may determine to be necessary or appropriate in the public interest or for the protection of investors to be deemed to be rules of such exchange, association, or clearing agency. 15 U.S.C. 78c(a)(27). Rule 19b–4(b) under the Exchange Act defines ''stated policy, practice, or interpretation'' to mean, in part, any material aspect of the operation of the facilities of the SRO or any statement made generally available that establishes or changes any standard, limit, or guideline with respect to the rights, obligations, or privileges of persons or the meaning, administration, or enforcement of an existing rule. 17 CFR 240.19b–4(b).

[70] *See* 15 U.S.C. 78s(b)(1).

[71] If the Commission does not approve or disapprove a proposed rule change within the required timeframe prescribed by section 19 of the Exchange Act, it is ''deemed to have been approved.'' 15 U.S.C. 78s(b)(2)(D).

[72] 15 U.S.C. 78*o*–3.

[73] *See* 15 U.S.C. 78*o*(b)(8). The Commission has proposed to amend 17 CFR 240.15b9–1, which provides an exemption from association membership for certain exchange members. Securities Exchange Act Release No. 95388 (July 29, 2022), 87 FR 49930 (Aug. 12, 2022) (proposing to replace a *de minimis* allowance with narrower exemptions from association membership).

authority to adopt a series of rules to fulfill its regulatory responsibility to facilitate the establishment of an NMS. In doing so, it particularly has emphasized the importance of promoting competition as a means to protect investors and to achieve the five statutory objectives for an NMS. In its request for comment on issues relating to market fragmentation in 2000,[74] for example, the Commission stated that the section 11A findings and objectives can be summed up in two fundamental principles. First, the interests of investors (both large and small) are preeminent, ''especially the efficient execution of their securities transactions at prices established by vigorous competition.'' [75] Second, investor interests are best served by a market structure that, to the greatest extent possible, maintains the benefits of ''*both* an opportunity for interaction of all buying and selling interest'' in individual securities and ''fair competition among all types of market centers'' seeking to provide a forum for the execution of securities transactions.[76] The Commission further stated that competition among multiple competing markets can isolate investor orders and that this ''may reduce competition *on price,* which is one of the most important benefits of greater interaction of buying and selling interest in an individual security.'' [77]

In 2005, the Commission adopted Regulation NMS to consolidate the NMS rules it had previously adopted under section 11A and to include new rules designed to modernize and strengthen equity market structure.[78] It again emphasized the importance of competition among orders to obtain the best prices for investors, stating that this basic principle was recognized in the legislative history of section 11A: ''Investors must be assured that they are participants in a system which maximizes the opportunities for the most willing seller to meet the most willing buyer.'' [79] The Commission summed up its approach to achieving an NMS as resisting suggestions that it adopt an approach focusing on a single form of competition that, while perhaps easier to administer, ''would forfeit the distinct, but equally vital, benefits associated with both competition among markets and competition among orders.'' [80]

Four categories of the Regulation NMS rules are particularly important in the context of Proposed Rule 615: (1) consolidated market data; (2) order handling and execution; (3) access to trading centers; and (4) disclosure of order routing practices and order execution statistics.

1. Rules Addressing Consolidated Market Data

Several rules under Regulation NMS set forth requirements for consolidated market data, which, as defined in Rule 600(b)(19) and (21) of Regulation NMS, includes information concerning quotations and transactions in NMS stocks. 17 CFR 242.601 (''Rule 601'') provides for the dissemination of transaction information; 17 CFR 242.602 (''Rule 602'') provides for the dissemination of quotation information; 17 CFR 242.603 (''Rule 603'') requires, among other things, the national securities exchanges and national securities associations to act jointly for disseminating consolidated market data; and 17 CFR 242.608 (''Rule 608'') addresses the joint-NMS plans that currently are responsible for operating the facilities for collecting and disseminating consolidated market data in NMS stocks.

In 2020, the Commission adopted a new rule and amended existing rules to establish a new infrastructure for consolidated market data and to update and significantly expand the content of consolidated market data (''MDI Rules'').[81] The MDI Rules have not yet been implemented and, as discussed below, given their unimplemented status, the description of Proposed Rule 615 in section IV below reflects the regulatory structure currently in place for consolidated market data. Section VII below addresses the economic effects of Proposed Rule 615, taking into account both the regulatory structure currently in place and the unimplemented MDI Rules. This section III.B.1 first will briefly summarize the currently implemented regulatory structure for consolidated market data. It then will discuss the status of the implementation of MDI Rules and how it would not affect the operation of and need for Proposed Rule 615.

a. Current Regulatory Structure for Consolidated Market Data

As stated in section II.B above, consolidated market data currently is collected and disseminated by the centralized SIPs. For quotation information, only the 16 exchanges that currently trade NMS stocks provide quotation information to the SIPs for dissemination in consolidated market data.[82] FINRA has the only SRO display-only facility (the ADF) for quotations. No broker-dealer, however, currently uses the ADF to display quotations in NMS stocks in consolidated market data. For transaction information, all of the national securities exchanges that trade NMS stocks and FINRA provide real-time transaction information to the SIPs for dissemination in consolidated market data. Such information includes the symbol, price, and size of the transaction. A notable difference, however, between the transaction information provided by the national securities exchanges and the transaction information provided by FINRA is that the identity of the particular exchange that executed a trade is included in consolidated market data, while the

[74] Securities Exchange Act Release No. 42450 (Feb. 23, 2000), 65 FR 10577 (Feb. 28, 2000) (''Market Fragmentation Concept Release'').

[75] *Id.* at 10580.

[76] *Id.* (emphasis in original).

[77] *Id.* (emphasis in original).

[78] Securities Exchange Act Release No. 51808 (June 9, 2005), 70 FR 37496 (June 29, 2005) (''Regulation NMS Adopting Release'').

[79] *Id.* at 37499 (quoting H.R. Rep. 94–123, 94th Cong., 1st Sess. 50 (1975)). The Commission further quoted this legislative history for section 11A of the Exchange Act to emphasize the importance of ensuring that investor orders are able to be executed in a market with the best price: '''market fragmentation becomes of increasing concern in the absence of mechanisms designed to assure that public investors are able to obtain the best price for securities regardless of the type or physical location of the market upon which his transaction may be executed.''' *Id.* at 37499 n.13.

[80] *Id.*

[81] Securities Exchange Act Release No. 90610 (Dec. 9, 2020), 86 FR 18596 (Apr. 9, 2021) (''MDI Adopting Release''); *see also The Nasdaq Stock Market LLC, et al* v. *SEC,* No. 21–1100 (D.C. Cir. May 24, 2022) (upholding these Commission amendments to market data rules adopted in the MDI Adopting Release). The MDI Adopting Release provides a comprehensive discussion of the current arrangements for consolidated market data, as well as the adopted but unimplemented rules to change these current arrangements.

[82] Currently, these national securities exchanges are: Cboe BYX Exchange, Inc. (''Cboe BYX''); Cboe BZX Exchange, Inc. (''Cboe BZX''); Cboe EDGA Exchange, Inc. (''Cboe EDGA''); Cboe EDGX Exchange, Inc. (''Cboe EDGX''); Investors Exchange LLC (''IEX''); Long-Term Stock Exchange, Inc. (''LTSE''); MEMX LLC (''MEMX''); MIAX Pearl, LLC (''MIAX PEARL''); Nasdaq BX, Inc. (''Nasdaq BX''); Nasdaq PHLX LLC (''Nasdaq Phlx''); The Nasdaq Stock Market LLC (''Nasdaq''); NYSE; NYSE American LLC (''NYSE American''); NYSE Arca, Inc. (''NYSE Arca''); NYSE Chicago, Inc. (''NYSE CHX''); and NYSE National, Inc. (''NYSE National''). The Commission approved rules proposed by BOX Exchange LLC (''BOX'') for the listing and trading of certain equity securities that would be NMS stocks on a facility of BOX known as BSTX LLC (''BSTX''), but BSTX is not yet operational. *See* Securities Exchange Act Release Nos. 94092 (Jan. 27, 2022), 87 FR 5881 (Feb. 2, 2022) (SR–BOX–2021–06) (approving the trading of equity securities on the exchange through a facility of the exchange known as BSTX); 94278 (Feb. 17, 2022), 87 FR 10401 (Feb. 24, 2022) (SR–BOX–2021–14) (approving the establishment of BSTX as a facility of BOX). BSTX cannot commence operations as a facility of BOX until, among other things, the BSTX Third Amended and Restated Limited Liability Company Agreement approved by the Commission as rules of BOX is adopted. *Id.* at 10407.

identity of the particular FINRA member responsible for reporting a trade, such as a wholesaler or other type of broker-dealer, is not included in consolidated market data.[83]

b. Unimplemented MDI Rules

When implemented, the MDI Rules will modify the current regulatory structure for consolidated market data in two respects. First, they will enhance the content of consolidated market data by defining three new data elements as ''core data'' [84]—(1) information about better priced quotations in higher priced stocks (to be implemented through a new definition of ''round lot'' [85] and the inclusion of certain ''odd-lot information''),[86] (2) information about quotations that are outside of the best-priced quotations (to be implemented through a new ''depth of book data'' definition),[87] and (3) information about orders that are participating in auctions (to be implemented through a new definition of ''auction information'').[88] As discussed below in section III.B.1.b.ii, the MDI Rules will enhance the content of consolidated market data, but the enhanced content of consolidated market data still will not include all of the quotation information currently available to market participants that purchase proprietary data feeds that are disseminated individually by national securities exchanges. Second, the MDI Rules will enhance the provision of consolidated market data by adopting a new decentralized model that replaces the SIPs with ''competing consolidators'' [89] and ''self-aggregators.'' [90] Under the decentralized model, the relevant SROs (national securities exchanges that trade NMS stocks and FINRA) will be required to provide their data directly to multiple competing consolidators and self-aggregators rather than to a centralized SIP.[91]

i. Implementation of the MDI Rules

In the MDI Adopting Release in 2020, the Commission outlined a phased transition plan for the implementation of the MDI Rules.[92] The first step was the filing of amendments to the effective NMS market data plan(s) as required under Rule 614(e) of Regulation NMS.[93] The Commission's approval of such amendments will be the starting point for the rest of the implementation schedule. While the Commission can approve NMS plan amendments within 90 days of the date of their publication in the **Federal Register** if the Commission finds them to be consistent with the standards set forth in Rule 608 of Regulation NMS,[94] the Commission may, under rule 608(b)(2)(i), institute proceedings to determine whether to approve or disapprove proposed amendments, which proceedings must conclude within 180 days of notice publication of the proposed amendments but can be extended by an additional 120 days.[95] Therefore, the maximum time permitted under rule 608 for Commission action is 300 days.

After the Commission finds that the plan amendments required under Rule 614(e) are consistent with the Rule 608 standards and approves such amendments, the next step will be a 180-day development period, during which competing consolidators can register with the Commission. The development period is followed by a 90-day testing period.[96] Once the testing period concludes, a 180-day parallel operation period will begin during which the SIPs and the decentralized consolidation model will operate in parallel.[97]

Within 90 days of the end of the parallel operation period, the operating committee(s) of the effective NMS plan(s), in consultation with relevant market participants, will make a recommendation to the Commission as to whether the SIPs should be decommissioned. The SIPs will only cease operations to the extent that the Commission approves an amendment pursuant to Rule 608 to the effective NMS plan(s) to effectuate such a cessation.[98]

The plan participants of two effective NMS plans filed the MDI Plan Amendments on November 5, 2021.[99] On September 21, 2022, the Commission disapproved the proposed amendments.[100] As a result, new proposed amendments pursuant to Rule 608 will need to be developed and filed for implementation of the MDI Rules.

The Commission does not believe that the subsequent implementation of the MDI Rules would substantially affect the operation of Proposed Rule 615. In the existing regulatory structure, the national securities exchanges and FINRA would be required to provide the SIPs with the necessary data (including the auction messages specified in Proposed Rule 615(c)(1)) and the quotation and transaction information specified in the proposed definition of ''open competition trading center'' in Proposed Rule 600(b)(64) of Regulation NMS). When the MDI Rules are subsequently implemented, a

[83] Separate from the dissemination of real-time transaction information in consolidated market data, FINRA publishes statistics on trading volume at member firms, including ATSs and wholesalers, that are aggregated on a weekly basis. Publication of the aggregate volume statistics is delayed by two weeks for some NMS stocks and by four weeks for others. The statistics are *available at https://www.finra.org/filing-reporting/otc-transparency*.

[84] The term ''core data'' is defined in section 600(b)(21) of Regulation NMS.

[85] The term ''round lot'' is defined in section 600(b)(82) of Regulation NMS.

[86] The term ''odd lot information'' is defined in section 600(b)(59) of Regulation NMS.

[87] The term ''depth of book data'' is defined in section 600(b)(26) of Regulation NMS.

[88] The term ''auction information'' is defined in section 600(b)(5) of Regulation NMS.

[89] The term ''competing consolidator'' is defined in section 600(b)(16) of Regulation NMS.

[90] The term ''self-aggregator'' is defined in section 600(b)(83) of Regulation NMS.

[91] Rule 603(b) of Regulation NMS requires, among other things, every national securities exchange on which an NMS stock is traded and national securities association to make available to all competing consolidators and self-aggregators its information with respect to quotations for and transactions in NMS stocks.

[92] MDI Adopting Release, *supra* note 81, 86 FR at 18698–18701.

[93] 17 CFR 242.614(e). The participants of the effective NMS market data plan(s) filed proposed amendments on Nov. 5, 2021, which were published for comment in the **Federal Register**. Securities Exchange Act Release Nos. 93615 (Nov. 19, 2021), 86 FR 67800 (Nov. 29, 2021); 93625 (Nov. 19, 2021), 86 FR 67517 (Nov. 26, 2021); 93620 (Nov. 19, 2021), 86 FR 67541 (Nov. 26, 2021); 93618 (Nov. 19, 2021), 86 FR 67562 (Nov. 26, 2021) (''MDI Plan Amendments'').

[94] 17 CFR 242.608(b)(2).

[95] 17 CFR 242.608(b)(2). The Commission instituted proceedings to determine whether to approve or disapprove the MDI Plan Amendments. Securities Exchange Act Release Nos. 94310 (Feb. 24, 2022), 87 FR 11748 (Mar. 2, 2022); 94309 (Feb. 24, 2022), 87 FR 11763 (Mar. 2, 2022); 94308 (Feb. 24, 2022), 87 FR 11755 (Mar. 2, 2022); 94307 (Feb. 24, 2022), 87 FR 11787 (Mar. 2, 2022).

[96] MDI Adopting Release, *supra* note 81, 86 FR at 18699–700.

[97] During the parallel operation period, the SIPs will continue to disseminate the data that they currently disseminate and competing consolidators will be permitted to offer consolidated market data products, including odd-lot information. Because the round lot definition will be implemented during a later phase consistent with the MDI Adopting Release, the SIPs and competing consolidators will collect, consolidate and disseminate NMS data that will be based on the current national securities exchange definitions of round lot. *Id.* at 18699–18701.

[98] *Id.* at 18701. Following the cessation of the operations of the SIPs, the changes necessary to implement the new round lot sizes will be tested for 90 days and then implemented. *Id.* The Commission also is proposing to accelerate implementation of the round lot sizes. *See* Securities Exchange Act Release No. 96494 (Dec. 14, 2022) (File No. S7–30–22) (Regulation NMS: Minimum Pricing Increments, Access Fees, and Transparency of Better Priced Orders) (''Minimum Pricing Increments Proposal''). The Commission encourages commenters to review that proposal to determine whether it might affect their comments on this proposing release.

[99] *See supra* note 93.

[100] Securities Exchange Act Release Nos. 95848 (Sept. 21, 2022), 87 FR 58544 (Sept. 27, 2022); 95849 (Sept. 21, 2022), 87 FR 58592 (Sept. 27, 2022); 95850 (Sept. 21, 2022), 87 FR 58560 (Sept. 27, 2022); 95851 (Sept. 21, 2022), 87 FR 58613 (Sept. 27, 2022).

decentralized model would replace the SIPs, and the national securities exchanges and FINRA would provide this information directly to the competing consolidators and self-aggregators pursuant to Rule 603(b) of Regulation NMS.[101]

As noted above, auction information is to be included in the expanded content of consolidated market data that can be disseminated by competing consolidators under the MDI Rules. Market participants in the decentralized model will have a choice of whether to purchase consolidated market data products that include auction information, as well as any of the other components of consolidated market data.[102] The fees that ultimately are approved for the different components of consolidated market data will affect the extent to which market participants choose to purchase auction information,[103] but, as discussed above, the fees are not known at this time. Any fees for auction information will be required to be fair, reasonable, and not unreasonably discriminatory,[104] and, as such, the Commission does not anticipate that such fees would be so high as to deter a substantial number of market participants interested in participating in auctions under Proposed Rule 615 from purchasing consolidated data products that include auction information.

ii. Implementation of the MDI Rules Will Not Substantially Reduce the Need To Propose Rule 615 To Address the Goals Stated Herein

As stated in section I above, Proposed Rule 615 is designed to promote order-by-order competition and thereby achieve two primary goals for the benefit of investors—(1) obtain better prices for the execution of the marketable orders of individual investors that currently are segmented at wholesalers, and (2) expand opportunities for such individual investor orders to meet directly with other investor orders without the participation of a dealer (such as a wholesaler). The MDI Rules would not substantially reduce the need to propose Rule 615 to address the goals stated herein.

The MDI Rules will enhance the content of consolidated market data and thereby benefit those market participants that currently use SIP data and decide to purchase the enhanced elements of consolidated market data. As the MDI Adopting Release stated, however, implementation of the MDI Rules will not expand the content of data already available to sophisticated market participants that purchase the proprietary data feeds that are individually disseminated by the national securities exchanges.[105] The Commission stated its understanding that ''approximately 50 to 100 firms purchase all of the proprietary [depth-of-book] feeds from the exchanges and do not rely on the SIP data for their trading.'' [106] Moreover, these 50 to100 firms that currently use proprietary data feeds play a significant role in the current market structure.[107] For example, the MDI Adopting Release stated that ''nearly all orders entered in the [NMS], including retail orders, touch a component (typically the order router of the executing broker) that uses proprietary data in order to reduce execution costs and improve execution quality.'' [108] Furthermore, the Commission understands that the wholesalers, as six of the highest volume trading firms in the U.S. equity markets, currently pay for and use the proprietary data feeds. One wholesaler submitted a comment on the MDI Rules stating that it would be unable to remain competitive, even after the MDI Rules were implemented, without continuing to purchase proprietary data feeds.[109]

Statements in the MDI Adopting Release addressing the benefits of the MDI Rules are consistent with a conclusion that the MDI Rules can benefit SIP data users that currently do not purchase the proprietary data feeds, but will not substantially reduce the need to propose Rule 615 to address the goals stated herein. For example, the MDI Adopting Release stated that the ''odd-lot aggregation methodology'' of the MDI Rules ''would benefit market participants by promoting tighter spreads in all stocks, especially high priced ones.'' [110] All of the odd lot quotations that will be aggregated, however, were already included in an order-by-order basis in the proprietary data feeds that the Commission understands the wholesalers use. As the MDI Adopting Release stated, the inclusion of odd-lot quote information in core data will improve transparency and ''reduce information asymmetry between market participants who already receive this information through proprietary [depth-of-book] feeds and market participants who choose to subscribe to this aspect of core data and previously did not receive this information.[111]

In addition, the MDI Adopting Release states that ''because richer, more timely consolidated market data may enhance the ability of broker-dealers to obtain the most favorable terms reasonably available under the circumstances, including the best reasonably available price and other factors, for their customer orders, broker-dealers should consider the availability of consolidated market data for purposes of evaluating best execution.'' [112] The availability of additional quotation information in consolidated market data, however, is unlikely to affect the wholesalers' and retail brokers' evaluation of best execution because the Commission understands that wholesalers already would be expected, under FINRA

[101] The MDI Adopting Release states that the benefits of a decentralized model for consolidated market data are gains in efficiency and innovation for delivering consolidated market data, reduced content and latency differentials between consolidated market data and proprietary market data, and increased market resiliency. MDI Adopting Release, *supra* note 81, 86 FR at 18778. As discussed in section III.B.1.b.ii below, the Commission does not believe that these benefits of the MDI Rules substantially reduce the need to propose Rule 615 to address the goals stated herein.

[102] *See, e.g., id.* at 18751 (competing consolidators will not be required to offer consolidated market products that ''include all of the content of expanded core data'' and market participants ''may choose not to take in all of the new core data elements in every instance.'').

[103] *See, e.g., id.* at 18764 (because fees will depend on future action by the effective NMS system plans, the Commission ''cannot be certain of the level of those fees or whether such fees would provide discounts'' for those end users who wish to receive subsets of consolidated market data).

[104] *See, e.g., id.* at 18773 (the fees for the data content underlying consolidated market data must be ''fair, reasonable and not unreasonably discriminatory'').

[105] *See, e.g., id.* at 18752 (''[a]lthough expanded core data will not contain all of the data contained in proprietary [depth of book] feeds, the Commission believes that it will contain data that will be useful for market participants''); *id.* at 18754 (the potentially lower cost of consolidated market data ''will come at the expense of losing the full set of data currently available via proprietary feeds,'' because the consolidated market data definition ''does not include all data elements currently available via proprietary data feeds.'').

[106] *Id.* at 18728.

[107] *See, e.g., id.* at 18734 n. 1724 (Commission analysis showed that 91.6% of the message volume on exchanges in a sample week came from just 50 firms that use proprietary data feeds).

[108] *Id.* at 18734.

[109] *Id.* at 18793 n. 2386 (commenters agreed that ''switching to new consolidated market data would come with this expense of losing some data compared to the proprietary data feeds,'' with one stating that it would be ''unable to remain competitive even after the final amendments are in place without continuing to purchase proprietary data feeds.''); *see also id.* at 18795 (stating possibility that potential participants in automated market making and other latency sensitive trading businesses could not ''compete effectively without using the data that would remain exclusive to proprietary feeds'').

[110] MDI Adopting Release, *supra* note 81, 86 FR at 18615.

[111] *Id.* at 18753.

[112] *Id.* at 18605 (footnotes omitted).

guidance,[113] to use a more complete set of quotation information (*i.e.,* proprietary data feeds) than will be available in the expanded MDI data when evaluating best execution today, and retail brokers use wholesalers as executing brokers to obtain the best terms reasonably available.

The MDI Adopting Release also stated that ''as a result of the new round lot definition and the inclusion of odd-lot quotations in core data, retail investors will be able to see, and more readily access, better-priced quotations.'' [114] Such information will, depending on the fees yet to be determined for such information (as stated above), enable those retail investors that purchase such information (or for those retail investors whose broker-dealers purchase it for them) to see and more readily access better-priced quotations than the current NBBO disseminated by the SIPs. To do so, retail investors will need to direct their own orders to the particular trading center that is displaying a better-priced quotation. As stated in the MDI Adopting Release, however, most retail investors rely on their broker-dealers for execution of their orders, and the additional quotation information will likely be used by more sophisticated retail investors that are able to process quotation information and self-direct their orders.[115]

The MDI Adopting Release also stated that ''through the addition of depth of book data and auction information in core data, the scope of NMS information will, to a greater extent, allow some market participants to trade in a more informed, competitive, and efficient manner.'' [116] The phrase ''some market participants'' as discussed above, refers to those market participants that currently rely on SIP data for trading and not the proprietary data feeds. For the marketable orders of individual investors that currently are routed to wholesalers, the expansion of depth of book data in consolidated market data will not affect the information used for their execution because the Commission understands that wholesalers currently use proprietary data feeds for evaluating the best execution of their orders, which include more information than the expanded consolidated market data of the MDI Rules.

An aspect of the MDI Rules that will affect the public evaluation of wholesaler order execution quality is smaller round lot sizes for quotations in NMS stocks with prices greater than $250 per share. These quotations determine the NBBO, and smaller round lot sizes can lead to narrower NBBO spreads. As discussed in section II above, the NBBO is a benchmark used to assess the market for an NMS stock, as well as to retrospectively assess the level of execution quality for an order. Accordingly, although implementation of the MDI Rules will not increase the information available to wholesalers in proprietary data feeds, changes in the round lot definition could narrow the NBBO as a public benchmark for the execution quality of the marketable orders of individual investors.

The Commission does not believe, however, the smaller round lot sizes for NMS stocks with prices that exceed $250 per share will substantially affect the need for Proposed Rule 615 in terms of improved order execution quality for the marketable orders of individual investors. In particular, Proposed Rule 615 would encompass all NMS stocks, while the new round lot definition will encompass a much smaller range of NMS stocks and trading volume. In the MDI Adopting Release, for example, Table 3 and Table 4 set out the range of stocks and volume estimated to be affected by the new round lot definition. This information is summarized below:

Round lot tier	Number of NMS stocks	% Average daily share volume	% Average daily dollar volume	% Instances of smaller NBBO
$0–$250	9,023	97.12	71.93	n/a
$250.01–$1,000	117	2.79	23.24	26.6
$1,000.01–$10,000	16	0.09	4.82	47.7
$10,000+	1	0.00	0.02	n/a

First, as stated in the MDI Adopting Release, ''most stocks, approximately 98.5%, will remain unaffected'' by the new round lot definition.[117] The 98.5% of unaffected NMS stocks with prices of $250 or less represented 97.12% of total NMS stock share volume and 71.93% of total NMS stock dollar volume. Thus, the great majority of NMS stocks and their volume would not be affected by the narrowing of the NBBO benchmark that will result from the new round lot definition in the MDI Rules.[118]

Second, for the estimated 1.5% of high-priced NMS stocks (over $250) that will be affected by the reduction in round lot sizes, the Commission estimated that most of the dollar volume (23.24% of total NMS stock dollar volume) will occur within the $250.01-$1,000 tier, but in this tier, the NBBO spread will be reduced for only 26.6% of the trading day.[119] For the remaining 73.4% of the trading day in these NMS stocks, the NBBO spread in these NMS stocks will be unaffected.[120] Accordingly, even for the 1.5% of NMS stocks that will be affected by the revised round lot definition, NBBO spreads were estimated to remain unaffected for the most of the trading day.

This conclusion is consistent with statements in the MDI Adopting Release. For example, the MDI Adopting Release states that ''the size of the change in the NBBO spread, conditional

[113] The MDI Adopting Release referred to this FINRA guidance concerning the relevance of proprietary data feeds to a broker-dealer's best execution efforts under FINRA rules. *Id.* at 18605 n. 94 (quoting FINRA Notice to Members 15–46, Guidance on Best Execution Obligations in Equity, Options and Fixed Income Markets at 3 n. 12 (Nov. 2015), *available at https://www.finra.org/rules-guidance/notices/15-46* (''FINRA Notice 15–46''). The relevant portion of FINRA Notice 15–46 provides the following guidance on compliance with FINRA Rule 5310: ''[A] firm that regularly accesses proprietary data feeds, in addition to the consolidated SIP feed, for its proprietary trading, would be expected to also be using these data feeds to determine the best market under prevailing market conditions when handling customer orders to meet its best execution obligations.''

[114] *Id.* at 18601.

[115] *See, e.g., id.* at 18753 (''the Commission believes, as suggested by commenters, that retail brokers may allow some sophisticated retail investors to directly utilize the expanded content of core data and realize the benefits discussed below'').

[116] *Id.* at 18601.

[117] MDI Adopting Release, *supra* note 81, 86 FR at 18743 (Table 4).

[118] *Id.* at 18753 (''Even though the new round lot definition would expand information on odd-lots that may be priced better than the current NBBO in some stocks, most stocks would not be affected by the new round lot definition.'') (footnotes omitted).

[119] *Id.* at 18743 (Table 3).

[120] *Id.* (Table 4). For NMS stocks with prices of $1000.01 to $10,000, which represented 4.82% of trading volume, the Commission estimated that, taking into account the new round lot definition, the NBBO spread would be reduced to some extent for 47.7% of the trading day. *Id.* (Tables 3–4).

on the NBBO being smaller, will also be substantial.'' [121] The phrase ''conditional on the NBBO being smaller'' [122] means that the reduction in size of the half spread is limited to the 1.5% of stocks and their volume that, as discussed above, will be affected by the new odd lot definition. As a result, there will be a significant reduction in half spread of the NBBO for those stocks, but this reduction is conditional on the minority of the trading day for 1.5% of NMS stocks when NBBO spreads actually will be affected by the new round lot definition.

Third and finally, the NBBO as a benchmark for order execution quality does not, as discussed in section II.C above, reflect the availability of prices better than round lot displayed quotations. Such better prices include displayed odd lot quotations and undisplayed orders at national securities exchanges, as well as the availability of NBBO price improvement at wholesalers that is enabled by the low adverse selection costs of the marketable orders of individual investors. In the MDI Adopting Release, the Commission considered whether a narrowing of the NBBO spread would affect the order execution quality of retail investors.[123] While it stated that a narrowing of the NBBO spread would, by definition, reduce the level of NBBO price improvement if execution prices for retail investors remained the same,[124] the Commission stated that ''retail investors might or might not'' experience an improvement in execution quality, ''as measured by execution prices,'' from wholesalers.[125] The Commission stated that a retail broker commented that retail investors would not receive better execution prices under the new round lot sizes because wholesalers already offer price improvement to retail investors that exceeds the potential improvements in the NBBO from the new round lot size.[126] Another commenter stated that all investors, including retail investors, would experience reduced execution costs from a tighter NBBO no matter where the execution took place.[127] The Commission concluded that it was ''uncertain'' whether the execution quality that retail investors receive from wholesalers would change if the NBBO spread narrows because the effect ''would depend on how the change in the NBBO compared to the current price improvement offered by wholesalers,'' as well as on ''changes in the degree of price improvement wholesalers will offer in stocks with tighter NBBOs, which is uncertain.'' [128]

As stated above, the Commission understands that wholesalers already would be expected, under FINRA guidance, to use proprietary data feeds, which contain a fuller set of quotations than will be included in the new round lot definition, when, among other things, evaluating best execution. Consequently, the new round lot definition will not change the quotation data used by wholesalers to determine prices for executing the orders of individual investors, but rather will change the NBBO as benchmark for analysis of order execution quality at wholesalers.[129] Moreover, narrowing the NBBO as a benchmark for execution quality of wholesalers will affect all wholesalers equally. For example, if the average NBO for an NMS stock declined by two cents, the NBO as a benchmark would reduce the calculation of NBBO price improvement by two cents for all wholesalers and therefore leave them in the same relative position when compared to each other. The Commission does not believe that implementation of the new round lot definition in the MDI Rules will substantially affect the need for Proposed Rule 615 in terms of an improvement in the order execution quality of the marketable orders of individual investors.

2. Rules Addressing Order Handling and Execution

Broker-dealers owe their customers a duty of best execution when handling and executing customer orders.[130] This duty of best execution derives from common law agency principles and fiduciary obligations, and is incorporated in SRO rules and enforced through the antifraud provisions of the Federal securities laws.[131] The Commission has stated that ''the duty of best execution generally requires broker-dealers to execute customers' trades at the most favorable terms reasonably available under the circumstances, *i.e.,* at the best reasonably available price.'' [132] Broker-dealers should periodically assess the quality of competing markets to assure that order flow is directed to the markets providing the most beneficial terms for their customer orders.[133] In doing so, broker-dealers must take into account price improvement opportunities, and whether different markets may be more suitable for different types of orders or particular securities.[134]

After the enactment of section 11A in 1975, which included as an objective the practicability of brokers' executing investor orders in the best market,[135] the Commission adopted rules that prescribe requirements for the handling and execution of orders in NMS stocks in certain contexts. These rules were often designed, at least in part, to promote best execution of investors' orders. Three rules in Regulation NMS, discussed below, specifically address the handling and execution of orders in NMS stocks—17 CFR 242.604 (''Rule 604,'' also known as the ''Limit Order Display Rule''), 17 CFR 242.611 (''Rule 611,'' also known as the ''Order Protection Rule''), and 17 CFR 242.612 (''Rule 612,'' also known as the ''Sub-Penny Rule'').

[121] *Id.* at 18744.

[122] Similarly, the following statement in the MDI Adopting Release is conditional on those instances where the NBBO spread is smaller: ''The Commission believes that, in particular, for securities with a significant amount of dollar trading volume, there will be significant changes to (tightening of) the quoted spread displayed under the new round lot definition.'' *Id.* at 18743.

[123] *Id.* at 18747 (section addressing ''effects of internalization on retail order flow'').

[124] *Id.* (''it may become more difficult for the retail execution business of wholesalers to provide price improvement and other execution quality metrics at levels similar to those provided under the 100 share round lot definition today'').

[125] *Id.*

[126] *Id.*

[127] *Id.*

[128] *Id.*

[129] *Id.* at 18745 (''the new round lot definition will also improve transaction cost analysis and best execution analysis in higher priced stocks, which are benchmarked against the NBBO'').

[130] The Commission also is proposing a new rule addressing the best execution obligations of broker-dealers. *See* Securities Exchange Act Release No. 96496 (Dec. 14, 2022) (File No. S7–32–22) (Regulation Best Execution) (''Regulation Best Execution Proposal''). The Commission encourages commenters to review that proposal to determine whether it might affect their comments on this proposal.

[131] *See* MDI Adopting Release, *supra* note 81, 86 FR at 18605. In addition, FINRA has codified a duty of best execution in its rules, requiring a broker-dealer to ''use reasonable diligence to ascertain the best market for the subject security and buy or sell in such market so that the resultant price to the customer is as favorable as possible under prevailing market conditions.'' FINRA Rule 5310, ''Best Execution and Interpositioning.''

[132] *See* MDI Adopting Release, *supra* note 81, 86 FR at 18605 (quoting Regulation NMS Adopting Release, *supra* note 78, 70 FR at 37538); *see also Geman* v. *SEC,* 334 F.3d 1183, 1186 (10th Cir. 2003) (quoting *Newton* v. *Merrill, Lynch, Pierce, Fenner & Smith, Inc.,* 135 F.3d 266, 270 (3d Cir. 1998)) (''[T]he duty of best execution requires that a broker-dealer seek to obtain for its customer orders the most favorable terms reasonably available under the circumstances.''); and *Kurz* v. *Fidelity Management & Research Co.,* 556 F.3d 639, 640 (7th Cir. 2009) (describing the ''duty of best execution'' as ''getting the optimal combination of price, speed, and liquidity for a securities trade'').

[133] *See* Regulation NMS Adopting Release, *supra* note 78, 70 FR at 37538.

[134] *See id.*

[135] Section 11A(a)(1)(C)(iv) of the Exchange Act; *see also supra* note 57 and accompanying text.

a. Limit Order Display Rule

The Limit Order Display Rule was originally adopted in 1996 as Rule 11Ac1–4 and redesignated as Rule 604 with the adoption of Regulation NMS in 2005.[136] It establishes minimum display requirements for customer limit orders that are not executed immediately, which, as discussed in section II.C above, can be referred to as ''non-marketable'' limit orders. In contrast to marketable limit orders, non-marketable limit orders cannot be executed immediately at the NBBO. Rule 604 requires specialists and OTC market makers to display the price and full size of customer limit orders when these orders represent buying and selling interest that is at a better price than a specialist's or OTC market maker's public quotation.[137] Specialists and OTC market makers also must increase the size of their quotation for a particular security to reflect a limit order of greater than *de minimis* size when the limit order is priced equal to the specialist's or OTC market maker's disseminated quotation and that quotation is equal to the NBBO.[138]

In adopting Rule 604, the Commission observed that the enhanced transparency of such orders would increase the likelihood that customer limit orders would be executed because contra-side market participants would have a more accurate picture of trading interest in a given security, and that the increased visibility would enable market participants to interact directly with limit orders, rather than rely on the participation of a dealer for execution.[139] The Commission also stated that the display requirement (together with other amendments being made at the time) would help ensure the disclosure of customer and market maker buying and selling interest that had, prior to adoption of Rule 604, been hidden from many market participants.[140]

b. Order Protection Rule

In 2005, the Commission adopted the Order Protection Rule as Rule 611 of Regulation NMS. Rule 611(a) applies to ''trading centers,'' which is defined broadly in Rule 600(b)(95) as a national securities exchange or national securities association that operates an SRO trading facility, an ATS, an exchange market maker, an OTC market maker, or any other broker or dealer that executes orders internally by trading as principal or crossing orders as agent.

Rule 611(a)(1) requires trading centers to implement written policies and procedures reasonably designed to prevent trade-throughs—the execution of an order at a price that is inferior to the price of a ''protected quotation.'' [141] To be protected, a quotation must be immediately and automatically accessible up to its full displayed size, must be the best-priced quotation (highest bid to buy and lowest offer to sell) in round lot sizes of an exchange or FINRA, and must be disseminated in consolidated market data.[142] Accordingly, Rule 611 provides for intermarket price protection only of an exchange's or FINRA's best bid and offer (''BBO''). It does not establish time priority among the same-priced quotations at different trading centers, nor does it protect ''depth-of-book'' quotations (quotations with prices outside an exchange's or FINRA's BBO) or odd lot quotations (quotations with sizes of less than one round lot).

In adopting Rule 611, the Commission stated that strong intermarket price protection offers 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 readily available prices, which can be difficult for investors, particularly individual investors, to monitor.[143] One of the Commission's concerns when adopting Rule 611 was the internalization of individual investor orders by broker-dealers. The Commission observed that the great majority of internalized trades are the small trades of individual investors, and that, in 2003, nearly 1 out of every 30 of these trades, of which there are millions, appears to have been executed at a price inferior to an automated and accessible quotation.[144] The Commission stated that Nasdaq's data submitted in response to the Rule 611 proposal appeared to indicate a need for regulatory action to reinforce the fundamental principle of best price for all NMS stocks.[145]

c. Sub-Penny Rule

Also in 2005, the Commission adopted the Sub-Penny Rule as Rule 612 of Regulation NMS to establish a minimum pricing increment for NMS stocks. Specifically, paragraph (a) of Rule 612 provides that no national securities exchange, national securities association, ATS, vendor, or broker or dealer shall display, rank, or accept from any person a bid or offer, an order, or an indication of interest in any NMS stock priced in an increment smaller than $0.01 if that bid or offer, order, or indication of interest is priced equal to or greater than $1.00 per share.[146] Rule 612 does not, however, prohibit a sub-penny trade by a wholesaler or other internalizing broker-dealer, as long as the trade did not result from an impermissible sub-penny quotation,

[136] Regulation NMS Adopting Release, *supra* note 78, 70 FR at 37570. Modifications included conforming terms to those adopted with Regulation NMS, such as changing references from ''covered security'' to ''NMS stock.'' *Id.* at 37572.

[137] Rule 604(b)(1) provides exceptions for, among other things, orders executed immediately upon receipt and odd lot orders.

[138] *See* Securities Exchange Act Release No. 37619A (Sep. 6, 1996), 61 FR 48290, 48290 (Sep. 12, 1996) (Order Execution Obligations) (adopting final rules to require the display of customer limit orders and amending a rule governing publication of quotations) (''1996 Order Handling Release''); Rule 604(a).

[139] *See* 1996 Order Handling Release, *supra* note 138, 61 FR at 48293.

[140] *Id.* at 48292. The Commission also adopted amendments to require a market maker to publish quotations for any listed security when it is responsible for more than 1% of the aggregate trading volume for that security and to make publicly available any superior prices that a market maker privately quotes through certain electronic communications networks (''ECNs''). *Id.* at 48292. Also, at the same time it adopted the Limit Order Display Rule in 1996, the Commission deferred action on a proposed rule to address the handling of customer market orders of less than block size, referred to as the ''Price Improvement Rule.'' *Id.* at 48322. This proposed rule would have required specialists and OTC market makers to provide their customer market orders an opportunity for price improvement. The proposal included a non-exclusive safe harbor to satisfy the price improvement obligation that included exposing the customer order for 30 seconds at an improved price in a published quotation. The proposal sought to improve opportunities in auction and dealer markets for market orders to interact directly with other market orders and public limit orders, consistent with the goals of an NMS. *Id.*

[141] Rule 600(b)(70) defines ''protected bid'' or ''protected offer'' as a quotation in an NMS stock that: (i) is displayed by an automated trading center; (ii) is disseminated pursuant to an effective NMS plan; and (iii) is an automated quotation that is the best bid or best offer of a national securities exchange, or the best bid or best offer of a national securities association.

[142] Rule 600(b)(71) defines ''protected quotation'' as a protected bid or a protected offer. As stated in section II.B.1 above, no FINRA member currently uses the ADF, its facility for displaying quotations, to disseminate quotations in consolidated market data. Today, only exchanges display protected quotations under Rule 611.

[143] Regulation NMS Adopting Release, *supra* note 78, 70 FR at 37505.

[144] *Id.* at 37508.

[145] *Id.* In response to the Commission's proposal to adopt Regulation NMS, The Nasdaq Stock Market, Inc. (n.k.a. Nasdaq) submitted data to show that the trade-through rates for Nasdaq stocks in some trading centers had dropped from the Fall of 2003 to the Fall of 2004, and that the reduction during that time was a result of fewer independently operating ECNs. The Commission stated ''[i]t is unlikely that ECN consolidation could have caused such a major reduction in trade-through rates at securities dealers when they execute their customer orders internally.'' *Id.* (footnote omitted).

[146] 17 CFR 242.612(a). Paragraph (b) of Rule 612 sets forth a minimum increment of $0.0001 for prices less than $1.00 per share.

order, or indication of interest.[147] For example, Rule 612 does not prevent wholesalers, after they receive an order from a broker, from choosing to execute that order in a transaction at a sub-penny price. This includes a trade executed at a price that is a sub-penny increment better than the best displayed quotation in consolidated market data.[148] This sub-penny trading exception is not available to market participants on exchanges and ATSs,[149] in contrast, because those trading centers operate by accepting, matching, and executing orders from market participants. Exchanges and ATSs, with limited exceptions, may only execute orders at a sub-penny price if the price is the NBBO midpoint.[150] Also, exchanges with retail liquidity programs (''RLPs'') have been granted an exemption from Rule 612 to provide executions in tenths of a penny.[151] The Commission has granted exemptions for these programs to promote competition between exchanges and OTC market makers (which, as discussed above, includes wholesalers).[152] As discussed in section VII below, however, the great majority of marketable orders of individual investors continue to be routed first to wholesalers.

3. Rules Addressing Access to Trading Centers

As stated above, access to trading centers and their services is a critically important component of the NMS as a means to link trading centers together in a unified system. For example, the Regulation NMS rules addressing the display of quotations, the display of customer limit orders, and protection of customer orders cannot achieve their objectives if market participants do not have fair and efficient means to access those trading centers that display quotations and execute orders.[153]

For purposes of assessing access requirements in today's NMS, trading centers for NMS stocks can be divided into three distinct regulatory categories: national securities exchanges, NMS Stock ATSs, and internalizing broker-dealers (including wholesalers). As discussed below, the statutory access requirements and the Commission's access rules currently apply to exchanges and ATSs, as well as to FINRA members that display quotations in consolidated market data through FINRA's ADF (of which there currently are none). In contrast, broker-dealers that do not display quotations in consolidated market data and that trade outside of an ATS, such as wholesalers, are not subject to any fair access requirements under the Exchange Act or Commission rules. While subject to Commission and SRO rules for broker-dealers, internalizing broker-dealers are not prohibited from restricting access to their trading mechanisms and the investor orders that they internalize. An internalizing broker-dealer is not required, for example, to provide other market participants, including institutional investors and liquidity providers on exchanges, with any opportunity to compete to provide the best prices to the individual investor orders that the broker-dealer executes internally.

a. Access Rules for National Securities Exchanges

As stated in section III.A above, the Exchange Act directly requires national securities exchanges to provide fair access in four contexts.[154] Section 6(b)(2) specifies that exchange rules must allow ''any'' broker-dealer registered with the Commission, unless subject to a specified disqualification, to become a member of the exchange. Section 6(b)(4) requires that exchange rules provide for the ''equitable'' allocation of ''reasonable'' dues, fees, and other charges among members, issuers, and other persons using exchange facilities. Section 6(b)(5) broadly requires that exchange rules be designed, among other things, to remove impediments to and perfect the mechanism of a free and open market and an NMS, and that exchange rules are not designed to permit unfair discrimination between customers, issuers, brokers, or dealers. And section 6(b)(8) requires that exchange rules do not impose any burden on competition not necessary or appropriate in furtherance of the purposes of the Exchange Act.

In addition to these broad statutory requirements for all national securities exchanges, the Commission has adopted 17 CFR 242.610 (''Rule 610'') of Regulation NMS, which addresses access to displayed quotations.

[147] The Commission also is proposing to amend Rule 612 regarding sub-penny trading. *See* Minimum Pricing Increments Proposal, *supra* note 98. The Commission encourages commenters to review that proposal to determine whether it might affect their comments on this proposing release.

[148] Regulation NMS Adopting Release, *supra* note 78, 70 FR at 37556 (the Commission stated that sub-penny executions due to price improvement are generally beneficial to retail investors).

[149] The regulatory framework for ATSs is discussed in section III.B.3 below.

[150] Neither Rule 612 nor any other Commission rule or interpretation states that exchanges and ATSs may execute midpoint orders at a sub-penny amount (*e.g.,* if the NBBO is 10.00–10.01 to execute at the mid-point price of 10.005). However, the Commission has stated that Rule 612 will not prohibit a sub-penny execution resulting from a midpoint or volume-weighted algorithm or from price improvement, so long as the execution did not result from an impermissible sub-penny order or quotation. Regulation NMS Adopting Release, *supra* note 78, 70 FR at 37556. Undisplayed ''floating'' midpoint orders (*i.e.,* orders that re-price when the exchange BBO changes), for example, are permissible under Rule 612, and the Commission has approved numerous rule proposals by national securities exchanges for their use. *See, e.g.,* Securities Exchange Act Release Nos. 89563 (Aug. 14, 2020), 85 FR 51510 (Aug. 20, 2020) (SR–PEARL–2020–03) (order approving proposed rule change by MIAX PEARL to establish rules governing the trading of equity securities, including a midpoint peg order type); and 78101 (June 17, 2016), 81 FR 41142 (June 23, 2016) (File No. 10–222) (order approving IEX's registration as a national securities exchange, including the exchange's inclusion of a midpoint pegged order type in its rulebook).

[151] Several exchanges operate RLPs. These are programs for retail orders seeking liquidity that allow market participants to supply liquidity to such retail orders by submitting undisplayed orders priced at least $0.001 better than the exchange's protected best bid or offer. Each program results from a Commission approval of a proposed rule change made on Form 19b-4 combined with a conditional exemption, pursuant to section 36 of the Exchange Act, from Rule 612 to enable the exchange to accept and rank (but not display) the sub-penny orders. *See, e.g.,* Securities Exchange Act Release Nos. 85160 (Feb. 15, 2019), 84 FR 5754 (Feb. 22, 2019) (SR–NYSE–2018–28) (approving the NYSE RLP on a permanent basis and granting the exchange a limited exemption from the Sub-Penny Rule to operate the program); 86194 (June 25, 2019), 84 FR 31385 (July 1, 2019) (SR–BX–2019–011) (approving Nasdaq BX's retail price improvement program on a permanent basis and granting the exchange a limited exemption from the Sub-Penny Rule to operate the program).

[152] *Id. See also* Securities Exchange Act Release No. 73702 (Nov. 28, 2014), 79 FR 72049 (Dec. 4, 2014) (SR–BX–2014–048) (approving Nasdaq BX's (f/k/a NASDAQ OMX BX Inc.) establishment of its retail price improvement program on a pilot basis). In granting the original exemption from Rule 612, the Commission stated that the vast majority of ''marketable retail orders'' are internalized by OTC market makers, and that retail investors can benefit from such arrangements to the extent that OTC market makers offer them price improvement over the NBBO. This price improvement is typically offered in sub-penny amounts. The Commission explained that OTC market makers typically select a sub-penny price for a trade without quoting at that exact amount or accepting orders from retail customers seeking that exact price; and that exchanges—and exchange member firms that submit orders and quotations to exchanges—cannot compete for ''marketable retail order flow'' on the same basis, because it would be impractical for exchange electronic systems to generate sub-penny executions without exchange liquidity providers or retail brokerage firms having first submitted sub-penny orders or quotations, which the Sub-Penny Rule expressly prohibits. The Commission explained that the limited exemption granted to operate the retail price improvement program should promote competition between exchanges and OTC market makers in a manner reasonably designed to minimize the problems that the Commission identified when adopting the Sub-Penny Rule. *Id.* at 72053.

[153] *See* Regulation NMS Adopting Release, *supra* note 78, 70 FR at 37538. The rules discussed in this section address requirements that apply to trading centers providing access to their services. Exchange Act Rule 15c3–5, in contrast, addresses access, but in the context of risk management controls for broker-dealers with market access.

[154] *See supra* notes 61–66 and accompanying text.

Specifically, Rule 610(a) prohibits any national securities exchange that operates an SRO trading facility [155] from imposing unfairly discriminatory terms that would prevent or inhibit any person from obtaining efficient access through a member of the national securities exchange to the quotations in an NMS stock displayed through its SRO trading facility. This provision is designed to prohibit national securities exchanges from limiting ''piggyback access'' as a means by which non-members obtain access to exchange quotations through the services of an exchange member.[156] Piggyback access, for example, allows non-members to obtain access to a national securities exchange's quotations without the need to obtain (and pay for) direct connectivity to the exchange.

b. Access Rules for NMS Stock ATSs

In 1998, the Commission initiated a new regulatory regime for ATSs with the adoption of Regulation ATS.[157] An ATS is a trading system that falls within the definition of exchange in Section 3(b)(1) of the Exchange Act, but is exempted from such definition by Rule 3a1–1 under the Exchange Act if the trading system complies with Regulation ATS.[158] For an NMS Stock ATS,[159] Regulation ATS requires, among other things, that the NMS Stock ATS must register with the Commission as a broker-dealer and must file a Form ATS–N, a publicly available document that includes detailed disclosures about the NMS Stock ATS's operations.

In addition, Regulation ATS includes two separate types of access requirements that potentially can apply to an NMS Stock ATS. First, Rule 301(b)(3) imposes order display and execution access requirements on an NMS Stock ATS that displays orders to any person and had 5% or more of average daily volume reported in an NMS stock during four of the preceding six calendar months. Similar to Rule 610, the ''execution access'' requirement of Rule 301(b)(3) is limited to access to displayed quotations in consolidated market data. As stated above in section III.B.1, FINRA's ADF is a facility for broker-dealers (including ATSs) to display quotations in consolidated market data. Currently, no NMS Stock ATS that displays quotations uses the ADF to display its quotations in consolidated market data, and no NMS Stock ATS is subject to the execution access requirement of Rule 301(b)(3).

Second, Rule 301(b)(5) imposes ''fair access'' requirements with respect to an NMS stock in which the NMS Stock ATS had 5% or more of the average daily volume reported during four of the preceding six calendar months. This fair access requirement requires an NMS Stock ATS (1) to establish written standards for granting access to trading on its systems, (2) to not unreasonably prohibit or limit any person in respect to access to services offered by such ATS by applying the written access standards in an unfair or discriminatory manner, (3) to maintain records of grants, denials, and limitations of access, and (4) to report the information required by Form ATS–R on grants, denials, and limitations of access. When it adopted Regulation ATS, the Commission emphasized that the fair access requirements of Rule 301(b)(5) apply to a far broader range of services than the ''execution access'' requirements of Rule 301(b)(3), which are limited to access to quotations. Specifically, the Commission stated that although it was adopting rules to require ATSs with significant trading volume to publicly display their best bid and offer and provide equal access to those orders, direct participation in ATSs offers benefits in addition to execution against the best bid and offer. The Commission gave as an example that direct participants could enter limit orders into the system, rather than just execute against existing orders on a fill-or-kill basis,[160] and that direct participants could view all orders, not just the best bid or offer, which provides important information about the depth of interest in a particular security. The Commission further observed that some ATSs also allowed direct participants to enter ''reserve'' orders which hide the full size of an order from view. Because of these advantages to direct participants in an ATS, access to the best bid and offer through an SRO provided an incomplete substitute. Therefore, the Commission adopted rules to require most ATSs that have a significant percentage of overall trading volume in a particular security to comply with fair access standards.[161]

In sum, the fair access requirements of Rule 301(b)(5) encompass all of the trading services of an NMS Stock ATS. When adopting these requirements, the Commission emphasized that an ''alternative trading system must apply [fair access] standards fairly and is prohibited from unreasonably prohibiting or limiting any person with respect to trading in any equity securities.'' [162]

Currently, only a single NMS Stock ATS discloses on its Form ATS–N that it is subject to these fair access requirements for securities that are available for trading on its platform.[163] NMS Stock ATSs that are not subject to fair access requirements are not prohibited from unfairly discriminating with respect to the trading services they offer broker-dealers and other market participants.

c. Access Rules for ADF Participants

As stated in section III.B.2 above, Rule 611 protects the best-priced displayed quotations of FINRA members that use the ADF to display quotations in consolidated market data (though no FINRA member currently uses the ADF to do so). In adopting Rule 611, the Commission recognized that assuring fair and efficient access to FINRA members displaying quotations in the ADF would be essential, given that other market participants were required by rule to not trade through such quotations.[164] The ADF falls within the definition of an ''SRO display-only facility'' in Rule 600(b)(88) because it merely displays the quotations of its participants and neither executes orders itself nor presents orders to ADF participants for execution. Instead, market participants must obtain their own means of access to ADF participants to trade with ADF protected quotations. Accordingly, the Commission adopted Rule 610(b) to promote such access to ADF participants.[165] Rule 610(b)(2) imposes

[155] Rule 600(b)(89) defines an ''SRO trading facility'' as a facility operated by or on behalf of a national securities exchange or a national securities association that executes orders in a security or presents orders to members for execution.

[156] *See* Regulation NMS Adopting Release, *supra* note 78, 70 FR at 37539. Rule 610(c) also limits the fees that can be charged for accessing an exchange's best-priced displayed quotations, and Rule 610(d) addresses locking and crossing quotations.

[157] *See* Regulation ATS Adopting Release, 63 FR 70844, *supra* note 27. ''Regulation ATS'' consists of 17 CFR 242.300 through 242.304 (''Rule 300'' through ''Rule 304'' under the Exchange Act).

[158] 17 CFR 240.3a1–1.

[159] In 2018, the Commission amended Regulation ATS with respect to the requirements that apply to NMS Stock ATSs. Securities Exchange Act Release No. 83663 (July 18, 2018), 83 FR 38768 (Aug. 7, 2018) (''ATS–N Adopting Release'').

[160] A fill-or-kill order is an order with instructions to cancel the order if it cannot be executed in its full size.

[161] Regulation ATS Adopting Release, *supra* note 27, 63 FR at 70872 (footnote omitted).

[162] *See id.* at 70873.

[163] *See supra* note 29 and accompanying text.

[164] *See* Regulation NMS Adopting Release, *supra* note 78, 70 FR at 37540 (discussing Rule 610, which addresses means of access to quotations). The Regulation NMS Adopting Release refers to National Association of Securities Dealers (''NASD'') members. NASD was the predecessor association to what today is FINRA.

[165] *See* Regulation NMS Adopting Release, *supra* note 78, 70 FR at 37502–03; *see also id.* at 37539–43.

the same piggyback access requirement that applies to exchanges under Rule 610(a), thereby assuring that market participants can obtain indirect access to an ATS's or broker-dealer's quotations in the ADF.

In addition, however, Rule 610(b)(1) imposes an access requirement that is particularly tailored to address concerns presented by FINRA members (including NMS Stock ATSs) displaying quotations in the ADF. Specifically, Rule 610(b)(1) requires that any trading center that displays quotations in NMS stocks through an SRO display-only facility must provide a level and cost of access to such quotations that is substantially equivalent to the level and cost of access to quotations displayed by SRO trading facilities (such as national securities exchanges). The Commission emphasized that the phrase ''level and cost of access'' would encompass both (1) the policies, procedures, and standards that govern access to quotations of the trading center, and (2) the connectivity through which market participants can obtain access and the cost of such connectivity.[166] The Commission further stated that trading centers that choose to display quotations in an SRO display-only facility would be required to bear the responsibility of establishing the necessary connections to afford fair and efficient access to their quotations, and the nature and cost of these connections for market participants seeking to access the trading center's quotations would need to be substantially equivalent to the nature and cost of connections to SRO trading facilities.[167]

In addition to these heightened access requirements for FINRA members (including NMS Stock ATSs) that display quotations in the ADF, the Commission stated that FINRA, as the self-regulatory authority responsible for enforcing compliance by ADF participants with the requirements of the Exchange Act, would need to evaluate the connectivity of ADF participants to determine whether they meet the requirements of Rule 610(b)(1).[168] The Commission also stated that the addition of a new ADF participant would constitute a material aspect of the operation of FINRA's facilities, and thus require the filing of a proposed rule change pursuant to section 19(b) of the Exchange Act that would offer an opportunity for public notice and comment.[169]

4. Disclosure of Order Routing Practices and Order Execution Statistics

Rule 606 of Regulation NMS requires broker-dealers to publish quarterly reports on their routing of customer orders in NMS stocks, and Rule 605 of Regulation NMS requires market centers to make data files publicly available on a monthly basis that include a variety of statistics on their execution of orders in NMS stocks.[170] When it originally adopted the two rules in 2000, the Commission stated that, by increasing the visibility of order execution and routing practices, the rules were ''intended to empower market forces with the means to achieve a more competitive and efficient [NMS] for public investors.'' [171]

Rule 606 requires broker-dealers to disclose, among other things, the percentage of non-directed customer orders routed to different trading centers, as well as the financial inducements offered by these trading centers to attract order flow.[172] Information must be provided for four types of orders—market orders, marketable limit orders, non-marketable limit orders, and other orders. The enhanced disclosures include a requirement to disclose net aggregate amounts of PFOF received from trading centers or amounts paid to them (such as transaction fees on exchanges), both as a total dollar amount and an amount per 100 shares.

Rule 605 requires market centers to disclose standardized statistics about the execution quality they achieve for ''covered orders,'' as defined in Rule 600(b)(22) of Regulation NMS.[173] In general, the definition of covered orders excludes order types for which the customer requests special handling that could detract from the goal of achieving comparable statistics for similar order types across different market centers. Unlike the Rule 606 disclosures, the Rule 605 data files are not designed to be human-readable and instead consist of a large volume of detailed statistics for each of the NMS stocks in which a market center receives covered orders. The data files are published in a format that is designed to be downloaded and processed with analysis software, such as a spreadsheet program, which then can be used to generate summary reports for viewing.

IV. Description of Proposed Rule 615

A. Overview of Order Competition Requirement

Paragraph (a) of Proposed Rule 615 sets forth the rule's core competition requirement. It states that a restricted competition trading center shall not execute a segmented order internally [174] until after a broker-dealer has exposed such order to competition at a specified limit price in a qualified auction operated by an open competition trading center. As discussed below in this section IV: (1) segmented order, open competition trading center, restricted competition trading center, and qualified auction are new terms proposed to be defined in Rule 600(b) of Regulation NMS; (2) certain exceptions to the order competition requirement are set forth in paragraph (b) of Proposed Rule 615; (3) the requirements for a qualified auction are specified in paragraph (c) of Proposed Rule 615; and (4) the requirements with respect to segmented orders that would be imposed on open competition trading centers, originating brokers, all broker-dealers, and national securities exchanges are set forth in paragraphs (d) through (g) of Proposed Rule 615.

The term ''segmented order,'' as proposed to be defined in Proposed Rule 600(b)(91) of Regulation NMS, is a

[166] Regulation NMS Adopting Release, *supra* note 78, 70 FR at 37549.

[167] *Id.*

[168] *Id.*

[169] *Id.*

[170] The rules that the Commission originally adopted were designated as Rule 11Ac1–6 and Rule 11Ac1–5. The Commission re-designated Rule 11Ac1–6 as Rule 606 and Rule 11Ac1–5 as Rule 605 when it adopted Regulation NMS in 2005. Regulation NMS Adopting Release, *supra* note 78, 70 FR at 37538. The term ''market center,'' as defined in Rule 600(b)(46) of Regulation NMS, is somewhat narrower than trading center. Market centers include, for example, national securities exchanges, ATSs, and OTC market makers (including wholesalers), but do not include the broad catch-all category of trading center that encompasses any broker-dealer that executes orders internally as principal or agent.

[171] Securities Exchange Act Release No. 43590 (Nov. 17, 2000), 65 FR 75414, 75427 (Dec. 1, 2000). The Commission enhanced the order routing disclosure requirements of Rule 606 when it amended the rule in 2018. Securities Exchange Act Release No. 84528 (Nov. 2, 2018), 83 FR 58338 (Nov. 19, 2018).

[172] A ''non-directed order'' is defined in Rule 600(b)(56) of Regulation NMS to mean any order from a customer other than a directed order, and a ''directed order'' is defined in Rule 600(b)(27) of Regulation NMS to mean an order from a customer that the customer specifically instructed the broker-dealer to route to a particular venue for execution.

[173] Rule 605(a)(1). The Commission also is proposing to amend the order execution quality disclosures required by Rule 605. *See* Securities Exchange Act Release No. 96493 (Dec. 14, 2022) (File No. S7–29–22) (Disclosure of Order Execution Information). The Commission encourages commenters to review that proposal to determine whether it might affect their comments on this proposing release.

[174] The applicability of paragraph (a) of Proposed Rule 615 to ''internally'' executed transactions is designed to accommodate the practice of some trading centers that both execute orders internally and obtain executions of orders externally by seeking liquidity at other trading centers. *Cf.* Rule 600(b)(95) of Regulation NMS (definition of ''trading center'' includes ''any other broker or dealer that executes orders internally by trading as principal or crossing orders as agent'').

key term determining the scope of Proposed Rule 615 and is designed to encompass those orders of individual investors with relatively low adverse selection costs.[175] In addition, paragraphs (b)(2) and (b)(3) of Proposed Rule 615 would provide exceptions for larger orders ($200,000 or more) and orders that are executed at favorable prices for individual investors (orders executed at the NBBO midpoint or better); paragraph (b)(4) would provide an exception for limit orders that have a limit price that is equal to or more favorable for the segmented order than the NBBO midpoint (*i.e.,* non-marketable segmented orders with a limit price that is equal to or lower than the midpoint for buy orders and equal to or higher than the NBBO midpoint for sell orders); and paragraph (b)(5) would provide an exception for orders sized less than one share and for the fractional component, if any, of a segmented order if no qualified auction is available to execute the fractional share or fractional component.[176]

The purpose of the order competition requirement is to expose segmented orders to competition to provide the best prices on an order-by-order basis and thereby minimize the transaction costs incurred by individual investors when they use marketable orders. Proposed Rule 615 would allow flexibility for broker-dealers, wholesalers, and other restricted competition trading centers in how they comply with the rule. A broker-dealer could choose, subject to its best execution responsibilities as discussed further below, to route a segmented order directly to a qualified auction, to an open competition trading center, or to a national securities exchange. Alternatively, a broker-dealer could route such segmented order to another destination, such as a routing broker-dealer, a wholesaler, or other restricted competition trading center, which, in turn, could route the segmented order to a qualified auction, to an open competition trading center, or to a national securities exchange.

For illustrative purposes, the following is one example of how a segmented order could be handled and executed in compliance with Proposed Rule 615. Assume that a broker-dealer routed a customer's segmented order to a wholesaler. The wholesaler that received the segmented order could select a price at which it was willing to execute a segmented order internally. Before executing internally, however, the wholesaler would be required to submit the segmented order to a qualified auction with a specified limit price. As discussed further below, the specified limit price is not a price at which the wholesaler is guaranteeing to execute (*i.e.,* it is not a ''reserve'' price or a ''backstop'' of the segmented order).[177] Rather, the specified limit price would inform auction responders on how to price their orders and also, if the segmented order did not receive an execution in the qualified auction, would be the price (or better) at which the wholesaler or other restricted competition trading center subsequently could execute the segmented order as soon as reasonably possible.

The wholesaler that submitted the segmented order to a qualified auction would have a choice of whether to participate in the qualified auction by submitting its own auction response. The wholesaler could, for example, use its selected price for execution of the segmented order as the specified limit price in the qualified auction or, alternatively, the wholesaler could pick a less aggressive price as the specified limit price for the qualified auction and participate in the qualified auction by submitting an auction response with its more aggressive selected price. The open competition trading center operating the qualified auction would widely disseminate an auction message, which would include the specified limit price, in consolidated market data that would invite auction responses. During the qualified auction, the full range of market participants with the technological capability of responding to a fast (sub-second) auction, such as exchange market makers and institutional investors through their broker-dealers' smart order routers (''SORs''), would have an opportunity to compete to provide the best price for the segmented order by submitting auction responses. If all or part of the segmented order could be executed in the qualified auction at the specified limit price or better, the open competition trading center operating the qualified auction would execute the segmented order pursuant to the execution priority rules set by the open competition trading center running the qualified auction, consistent with the execution priority requirements of Proposed Rule 615(c)(5). If the segmented order did not receive a full execution in the qualified auction, the unexecuted order, or unexecuted portion thereof, would be canceled back to the wholesaler, who could, as soon as reasonably possible, execute the segmented order, or unexecuted portion thereof, internally at a price that was equal to or better for the segmented order than the specified limit price. As discussed below, the wholesaler would not, however, be required to execute the unexecuted segmented order or unexecuted portion of the segmented order at the specified limit price. Any unexecuted segmented order, or any unexecuted portion thereof, would continue to be subject to the order competition requirements of Proposed Rule 615(a).

Given the absence of a ''reserve price'' or ''backstop'' requirement, a segmented order would not have certainty of an execution in a qualified auction at a price equal to the NBBO or better, but the marketable orders of individual investors orders today also do not have certainty of execution for orders routed to wholesalers. As shown in Table 7 in section VII.B.4 below, 1.67% of marketable order shares in NMS stocks (and 3.61% of marketable order shares in non-S&P 500 stocks) receive executions at prices that are outside the NBBO at the time the wholesaler received the order. This low percentage of orders executed outside the NBBO when routed to wholesalers is consistent with the low probability that the NBBO will move away from individual investor orders in the very short time period of a qualified auction.[178] For the reasons discussed in section VII.C.2.b.i below, the Commission does not believe that

[175] As discussed in IV.B.1 below, the proposed definition of ''segmented order'' would exclude very active traders whose orders are likely to impose a much higher level of adverse selection costs on liquidity providers than the less-active accounts that are more typical of individual investors. This is done by limiting the proposed definition of ''segmented orders'' to orders for accounts in which the average daily number of trades executed in NMS stocks was less than 40 in each of the six preceding calendar months.

[176] As discussed in section IV.B.1 below, the proposed definition of ''segmented order'' does not include a limit price component. Compliance with the order competition requirement for limit orders would vary depending on the relation of any limit price and an execution price to the NBBO. For example, segmented orders that have a limit price, or are executed at a price, equal to or more favorable for the segmented order than the NBBO midpoint or better, would have an exception under paragraph (b)(3) or (b)(4) of Proposed Rule 615(b). Segmented orders with a limit price beyond the NBBO midpoint (higher for segmented orders to buy and lower for segmented orders to sell) could still qualify for the exception in Proposed Rule 615(b)(3) if they were executed at the NBBO midpoint or better (*i.e.,* such an order would have been executed at a more favorable price for the segmented order than its limit price).

[177] If the segmented order is not executed in the qualified auction, however, the wholesaler could choose to execute the segmented order internally at the specified limit price or better.

[178] *See infra* section VII.C.2.b.i (the fade probability of the NBBO prices goes from an average of 1.8% at 25 milliseconds after an internalized individual investor order, to 2.8% at 100 milliseconds, and to 4.6% at 300 milliseconds).

segmented orders would have significantly greater risk of inferior execution prices under Proposed Rule 615 than currently provided by wholesalers, but the variability of execution prices could increase.

In sum, Proposed Rule 615 would allow segmented orders to continue to be executed internally by a wholesaler or other restricted competition trading center, but not until after the execution price had been exposed to order-by-order competition in a fair and open qualified auction. In addition, qualified auctions would give the trading interest of other investors, particularly institutional investors, an opportunity to interact directly (without the participation of a dealer) with, and thus execute against, the marketable orders of individual investors. When investor orders are able to interact directly at a fully competitive price without the intermediation of a wholesaler or other dealer, two investors (both the buyer and the seller) are able to benefit mutually from a single trade, thereby promoting the NMS objective that, consistent with the objectives of economically efficient execution of securities transactions and the practicability of brokers executing investors' orders in the best market, investors' orders have an opportunity to be executed without the participation of a dealer.[179]

Proposed Rule 615 does not limit the types of broker-dealers that would be permitted to submit segmented orders for execution in a qualified auction. For example, a retail broker that currently routes segmented orders directly to a wholesaler could instead route such orders directly to a qualified auction with a specified limit price selected by the retail broker. Such specified limit price would need to be consistent with its best execution responsibilities and the terms of the order as set by the customer. If the segmented order did not receive an execution in the auction at the specified limit price, the retail broker could, as soon as reasonably possible, route the segmented order to a wholesaler with a representation that the segmented order had cleared (*i.e.,* not received an execution in) a qualified auction at that price. The wholesaler then could, in compliance with Proposed Rule 615, as soon as reasonably possible, execute the segmented order internally at the specified limit price or better.

If a segmented order did not receive an execution in a qualified auction (regardless of whether submitted to the auction by a retail broker, a wholesaler, or other broker-dealer), a wholesaler that received such order following the conclusion of a qualified auction would not be required by Proposed Rule 615 to execute the order internally. If a wholesaler chose not to execute the order internally following the conclusion of a qualified auction, the segmented order, as with all segmented orders, would need to be further handled in compliance with Proposed Rule 615. For example, (1) the wholesaler could return the order to the retail broker or other broker-dealer for further handling (such as resubmission to a qualified auction with a revised specified limit price); (2) the wholesaler itself could resubmit the segmented order to a qualified auction with a revised specified limit price;[180] or (3) the wholesaler could route the order directly to an open competition trading center or national securities exchange (as national securities exchanges are not restricted competition trading centers subject to Proposed Rule 615(a)) for an immediate execution on its continuous order book. The decision on how to handle segmented orders that clear qualified auctions without executions also would be governed by the relevant best execution responsibilities of retail brokers and wholesalers.

As indicated in the above example and subject to relevant best execution responsibilities, a broker-dealer responsible for obtaining the execution of a segmented order has the option of routing the order directly to the continuous order book[181] of an open competition trading center or national securities exchange for execution, without exposure in a qualified auction. The definition of restricted competition trading center would exclude all open competition trading centers and all national securities exchanges.[182] They would be excluded because both of these types of trading centers either are not permitted by the Exchange Act currently, or would not be permitted by Proposed Rule 615, to unfairly restrict access to their continuous order books.[183] Consequently, segmented orders routed directly to the continuous order books of open competition trading centers and national securities exchanges would be subject to competition to provide the best prices on an order-by-order basis, and thus would not be isolated.[184]

Importantly, however, all relevant broker-dealer best execution responsibilities would govern the extent to which segmented orders could be routed to an open competition trading center or national securities exchange without first clearing a qualified auction. As discussed in section III.B.2 above, best execution generally requires a broker-dealer to obtain the best terms reasonably available for customer orders. Because liquidity providers can profitably offer better prices to segmented orders of individual investors with low adverse selection costs as compared to the prices they can offer other types of order flow, trading mechanisms that offer such segmentation, as would a qualified auction, are quite likely to obtain better prices for segmented orders than other trading mechanisms, such as the continuous order book of an open competition trading center or national securities exchange, that commingle all types of order flow.[185] A broker-dealer would need to consider the opportunity for better prices in its best execution analysis.

There may be market conditions when a best execution analysis could indicate that a broker-dealer should route segmented orders directly to the continuous order book of an open competition trading center or national securities exchange. One example could be a ''fast market''—when publicly quoted prices are moving rapidly away when a broker-dealer receives a marketable order (that is, rapidly up in price for orders to buy or rapidly down in price for orders to sell). In these market conditions, the broker-dealer could determine that best prices could be obtained by immediately attempting to execute segmented orders against the NBBO on an open competition trading center or national securities exchange,

[179] *See* Section 11A(a)(1)(C)(v) of the Exchange Act.

[180] The revised specified limit price set by the wholesaler would have to be consistent with the terms of the order, such as the limit price set by the customer, if any, as well as with the wholesaler's best execution responsibilities.

[181] *See infra* section IV.B.2 (discussing the proposed definition of ''continuous order book'').

[182] *See* Proposed Rule 600(b)(87) and discussion in section IV.B.3 below.

[183] Section III.B.2 above discusses the Exchange Act provisions that currently prohibit a national securities exchange from unfairly restricting access. Section IV.B.2 below discusses the proposed access requirement for any open competition trading center that is not a national securities exchange (*i.e.,* an NMS Stock ATS). In many cases, an open competition trading center also would be a national securities exchange. As discussed in section IV.B.2 below, however, some national securities exchanges would not meet the definition of an open competition trading center.

[184] As discussed in sections IV.D and IV.G below, open competition trading centers and national securities exchanges would not be allowed to operate a mechanism limited, in whole or in part, to segmented orders, including RLPs, barring an exception from Proposed Rule 615. *See infra* notes 258, 259 and accompanying text.

[185] *See, e.g., infra* section VII.C.1.b (discussing anticipated benefits of improved execution quality for retail orders exposed in qualified auctions).

rather than first submitting segmented orders to qualified auctions when market conditions suggest that auction would be unlikely to generate better prices than the NBBO. Proposed Rule 615 is designed to give broker-dealers sufficient flexibility to obtain best execution of individual investor orders in the full range of market conditions.

B. Coverage of Proposed Rule 615

1. Definition of Segmented Order

The term ''segmented order,'' as proposed to be defined in Proposed Rule 600(b)(91) [186] of Regulation NMS, would have two parts. First, the order for an NMS stock must be for an account of a natural person, or an account held in legal form on behalf of a natural person or group of related family members. Second, for such an account, the average daily number of trades executed in NMS stocks must be less than 40 in each of the preceding six calendar months. The intent of the proposed definition is to encompass the marketable orders of individual investors with expected low adverse selection costs that retail brokers currently route to wholesalers for handling and execution. These orders already are segmented in practice.

The proposed definition's limitation to ''natural persons'' draws on the approach in existing rules designed to identify the orders of individual investors. For example, the definition of ''retail customer'' in the Commission's Regulation Best Interest (''Regulation BI'') is limited to a ''natural person.'' [187] Moreover, several national securities exchanges operate programs for trading ''retail'' orders that are limited to accounts of natural persons or certain accounts on behalf of natural persons.[188] The proposed definition of segmented order is closely related to these rules,[189] as well as to FINRA's fee schedule for Nasdaq's Trade Repository Facility.[190] Patterning the definition of segmented order on existing SRO rules is designed to leverage market knowledge and to facilitate compliance with Proposed Rule 615. This would help reduce the costs of compliance because broker-dealers would already be familiar with identifying orders as for the accounts of natural persons, or for related accounts, in these other contexts. In addition to the accounts of natural persons themselves, the definition would, again consistent with SRO rules, cover accounts held in legal form on behalf of natural persons or groups of related family members.

For purposes of the definition of ''segmented order,'' a ''group of related family members'' would be defined broadly to include a group of natural persons with any of the following relationships: child, stepchild, grandchild, great grandchild, parent, stepparent, grandparent, great grandparent, domestic partner, spouse, sibling, stepbrother, stepsister, niece, nephew, aunt, uncle, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother-in-law, or sister-in-law, including adoptive and foster relationships; and any other natural person (other than a tenant or employee) sharing a household with any of the foregoing natural persons.[191] This definition is designed to be broad so as not to restrict the types of arrangements that may be set up to benefit family groups, including individual retirement accounts, corporations, and limited liability companies for the benefit of related family members.[192]

The second part of the proposed definition of segmented orders focuses on the frequency of trading in an account. It would limit the average daily number of trades executed in NMS stocks in an account to less than 40 for each of the six preceding calendar months. This part of the proposed definition would exclude very active traders whose orders are likely to impose a much higher level of adverse selection costs on liquidity providers than the less-active accounts that are more typical of individual investors. For example, very active traders may use sophisticated trading tools, such as application programming interfaces (APIs) and computer algorithms, to submit their orders. These tools can enable highly active trading strategies that impose much higher adverse selection costs on liquidity providers than the manual placement of orders by a natural person. Rather than prohibiting any opportunity for investors to use potentially beneficial trading tools,[193] however, the proposed

[186] Rule 600(b) of Regulation NMS sets forth defined terms. Rule 600(b) would be amended to insert new defined terms used in Proposed Rule 615, and existing defined terms would be renumbered accordingly. Cross references to Rule 600(b) throughout the rules and regulations under the Exchange Act would also be amended to reflect the new numbering.

[187] 17 CFR 240.15l 1(b)(1) (defining ''retail customer'' as, among other things, as a natural person who receives a recommendation of any securities transaction from a broker-dealer and uses the recommendation primarily for personal, family, or household purposes). Proposed Rule 615 does not incorporate all of the definition of ''retail customer'' in Regulation BI, because that definition is limited to when there is a recommendation to a retail customer. Proposed Rule 615, in contrast, is designed to promote competition for individual investor orders, regardless of whether such investor is self-directed. Moreover, Proposed Rule 615 is focused on limiting the extent to which an account may generate orders with a high level of adverse selection costs. As discussed below, Proposed Rule 615 includes a trading activity threshold designed to address this policy concern. The definition of ''retail investor'' for purposes of 17 CFR 249.641 (''Form CRS'') (Relationship Summary for Brokers and Dealers Providing Services to Retail Investors) is also limited to ''natural persons'' and defines ''retail investor'' as a natural person, or the legal representative of such natural person, who seeks to receive or receives services primarily for personal, family or household purposes. In the context of Form CRS, the term ''retail investor'' is used in connection with disclosures to prospective customers, and as in the context of Regulation BI, relates to the relationship between an investor and a financial professional. *See* Securities Exchange Act Release No. 86031 (June 5, 2019), 84 FR 33318, 33345 (July 12, 2019) (adopting Regulation Best Interest: The Broker-Dealer Standard of Conduct) (''Regulation BI Adopting Release''). Because Proposed Rule 615 is intended to improve competition for individual investor orders, and is not related to the relationship between an investor and a financial professional, the Commission is not proposing to include the phrase ''primarily for personal, family, or household purposes'' in the definition of segmented order. For purposes of Proposed Rule 615, limiting segmented orders to orders for the accounts of natural persons, and specifically those with less than 40 trades in NMS stocks in each of the preceding 6 months, is intended to address adverse selection costs and is not related to the purposes for which a natural persons may be seeking the services of a broker-dealer.

[188] *See supra* note 151 (generally describing exchange RLPs).

[189] *E.g.,* IEX Rule 11.190(b)(15) (providing, among other things, that ''[a] Retail order must reflect trading interest of a natural person'' and that ''[a]n order from a retail customer can include orders submitted on behalf of accounts that are held in a corporate legal form—such as an Individual Retirement Account, Corporation, or a Limited Liability Company—that have been established for the benefit of an individual or group of related family members, provided that the order is submitted by an individual.''); and Nasdaq, Equity 7, section 118 (defining a ''Designated Retail Order'' as originating from a ''natural person'' and explaining that ''[a]n order from a 'natural person' can include orders on behalf of accounts that are held in a corporate legal form—such as an Individual Retirement Account, Corporation, or a Limited Liability Company—that has been established for the benefit of an individual or group of related family members, provided that the order is submitted by an individual'').

[190] FINRA Rule 7620A (defining a ''Retail Order'' as originating from a ''natural person'' and explaining that ''[a]n order from a 'natural person' can include orders on behalf of accounts that are held in a corporate legal form, such as an Individual Retirement Account, Corporation, or a Limited Liability Corporation that has been established for the benefit of an individual or group of related family members, provided that the order is submitted by an individual'').

[191] Proposed Rule 600(b)(91)(iii).

[192] Given the proposed broad definition of ''group of related family members'' in Proposed Rule 600(b)(91), an account held in legal form on behalf of a group of related family members could include some accounts with an extensive portfolio of NMS stocks. The second prong of the definition of segmented order, however, would exclude accounts with average daily trades of 40 or more and likely would exclude many accounts with large portfolios.

[193] Some SRO rules, for example, prohibit the use of any computerized technology for submitting retail orders. *See, e.g.,* NYSE Rule 7.44(a)(3) (defining ''retail order'' in the context of NYSE's

Continued

definition specifies a maximum level of trading activity as a means to limit the level of adverse selection costs.

The proposed level is supported by an analysis of the distribution of order activity across accounts reported to the Consolidated Audit Trail as being held for the benefit of an ''Individual Customer'' for the first six months of 2022.[194] Across this period, slightly more than 99.9% of Individual Customer accounts originated, on an average daily basis, 40 or fewer orders associated with a trade. The median number of daily-average orders associated with a trade from accounts at or below this threshold was less than one.[195] The median number of daily-average orders associated with a trade from accounts above this threshold was approximately 68.[196] Accordingly, the threshold in the proposed rule is designed to capture the overwhelming majority of individual investor accounts that could benefit from strengthened competition for their orders, while excluding accounts that might impose a high level of adverse selection costs on liquidity providers. Including orders highly likely to impact short-term price changes in qualified auctions could detract from the quality of execution prices for segmented orders as a whole.[197] Specifically, including orders with high adverse selection costs in qualified auctions would increase the overall level of adverse selection costs of the order flow submitted to qualified auctions. Because auction responders could not know in advance whether any particular order was likely to impose high adverse selection costs, they would need to adjust the prices of all their auction responses to reflect the higher level of adverse selection costs of qualified auction order flow as a whole.

The proposed definition of segmented order does not have a size limitation and therefore encompasses orders of all sizes, whether large or small. As discussed in section IV.B.5 below, however, the execution of large orders with sizes of $200,000 or more would be eligible for an exception from the order competition requirement of Proposed Rule 615(a). Such orders would, however, remain segmented orders and, if consistent with a broker-dealer's best execution responsibilities, could be submitted for execution in a qualified auction.

Orders with small sizes would also be included in the proposed definition of segmented orders and would be subject to the order competition requirement. These include both odd lot orders with a size of less than one round lot (generally less than 100 shares) and orders with a fractional share component (less than one share). As discussed further below, while orders for less than one share and orders for more than one share with a fractional share component would also fall within the proposed definition of a segmented order, Proposed Rule 615 would include an exception for orders for less than one share and for the fractional component of a segmented order, if there is no qualified auction available for such orders.[198]

Finally, the proposed definition of a segmented order does not include a limit price component. All segmented orders that are market orders would be subject to the order competition requirement prior to execution because, by definition, such orders are instructed to be executed immediately at the best available prices. For segmented orders that are limit orders, compliance with the order competition requirement would depend on the relation of the segmented order's limit price to the NBBO at the time it was received by the restricted competition trading center. For segmented orders with limit prices that are equal to or more favorable for the segmented order than the NBBO midpoint at the time of receipt (lower for buy orders and higher for sell orders), execution of the order would qualify for the exceptions from the order competition requirement in paragraphs (b)(3) and (b)(4) of Proposed Rule 615. Given the favorable price at which these non-marketable orders would be executed, however, they often may be publicly displayed as a means to attract contra-side trading interest (as well as to comply with Rule 604 of Regulation NMS).

Segmented orders with a limit price that is less favorable for the segmented order than the NBBO midpoint at the time of receipt (*i.e.,* segmented buy orders with a limit price higher than the NBBO midpoint and segmented sell orders with a limit price lower than the NBBO midpoint) often would not be executed at the NBBO midpoint or better (and therefore would not qualify for the exceptions in paragraphs (b)(3) or (b)(4) of Proposed Rule 615(b)(3)). Those orders not executed at the NBBO midpoint or better necessarily will pay a half-spread of some amount on the transaction (*i.e.,* orders executed beyond the NBBO midpoint, by definition, are paying a spread), even if it is less than the full NBBO half-spread. These include segmented orders that are marketable and a subset of non-marketable limit orders with limit prices that are beyond the NBBO midpoint but within the far-side NBBO (lower than the national best offer for segmented orders to buy and higher than the national best bid for segmented orders to sell) (hereinafter referred to as ''beyond-the-midpoint non-marketable limit orders''). A broker-dealer responsible for handling this subset of segmented orders that are non-marketable would need to determine how to achieve best execution of such orders. Under the limit order display requirements of Rule 604 of Regulation NMS, as discussed in section III.B.2.a above, such an order generally would need to be immediately displayed (which would narrow the NBBO spread) or immediately executed. To immediately execute the order, a restricted competition trading center would need to comply with the order competition requirement of Proposed Rule 615(a).

RLP to require that ''the order does not originate from a trading algorithm or any other computerized methodology'').

[194] Analysis of Consolidated Audit Trail data for all orders originated from an account marked as held for the benefit of an Individual Customer, Jan. 1, 2022, through June 30, 2022. This analysis counted any order associated with one or more trades or fills in an order lifecycle. For the Consolidated Audit Trail, account type definitions are available in Appendix G to the CAT Reporting Technical Specifications for Industry Members (*https://catnmsplan.com*), for the field name ''accountHolderType.'' Account types represent the beneficial owner of the account for which an order was received or originated, or to which the shares or contracts are allocated. Possible types are: Institutional Customer, Employee, Foreign, Individual Customer, Market Making, Firm Agency Average Price, Other Proprietary, and Error. An Institutional Customer account is defined by FINRA Rule 4512(c) as a bank, investment adviser, or any other person with total assets of at least $50 million. An Individual Customer account means an account that does not meet the definition of an ''institution'' and is also not a proprietary account. Therefore, the CAT account type ''Individual Customer'' includes natural persons as well as corporate entities that do not meet the definitions for other account types.

[195] *Id.*

[196] *Id.*

[197] In other contexts, national securities exchanges currently characterize certain types of orders according to the level of activity associated with a market participant's account. With respect to trading in listed options, several exchanges include the concept of ''Professional'' order, and these orders, which must be identified as such, are distinguished from other customer orders. For example, pursuant to Cboe Exchange, Inc. (''CBOE'') Rule 1.1, ''Professional'' means any person or entity that is not a broker or dealer in securities and places more than 390 orders in listed options per day on average during a calendar month for its own beneficial account(s). Under CBOE's rules, all Professional orders are distinguished from other public customer orders (*i.e.,* orders for persons other than broker-dealers), must be marked as such, and are handled by CBOE's trading platform in the same manner as broker-dealer orders unless otherwise specified. *See* CBOE Rule 1.1. *See also* NYSE Arca Rule 1.1; Nasdaq, Options 1, section 1(a)(47); and BOX Rule 100(a)(52).

[198] *See infra* section IV.B.5.

2. Definition of Open Competition Trading Center

The term ''open competition trading center,'' as proposed to be defined in Rule 600(b)(64), determines the scope of coverage of Proposed Rule 615 in two important respects. First, it identifies those trading centers that would be authorized to operate qualified auctions. Second, it conversely specifies those trading centers that would be subject to the order competition requirement of paragraph (a) of Proposed Rule 615 because a ''restricted competition trading center'' is defined as any trading center other than an open competition trading center or a national securities exchange.

The proposed definition of open competition trading center is designed to address three primary concerns. First and foremost, trading centers that operate qualified auctions must offer sufficient access, transparency, and trading by a wide range of market participants to support the goal of fair competition in auctions to provide the best prices for investor orders. Second, the proposed definition of open competition trading center seeks to establish as level a regulatory playing field as possible regarding Proposed Rule 615 between the national securities exchanges and NMS Stock ATSs [199] that are eligible to operate a qualified auction, while recognizing the distinct regulatory regimes for national securities exchanges under the Exchange Act and for NMS Stock ATSs under Regulation ATS.[200] As described in section III.A above, section 11A(c)(1)(F) of the Exchange Act grants rulemaking authority to the Commission to assure equal regulation of all markets for NMS stocks, with equal regulation defined in section 3(a)(36) to mean that no member of a class has a competitive advantage over any other member of a class resulting from a regulatory disparity that the Commission determines is unfair and not necessary or appropriate in furtherance of the purposes of the Exchange Act.[201] Qualified auctions would be a new trading mechanism, mandated by rule in some contexts, that could be operated by both national securities exchanges and NMS Stock ATSs, and open competition trading centers would be a new class of market participants. Because national securities exchanges and NMS Stock ATSs operating as open competition trading centers would fall within the same class of market participant, and given the functional similarity between these two types of trading centers, neither type should have a competitive advantage in operating qualified auctions that is attributable to an unfair and unnecessary regulatory disparity.[202] Third, the proposed definition of open competition trading center is designed to address a concern that qualified auctions, as a new mandatory mechanism for execution of segmented orders, should not further exacerbate the fragmentation of trading interest in NMS stocks among different trading centers that already characterizes the NMS. As discussed in section VII.B.1 below, trading centers for NMS stocks include 16 national securities exchanges, 32 NMS Stock ATSs,[203] 6 wholesalers, and more than 230 other broker-dealers. Allowing only national securities exchanges and NMS Stock ATSs that meet the prescribed transparency and volume thresholds to meet the proposed definition of open competition trading center is also designed to prevent additional complexity and connectivity costs to market participants arising from the introduction of qualified auctions. Such trading centers that meet the proposed definition are likely to have already attracted a wide variety of market participants with the established connectivity necessary to promote vigorous competition in qualified auctions.

Given the differing regulatory regimes for national securities exchanges and NMS Stock ATS that were described in section III above, the elements of the proposed definition of open competition trading center vary for national securities exchanges and NMS Stock ATSs. As discussed in section IV.D below, paragraph (d) of Proposed Rule 615 would prohibit both national securities exchanges and NMS Stock ATSs from operating a qualified auction if they do not meet the elements of the definition of an open competition trading center.

a. National Securities Exchanges

As discussed in section III.A above, the Exchange Act sets forth a comprehensive regulatory regime for national securities exchanges with a variety of requirements that address, among other things, access and competition. For example, national securities exchanges must allow any registered broker-dealer to become a member, subject to the limitations of section 6(c) of the Exchange Act, and their rules cannot impose a burden on competition not necessary or appropriate in furtherance of the purposes of the Exchange Act. The Commission has crafted the proposed definition of open competition trading center for national securities exchanges having taken into account that such exchanges already are subject by statute to this regulatory regime.

The proposed definition of open competition trading center for national securities exchanges has four elements. First, such an exchange would be required to operate a trading facility that is an automated trading center and displays automated quotations that are disseminated in consolidated market data pursuant to Rule 603(b) of Regulation NMS. The terms ''automated trading center'' and ''automated quotation'' are defined in Rule 600(b)(8) and Rule 600(b)(7) of Regulation NMS. Each is an element of the definition of a ''protected bid or protected offer'' in Rule 600(b)(70), which are eligible for protection against trade-throughs pursuant to Rule 611 of Regulation NMS. Rule 603(b) provides for the dissemination of consolidated market data by SROs. This element of the proposed definition of an open competition trading center would help ensure transparency of quotations and fair and efficient access to such quotations. It is also designed to ensure that qualified auctions are held on lit

[199] The Commission is proposing that for purposes of Regulation NMS, which would include Proposed Rule 615, NMS Stock ATS, as would be defined in Proposed Rule 600(b)(59), will have the meaning provided in 17 CFR 242.300(k) (Rule 300(k) of Regulation ATS).

[200] A trading center that operates a qualified auction for segmented orders necessarily would fall within the definition of an exchange under section 3(a)(1) of the Exchange Act [15 U.S.C. 78c(a)(1)], and 17 CFR 240.3b–16(a) (''Rule 3b–16(a)'') thereunder, because it would be bringing together the orders of multiple buyers and sellers using established non-discretionary methods (*i.e.*, the qualified auction trading facility) under which such orders would interact and the buyers and sellers would agree upon terms of a trade. If a trading center falls within the definition of an exchange, it either must register as an exchange or comply with an exemption to such registration, such as the exemption for ATSs under Regulation ATS.

[201] 15 U.S.C. 78c(a)(36). In discussing equal regulation in the context of Exchange Act Section 11A(c)(1), the Commission stated that the legislative history of section 3(a)(36) emphasizes that equal regulation ''is a competitive concept intended to guide the Commission in its oversight and regulation of the trading markets and the conduct of the [s]ecurities industry.'' *See* Securities Exchange Act Release No. 42208 (Dec. 1999), 64 FR 70613, 70623 n.80 (Dec. 17, 1999) at 70623 n.80 (Concept Release on Market Information Fees and Revenues) (quoting S. Rep. No. 94–75, 94th Cong., 1st Sess. 7 (1975) at 94).

[202] The Commission has expressed, in other contexts, its belief that the regulatory differences between NMS Stock ATSs and national securities exchanges may create a competitive imbalance between two functionally similar trading centers, and sought to address those concerns by more closely aligning certain requirements for NMS Stock ATSs with those of national securities exchanges. *See, e.g.,* ATS–N Adopting Release, *supra* note 159, 83 FR at 38775–76.

[203] As of Sept. 30, 2022, there were 32 NMS Stock ATSs that had filed an effective Form ATS–N with the Commission.

trading centers, and that the requirements for open competition trading centers are consistent between national securities exchanges and NMS Stock ATSs. Also, incorporating the requirements for an automated trading center and automated quotations would help ensure that such exchange has the necessary technology to run qualified auctions efficiently.

Second, a national securities exchange would be required to provide transaction reports identifying it as the venue of execution that are disseminated in consolidated market data pursuant to Rule 603(b). Identifying the venue of execution would help market participants assess where liquidity for an NMS stock can be found in the NMS, including for qualified auctions. Current arrangements for disseminating consolidated market data provide this execution venue information for exchanges, but not, as discussed below, for NMS Stock ATSs. This requirement is designed to provide a parallel requirement for national securities exchanges and NMS Stock ATSs operating qualified auctions, and require the identification of the venue of execution by rule for national securities exchanges operating as open competition trading centers.

Third, a national securities exchange would be required to have had an average daily share volume of 1.0 percent or more of the aggregate average daily share volume for all NMS stocks as reported by an effective transaction reporting plan during at least four of the preceding six calendar months.[204] The proposed 1.0 percent threshold across all NMS stocks, and not merely for a single NMS stock, is designed to help ensure that, prior to operating a qualified auction, the national securities exchange has attracted a wide range of market participants with connectivity to such exchange already in place that would be sufficient to support vigorous competition in qualified auctions to provide the best prices for segmented orders. As of September 30, 2022, 6 of the 16 national securities exchanges trading NMS stocks reported less than 1% of share volume in NMS stocks.[205] Five of these (Nasdaq BX, Nasdaq Phlx, NYSE American, NYSE CHX, and NYSE National), however, were part of exchange groups with other national securities exchanges that reported more than 1% of share volume in NMS stocks. Any exchange that was below the 1% threshold, even if it were part of a group of exchanges with some exchanges that meet the threshold, would not meet the definition of an open competition trading center and could not operate a qualified auction. The one remaining national securities exchange that reported less than 1% of share volume in NMS stocks was LTSE, with less than 0.01% of share volume in NMS stocks.

The 1% threshold also would impose a hurdle for a new entrant that wished to register as a national securities exchange to become an open competition trading center. In the absence of a minimum volume threshold, however, the introduction of qualified auctions as a new trading mechanism mandated by regulation could lead to the entry of multiple new national securities exchanges intended solely to operate qualified auctions, which could result in either (1) a substantial increase of connectivity costs and complexity for market participants to connect to every open competition trading center, or (2) a refusal of many market participants to incur such costs and complexity, which could detract from the level of competition to provide the best prices for segmented orders at open competition trading centers with relatively few connected market participants. The 1% threshold is designed to be low enough to help ensure that the core competition objective of Proposed Rule 615 is achieved through qualified auctions operated by multiple national securities exchanges, while being high enough to demonstrate that a national securities exchange has attracted a sufficient level of interest from market participants to avoid unduly exacerbating the already substantial level of fragmentation in NMS stocks.

Given that only a small percentage of marketable orders of individual investors currently are routed to national securities exchanges, the competitive opportunity to operate qualified auctions that would enable their members and members' customers to interact with low-cost marketable order flow is likely to be an attractive new line of business. If, for example, a single national securities exchange began operating qualified auctions, it would have a monopoly on the business, which would be quite likely to attract multiple additional competitors. It therefore is likely that each of the three exchange groups associated with CBOE, Nasdaq and NYSE would select one of their national securities exchanges to operate qualified auctions,[206] and the three non-group national securities exchanges that exceed the 1% threshold would operate qualified auctions as well.

Fourth and finally, a national securities exchange would be required to operate pursuant to its own rules providing that such exchange will comply with the proposed requirements for qualified auctions in paragraph (c) of Proposed Rule 615. This element would help to ensure that the operation of a qualified auction would be fully described in the exchange's rules and that the exchange's compliance with those rules would be subject to the examination and enforcement tools in place for exchange rules.[207] Market participants therefore would be able to reference the rules of a national securities exchange to determine whether it operates a qualified auction and the material terms of such auctions, including the hours of operation.

b. NMS Stock ATSs

As discussed above in section III.B, NMS Stock ATSs are subject to a quite different set of statutory and regulatory requirements than national securities exchanges. The definition of open competition trading center for NMS Stock ATSs would reflect these differences and includes seven elements.

First, an NMS Stock ATS would be required to display quotations through an SRO display-only facility (currently, the only such facility is FINRA's ADF) in compliance with Rule 610(b) of Regulation NMS.[208] To add an NMS Stock ATS as a new ADF participant, FINRA would need to file a proposed rule change that, after an opportunity for public notice and comment and review by the Commission, became effective pursuant to section 19(b) of the Exchange Act and Rule 19b–4 thereunder.[209] An NMS Stock ATS, by displaying quotations in the ADF that

[204] As discussed in section IV.B.2.b below, NMS Stock ATSs operating as open competition trading centers would be subject to the same volume threshold.

[205] *See, e.g.,* Cboe, U.S. Historical Market Volume Data, *available at https://cboe.com/us/equities/market_statistics/historical_market_volume/.*

[206] *See infra* note 276 and accompanying text.

[207] Also, because national securities exchanges must file with the Commission proposed changes to their rules, an exchange's adoption of rules for operating qualified auctions would be subject to public notice, comment, and Commission review, as well as Commission oversight. *See* 15 U.S.C. 78s(b).

[208] Under Rule 600(b)(88), the term ''SRO display-only facility'' means a facility operated by or on behalf of a national securities exchange or national securities association that displays quotations in a security, but does not execute orders against such quotations or present orders to members for execution. As discussed above in section III.B.3, FINRA's ADF is the only SRO display-only facility, but currently has no participating members.

[209] *See* Regulation NMS Adopting Release, *supra* note 78, 70 FR at 37543 (addition of ADF participant would constitute a change to a material aspect of FINRA's facilities that would require the filing of a proposed rule change).

FINRA provides to the SIPs, would have established an ability to disseminate information in consolidated market data, as would be required for auction messages under Proposed Rule 615(c)(1). In addition, as discussed in section III.B above, Rule 610(b) imposes heightened connectivity obligations on an NMS Stock ATS that displays quotations in the ADF, which would help assure that market participants have fair and efficient access to any NMS Stock ATS that wished to operate a qualified auction. This requirement is not needed for national securities exchanges, which, as discussed in section III.A above, are subject to a series of Exchange Act access requirements.

Second, an NMS Stock ATS would be required to operate as an automated trading center and display automated quotations that are disseminated in consolidated market data pursuant to Rule 603(b) of Regulation NMS. This element matches an element of the proposed definition of open competition trading center for national securities exchanges and is proposed for the same reason.

Third, an NMS Stock ATS would be required to identify the NMS Stock ATS as the venue of execution in transaction reports that are disseminated in consolidated market data pursuant to Rule 603(b). As discussed above, this element also would be required for national securities exchanges and is designed to help market participants assess where liquidity can be found in the NMS for a particular NMS stock. In contrast to the transaction reports of national securities exchanges, the transaction reports of off-exchange venues that FINRA currently provides for dissemination in consolidated market data do not identify the particular FINRA member (including both NMS Stock ATSs and broker-dealers) that reported the trade. For NMS Stock ATSs that display quotations in the ADF and operate qualified auctions, full post-trade transparency concerning the identity of the NMS Stock ATS that executed trades, including the execution of segmented orders in qualified auctions, would be needed to promote fair competition among markets and the practicability of broker-dealers determining the best market for executing customer orders. For example, real-time dissemination of a transaction report indicating that an NMS Stock ATS had executed a segmented order in an NMS stock in a qualified auction could assist broker-dealers in identifying where to route segmented orders, as well as market participants in identifying where they could interact with segmented orders in qualified auctions. Accordingly, if Proposed Rule 615 were adopted, an NMS Stock ATS would not be able to meet the definition of an open competition trading center unless the effective NMS plans for NMS stocks were conformed to provide for the collection and dissemination of an identification of the NMS Stock ATS as the venue of execution in its transaction reports.

Fourth, an NMS Stock ATS would be required to permit any registered broker-dealer to become a subscriber,[210] except those with statutory disqualifications or financial responsibility or operational capability concerns. This element parallels the Exchange Act section 6(b)(2) requirement that, subject to the provisions of section 6(c), a national securities exchange must permit any registered broker-dealer to become a member. It thereby would help ensure that all market participants seeking to trade on an NMS Stock ATS, whether they be broker-dealers trading proprietarily or investors trading through the services of a broker-dealer, would have access to the NMS Stock ATS in the same manner as they have access to national securities exchanges. An NMS Stock ATS could not, however, permit a registered broker-dealer subject to a statutory disqualification to become a subscriber.[211] In contrast, national securities exchanges may, subject to Commission oversight, allow a registered broker-dealer with a statutory disqualification to become a member.[212] The stricter standard for NMS Stock ATSs is appropriate because, as non-SROs, they are not subject to the same level of Commission oversight as national securities exchanges.[213] For example, section 6(c)(2) of the Exchange Act provides that a national securities exchange must file notice with the Commission not less than thirty days prior to admitting any person to membership, if the exchange knew, or in the exercise of reasonable care should have known, that such person was subject to a statutory disqualification. An NMS Stock ATS is not subject to this notice requirement. An NMS Stock ATS could, however, pursuant to written policies and procedures, prohibit any registered broker-dealer from becoming a subscriber, or impose conditions upon such a subscriber, that did not meet specified standards of financial responsibility and operational capability.[214] This ability to prohibit or limit subscribers is patterned on the ability of national securities exchanges under section 6(c)(3)(A) of the Exchange Act,[215] which also permits a national securities exchange to deny or condition membership to a broker-dealer that has engaged, and is reasonably likely to engage again, in acts or practices inconsistent with just and equitable principles of trade. It would not be appropriate for NMS Stock ATSs, as non-SROs, to have this disciplinary authority over its subscribers.

Fifth, an NMS Stock ATS would be required to provide equal access among all subscribers of the NMS Stock ATS and the registered broker-dealer of the NMS Stock ATS to all services that are related to a qualified auction operated by the NMS Stock ATS under Proposed Rule 615(c) and to any continuous order book operated by the NMS Stock ATS.

[210] NMS Stock ATSs generally have subscribers, unlike national securities exchanges with self-regulatory responsibilities for members. The proposed definition of ''subscriber'' in Rule 600(b)(100) of Regulation NMS is a cross-reference to the definition of ''subscriber'' in 17 CFR 242.300(b) (Rule 300(b) of Regulation ATS). The Regulation ATS definition is being proposed to be used in this context to leverage industry experience and help minimize compliance costs.

[211] Proposed Rule 600(b)(64)(ii)(D)(1).

[212] Pursuant to Exchange Act section 6(c)(2), a national securities exchange may, and in cases in which the Commission, by order, directs as necessary or appropriate in the public interest or for the protection of investors shall, deny membership to any registered broker or dealer or natural person associated with a registered broker or dealer, and bar from becoming associated with a member any person, who is subject to a statutory disqualification. If a national securities exchange knowingly allows a registered broker-dealer with a statutory disqualification to become a member, or should have known in the exercise of reasonable care, section 6(c)(2) further requires the national securities exchange to file notice with the Commission.

[213] *See, e.g.,* Regulation ATS Adopting Release, 63 FR at 70858 (discussing when ATS regulation may not be appropriate and stating that ''it may be necessary for the Commission's greater oversight authority over registered exchanges to apply'').

[214] An NMS Stock ATS must disclose on its Form ATS–N whether it can exclude, in whole or in part, any subscriber from the ATS's services, and if so, it must provide a summary of the conditions for excluding, in whole or in part, a subscriber from those services. Form ATS–N, Part III, Item 3.a. Consequently, an NMS Stock ATS would be required to disclose its policies and procedures for excluding a broker-dealer on its Form ATS–N. Additionally, an NMS Stock ATS that is subject to the fair access requirements of Rule 301(b)(5) (*see supra* section III.B.3), must also disclose a list of all persons granted, denied, or limited access to the ATS during the quarterly period covered by the report, and, among other things, the nature of any denial or limitation of access. Form ATS–R, Instruction 8 and Item 7.

[215] Pursuant to Exchange Act section 6(c)(3), a national securities exchange may deny membership to, or condition the membership of, a registered broker or dealer if such broker or dealer does not meet such standards of financial responsibility or operational capability or such broker or dealer or any natural person associated with such broker or dealer does not meet such standards of training, experience, and competence as are prescribed by the rules of the exchange.

This equal access element would require an NMS Stock ATS to provide access on the same terms and conditions among all subscribers and the registered broker-dealer of the NMS Stock ATS. It therefore would impose a more stringent standard on NMS Stock ATSs than the ''no unfair discrimination'' standard for national securities exchanges under section 6(b)(5) of the Exchange Act. The more stringent standard is designed to reflect the different statutory and regulatory regimes for NMS Stock ATSs and national securities exchanges and particularly to help achieve the goal of equal regulation, as defined in section 3(b)(36) of the Exchange Act and described in section III.A above.

For example, as discussed in section III above, national securities exchanges must comply with a variety of statutory requirements that are not applicable to NMS Stock ATSs. While they fall within the statutory definition of an exchange, NMS Stock ATSs have been exempted from compliance with the statutory requirements for registered national securities exchanges if they are registered as a broker-dealer and comply with Regulation ATS. Among other things, the rules for all national securities exchanges (1) must be designed affirmatively to remove impediments to and perfect the mechanism of a free and open market and an NMS; (2) must not be designed to permit unfair discrimination between customers, issuers, or broker-dealers; and (3) must not impose any burden on competition that is not necessary or appropriate in furtherance of the purposes of the Exchange Act.[216]

Each of the foregoing requirements promotes the objective of ensuring fair and efficient access to the trading services of national securities exchanges, which is essential for promoting fully competitive pricing in qualified auctions, but none applies to NMS Stock ATSs. While they must file amendments to Form ATS–N, the amendments are not published for public comment and do not require Commission approval prior to implementation. Moreover, the standards for access to NMS Stock ATSs are much more limited than those that apply to national securities exchanges.[217] An NMS Stock ATS must comply with the fair access requirement of Rule 301(b)(5) only for a particular NMS stock in which it exceeds 5% of volume.[218] As discussed above in sections II.B and III.B.3.b, only one NMS Stock ATS discloses on its Form ATS–N that it is subject to this fair access requirement for securities that are available for trading on its platform. Most importantly, in light of the core order competition requirement of Proposed Rule 615, Regulation ATS does not impose any requirement on NMS Stock ATSs that is equivalent to section 6(b)(8) of the Exchange Act, which prohibits national securities exchanges from imposing any burden on competition not necessary or appropriate in furtherance of the provisions of the Exchange Act.

Given that NMS Stock ATSs currently are subject to different requirements for promoting fair and efficient access to their trading services than are national securities exchange, the Commission believes an NMS Stock ATS should be required to meet a more stringent standard to help ensure equal regulation regarding Proposed Rule 615 and sufficient access and transparency for a wide range of market participants. Accordingly, an NMS Stock ATS would, if it wished to operate a qualified auction under Proposed Rule 615, be required to provide equal access to all trading services related to its qualified auctions, as well as to all trading services related to a continuous order book operated by the NMS Stock ATS. The extension of equal access to services related to a continuous order book is needed because, as discussed in section IV.C below, such a book would be required to be integrated with qualified auctions.[219] The proposed equal access requirement is designed to help ensure a level playing field regarding Proposed Rule 615 for competition among national securities exchanges and NMS Stock ATSs and thereby promote the Exchange Act principle of equal regulation. Specifically, consistent with the NMS objective in section 11A(1)(C)(ii) of promoting fair competition among markets, neither type of trading center should have a significant regulatory advantage for operating qualified auctions that could drive volume in such auctions to either type, whether it be national securities exchanges or NMS Stock ATSs.

Sixth, an NMS Stock ATS would be required to have had an average daily share volume of 1.0 percent or more of the aggregate average daily share volume for NMS stocks as reported by an effective transaction reporting plan during at least four of the preceding six calendar months.[220] The methodology for this calculation would be the same as prescribed for application of the fair access requirements of ATSs by Rule 301(b)(5)(i)(A) of Regulation ATS, except that the numerator and denominator in the percent calculation is volume in all NMS stocks, rather than in any particular NMS stock. As with the fair access requirement, the proposed methodology is designed to encompass NMS Stock ATSs that have demonstrated a consistent historical level of volume. To promote fair competition and equal regulation, this proposed element is the same as that proposed for national securities exchanges and is proposed for the same primary reasons—(1) to help ensure that an NMS Stock ATS has attracted a wide range of market participants with connectivity already in place that would be sufficient to support vigorous competition in qualified auctions to provide the best prices for segmented orders; and (2) to avoid exacerbating the costs and complexity of fragmentation that already exists of trading interest in NMS stocks.

Seventh and finally, an NMS Stock ATS would be required to operate pursuant to an effective Form ATS–N that sets forth the operations of the qualified auction and compliance by the NMS Stock ATS with the requirements of Proposed Rule 615(c) for a qualified auction, as well as with all of the other elements of the definition of open competition trading center for NMS Stock ATSs that are discussed above. This proposed disclosure element is designed to ensure that an NMS Stock ATS fully discloses material operating

[216] As discussed above, in comparison, national securities exchanges are also required to file proposed rule changes to establish or modify trading services, which must be published for public comment. *See supra* notes 68–71, 207, and accompanying text.

[217] *See, e.g.,* ATS–N Adopting Release, *supra* note 159, 83 FR at 38841.

[218] 17 CFR 242.301(b)(5)(i).

[219] As discussed below in section IV.C.5, a displayed order resting on the continuous order book would have priority over an equally-priced auction response, and an undisplayed order resting on the continuous order books would have priority if it provided a better price for a segmented orders than an auction response.

[220] A 1% volume threshold in NMS stocks is also one of the thresholds used to determine whether an NMS Stock ATS is an SCI entity subject to the requirements of 17 CFR 242.1000 through 242.1007 (''Regulation SCI''). *See* 17 CFR 242.1000 paragraph (1)(ii) of ''SCI alternative trading system or SCI ATS'' definition, and ''SCI entity'' definition. Among other things, each SCI entity is required to comply with the capacity, integrity, resiliency, availability, and security requirements of Rule 1001 of Regulation SCI. In adopting a volume threshold for NMS Stock ATSs for purposes of Regulation SCI, the Commission recognized that certain ATSs play an important role in today's securities markets, and that higher volume ATSs collectively represent a significant source of liquidity for NMS stocks, with some ATSs having similar and, in some cases, greater trading volume than some national securities exchanges. *See* Securities Exchange Act Release No. (Nov. 19, 2014), 73639 79 FR 72252, 72262 (Dec. 5, 2014) (adopting Regulation SCI and related amendments to Regulation ATS).

practices to the public on Form ATS–N, and that these operating practices are subject to the examination and enforcement tools in place for NMS Stock ATSs. Market participants therefore would be able to reference the Form ATS–N of an NMS Stock ATS to determine whether it operates a qualified auction and the material terms of such auctions, including the hours of operation.

3. Definition of Restricted Competition Trading Center

The proposed definition of restricted competition trading center [221] encompasses any trading center that is neither an open competition trading center nor a national securities exchange. Some national securities exchanges may not meet all of the elements of the proposed definition of an open competition trading center, such as the minimum 1% volume threshold. Nevertheless, all national securities exchanges, as well as open competition trading centers, would be excluded from the definition of restricted competition trading center because both these types of trading centers either are not permitted by the Exchange Act (in the case of all national securities exchanges) or would not be permitted by Proposed Rule 615(d)(1) and its incorporation of the proposed definition of an open competition trading center (in the case of NMS Stock ATSs) to unfairly restrict access to their platforms.

Currently, no NMS Stock ATS displays quotations in the ADF. Unless this changes,[222] no NMS Stock ATS would meet the proposed definition of an open competition trading center, and therefore all would be restricted competition trading centers. The three other types of broker-dealer trading centers are exchange market makers, OTC market makers (including wholesalers), and internalizing broker-dealers.[223] These broker-dealers, as stated in section IV.B.2 above, could not operate a qualified auction without falling within the Exchange Act definition of exchange.[224] Unless such a broker-dealer became an NMS Stock ATS and met all of the elements of the proposed definition of an open competition trading center, it would fall within the definition of a restricted competition trading center and would be subject to the order competition requirements of Proposed Rule 615(a).

4. Definition of Originating Broker

As discussed in section IV.E below, originating brokers would perform several vital functions under Proposed Rule 615, including making the original determination that an order falls within the definition of a segmented order and identifying the order as such when routed for execution. The proposed definition of originating broker [225] reflects these important functions. It would cover any broker with responsibility for handling a customer account, including, but not limited to, opening and monitoring the customer account and accepting and transmitting orders for the customer account.[226] As such and as discussed further below, there may be more than one originating broker for a particular customer account.

The Commission understands that broker business practices can vary widely in terms of how customer accounts are handled. Some brokers may perform this entire function internally, while others may work with additional brokers to handle customer orders. A single broker that is solely responsible for the handling of a customer account would be an originating broker. To the extent that multiple brokers perform different functions for a customer account (sometimes referred to as ''introducing brokers,'' ''carrying brokers,'' or ''clearing brokers''), each such broker would be an originating broker. In addition, as discussed further in section IV.E below, different types of brokers enter into agreements with one another to allocate certain responsibilities with respect to their handling of customer accounts.[227] As discussed in section IV.C.1 below, paragraph (c)(1)(ii) of Proposed Rule 615 specifies that, if multiple brokers for a segmented order fall within the proposed definition of originating broker, the broker responsible for approving the opening of accounts for customers (commonly performed by an introducing broker) would be required to be identified in auction messages under Proposed Rule 615(c)(1).

5. Exceptions

Paragraph (b) of Proposed Rule 615 sets forth five exceptions from the order competition requirement of paragraph (a). The first exception is for a segmented order that is received and executed by a restricted competition trading center during a time period when no open competition trading center is operating a qualified auction for the segmented order. This exception would be necessary to enable segmented orders to trade during such a time period, since compliance with Proposed Rule 615 would otherwise be impossible if no qualified auction were available. Proposed Rule 615 does not specify any particular time period during which an open competition trading center must operate a qualified auction. Given, however, the requirement in paragraph (c)(3) of Proposed Rule 615 that auction messages must be provided for dissemination in consolidated market data,[228] a qualified auction could not operate at any time when the facilities for disseminating consolidated market data were not operating. As discussed in section III.B above, such facilities currently are operated by the SIPs. The current SIP hours of operation are from 4 a.m. to 8 p.m. eastern time on trading days for the U.S. equity markets. While the trade-through restrictions of Rule 611 of Regulation NMS apply only

[221] Proposed Rule 600(b)(87).

[222] *See supra* note 208.

[223] *See supra* section II.B.

[224] *See supra* note 200 and accompanying text.

[225] Proposed Rule 600(b)(69).

[226] The broker-dealer functions specifically enumerated in the proposed definition of originating broker are included in the list of responsibilities that FINRA requires its members to allocate for accounts that are carried on an omnibus or fully disclosed basis. *See infra* note 227. *See also* Securities Investment Advisers Act Release No. 5429 (June 5, 2019), 84 FR 33681 (July 12, 2019) (clarifying the scope of the broker-dealer exclusion from the definition of ''investment adviser'' under the Investment Advisers Act of 1940 for broker-dealers whose performance of advisory services is ''solely incidental'' to the conduct of its business as a broker-dealer and for which the broker-dealer ''receives no special compensation''); and Regulation BI Adopting Release, *supra* note 187, at 33358 (discussing disclosure requirements for broker-dealers related to ''monitoring the performance of the retail customer's account'').

[227] FINRA Rule 4311 addresses the allocation of responsibilities between members for accounts that are carried on an omnibus or fully disclosed basis. FINRA Rule 4311(c)(1) specifies the minimum requirements for carrying agreements in which accounts are carried on a fully disclosed basis. FINRA Rule 4311(c)(1) (''Each carrying agreement in which accounts are to be carried on a fully disclosed basis shall specify the responsibilities of each party to the agreement, including at a minimum the allocation of the responsibilities set forth in paragraphs (c)(1)(A) through (I) and (c)(2) of this Rule.''); FINRA Rules 4311(c)(1)(A) through (I) (''(A) Opening and approving accounts. (B) Acceptance of orders. (C) Transmission of orders for execution. (D) Execution of orders. (E) Extension of credit. (F) Receipt and delivery of funds and securities. (G) Preparation and transmission of confirmations. (H) Maintenance of books and records. (I) Monitoring of accounts.''); FINRA Rule 4311(c)(2) (prescribing the requirements for how each carrying agreement in which accounts are to be carried on a fully disclosed basis must allocate responsibility for the safeguarding of funds and securities, and the preparing and transmitting of statements of accounts to customers). FINRA Rules are *available at https://www.finra.org/rules-guidance/rulebooks/finra-rules*.

[228] The phrase ''provided for dissemination in consolidated market data'' reflects that, while national securities exchanges send quotation and transaction information directly to the SIPs, NMS Stock ATSs would provide such information to the ADF operated by FINRA, which would send the information to the SIPs.

during regular trading hours of 9:30 a.m. to 4:00 p.m. eastern time,[229] the order competition requirement of Proposed Rule 615(a) is needed for additional hours given the enhanced risks for individual investors. Unlike Rule 611, Proposed Rule 615 is narrowly targeted on protecting the interests of individual investors and the risks they face when using marketable orders to trade in NMS stocks. These include the risks of lower liquidity and wider spreads that are particularly significant in after-hours trading and that qualified auctions could address effectively.[230]

The second exception from Proposed Rule 615 would be for large orders with a market value of at least $200,000 calculated with reference to the NBBO midpoint when the order is received by a restricted competition trading center. This exception is designed to address the heightened liquidity need of large orders that often may be more appropriately addressed outside of a qualified auction. The $200,000 threshold is the same dollar amount as in other Regulation NMS rules to exclude orders or trades that are so large as to warrant different treatment than smaller orders.[231] A specific methodology for calculating market value (NBBO midpoint at time of order receipt) is prescribed to provide additional clarity for restricted competition trading centers on complying with Proposed Rule 615 that should be readily implementable when qualified auctions are operating. The $200,000 threshold is designed to except orders that may be difficult to execute efficiently in qualified auctions at prices that generally would be at or within the NBBO. While these large orders are eligible for an exception, they still would meet the definition of a ''segmented order'' and could be routed for execution in a qualified auction if the broker-dealer handling the order determines that such routing would promote best execution of the segmented order.

The third exception, provided by Proposed Rule 615(b)(3), is for segmented orders that are executed by a restricted competition trading center at a price that is equal to the NBBO midpoint or more favorable for the segmented order (*i.e.,* the NBBO midpoint or lower for segmented orders to buy or the NBBO midpoint or higher for segmented orders to sell), as determined with reference to the NBBO at the time the segmented order was received by the restricted competition trading center. For trades at these prices, an investor would either be paying no spread (with a price at the NBBO midpoint) or earning a spread (with a buy order executed at a price lower than the NBBO midpoint and a sell order executed at a price higher than the NBBO midpoint). In such circumstances, the submission of a segmented order to a qualified auction would not be necessary to obtain a competitive price for such order.

The fourth exception, provided by Proposed Rule 615(b)(4), is for segmented orders that are limit orders with a limit price selected by the customer that is equal to or more favorable for the segmented order than the midpoint of the national best bid and national best offer when the segmented order is received by the restricted competition trading center. This exception is designed so that when the customer has selected a limit price that will result in a favorable execution, submission of the segmented order to a qualified auction would not be necessary to obtain a competitive price. This exception would work in conjunction with the third exception for executions of segmented orders at a price equal to the midpoint or more favorable to the segmented order. As discussed above in section IV.B.1, this exception would not apply to beyond-the-midpoint non-marketable limit orders.

Finally, the fifth exception, provided by Proposed Rule 615(b)(5), is for the fractional share component of a segmented order. Fractional share orders typically are submitted by individual investors in dollar sizes rather than share sizes, and often are referred to as ''cash orders.'' If the dollar size of an order is less than the share price for an NMS stock (such as a $200 order for a $450 stock), the size of the order will be less than one share. If the dollar size of the order is greater than the share price for an NMS stock (such as a $1000 order for a $450 stock), the size of the order will be greater than one share and have a fractional share component. While these orders for less than one share and orders for more than one share or with a fractional share component would fall within the definition of segmented order, they raise practical difficulties for executing in qualified auctions because currently, most trading centers, including all national securities exchanges, only accept orders with whole share sizes and do not accept orders for less than one share or orders with a fractional share component. The Commission is concerned that applying the requirements of Proposed Rule 615 to orders for less than one share and orders for more than one share with a fractional component would interfere with broker-dealers willingness to accept such customer orders. For these reasons, Proposed Rule 615 would provide an exception for orders less than one share and the fractional component of a segmented order, if no qualified auction is available for such orders. Specifically, the rule would provide an exception if the segmented order is received and executed by the restricted competition trading center during a time period when no open competition trading center is operating a qualified auction for the segmented order that accepts orders that are not entirely in whole shares, and the customer selected a size for a segmented order that is not entirely in whole shares of an NMS stock, in which case any portion of such segmented order that is less than one whole share of the NMS stock, and only such portion, would not be subject to the order competition requirement of Proposed Rule 615(a).[232] As is the case with each of the exceptions, a broker-dealer's responsibilities with respect to best execution of a segmented order, including the fractional share portion of a segmented order, would remain in effect. The exception would only address whether the segmented order, or fractional portion thereof, is required to be exposed in a qualified auction.

Proposed Rule 615 does not provide an exception for orders directed by a customer to a particular restricted competition trading center for execution. Currently, 98% of the marketable orders of individual investors routed to wholesalers are not directed to any particular trading center, with the investor instead relying on their broker-dealer, and their broker-dealer's best execution responsibilities, for order routing.[233] Moreover, because the rule would only apply to the internalization of segmented orders by a restricted competition trading center, customers could continue to direct segmented orders to any trading center

[229] *See* Rule 600(b)(94) of Regulation NMS (limiting definition of trade-through to regular trading hours); Rule 600(b)(77) of Regulation NMS (defining regular trading hours).

[230] *See* FINRA Rule 2265 (Extended Hours Trading Risk Disclosure) (requiring disclosure to customers of the risks of extended hours trading, including the risks of lower liquidity and wider spreads).

[231] *See, e.g.,* Rule 604(b)(4) of Regulation NMS (providing an exception for orders of block size from required limit order display) and Rule 600(b)(12) of Regulation NMS (defining ''block size'' as, in part, an order for a quantity of stock having a market value of at least $200,000).

[232] Proposed Rule 615(b)(5).

[233] *See infra* section VII.B.2.a for a discussion of the routing of individual investor orders in today's market structure.

that was not a restricted competition trading center (*i.e.,* an open competition trading center or national securities exchange, which are excluded from the definition of restricted competition trading center) without their orders being subject to the requirement for exposure in a qualified auction. Segmented orders directed to a restricted competition trading center would need to comply with Proposed Rule 615 and, absent an exception, be exposed to competition in a qualified auction. Any delay would be limited, however, to a very short, sub-second time period (as specified in Proposed Rule 615(c)(2)) and would give individual investors an opportunity to obtain fully competitive prices for their segmented order, as well as give other market participants, including institutional investors, an opportunity to interact with segmented orders.

C. Qualified Auction Requirements

The term ''qualified auction'' is proposed to be defined in Proposed Rule 600(b) of Regulation NMS as an auction that is operated by an open competition trading center pursuant to paragraph (c) of Proposed Rule 615.[234] Paragraph (c), in turn, sets forth a series of specific requirements for qualified auctions, which could be operated only by national securities exchanges and NMS Stock ATSs that meet the definition of an open competition trading center. Given that routing segmented orders to qualified auctions would be mandated by rule in some contexts, these auctions should be operated in a manner that primarily promotes the core order competition objective of Proposed Rule 615.[235] The proposed requirements for qualified auctions are designed to achieve this competition objective.

1. Auction Messages

Proposed Rule 615(c)(1) specifies the requirements for an auction message that announces the initiation of a qualified auction for a segmented order. The first is that the message must be provided for dissemination in consolidated market data pursuant to Rule 603(b) of Regulation NMS. As stated in section III.B.1 above, the Commission has adopted amendments to Regulation NMS that expand the information required to be included in consolidated market data, which would include auction information.[236] Because these amendments have not yet been implemented, if Proposed Rule 615 is adopted, the effective NMS plans for NMS stocks would need to be conformed to provide for the collection and dissemination of auction messages pursuant to Proposed Rule 615(c)(1)(i). The wide dissemination of qualified auction messages in consolidated market data would help ensure the broadest possible participation of market participants in qualified auctions and the best prices for segmented orders.

The phrase ''provided for dissemination in consolidated market data'' reflects that, while national securities exchanges send quotation and transaction information directly to the SIPs, NMS Stock ATSs would provide such information to the ADF operated by FINRA, which would send the information to the SIPs.[237] The primary purpose of an auction message is to promote competition by soliciting potential auction responses from a wide spectrum of market participants. The inclusion of the auction messages in consolidated market data, rather than being limited to the proprietary data feed of a national securities exchange or NMS Stock ATS, is designed to help achieve this purpose. In addition, wide dissemination of auction messages would help address some of the problems raised by the current level of fragmented trading interest in NMS stocks. For example, market participants that wish to interact with segmented orders would not need to predict the trading center to which segmented orders are likely to be routed and post a resting order in that trading center in advance of the arrival of a segmented order. Rather, market participants would be able to direct their auction responses to the particular open competition trading center that disseminated the auction message signaling that a segmented order was available for interaction.

Qualified auctions therefore may be useful, for example, to institutional investors that currently seek to trade with marketable order flow using resting undisplayed orders, often priced at the NBBO midpoint, that are intended to minimize information leakage concerning the typically large trading interest of institutional investors. Today, these market participants must select one or more trading centers on which to rest their orders based on predictions of the frequency and level of adverse selection costs of the marketable order flow with which they may interact at a particular trading center. With qualified auctions, such market participants would know the specific open competition trading centers where they could interact directly with segmented order flow that had low adverse selection costs. The Commission anticipates that qualified auctions thereby could benefit investors on both sides of the trades in qualified auctions—segmented orders could receive highly favorable prices (such as a ''no spread'' execution at the NBBO midpoint) and institutional investors would have a much greater opportunity to interact with the low-cost order flow of individual investors than they have today.[238] Information leakage would be limited because, as discussed below, an institutional investor's auction response would not be displayed, and, if the institutional investor traded in a qualified auction, the only displayed information would be a transaction report that maintained the anonymity of the parties to the transaction.

Proposed Rule 615(c)(1) also specifies the information content of an auction message, including disclosure that the auction is for a segmented order, the identity of the open competition trading center, NMS stock symbol, side (buy or sell), size, limit price, and identity of the originating broker for the segmented order. For auction responders, all of this information is necessary or useful in deciding whether to respond to the auction message and, if so, at what price. The fact that the order is a segmented order would indicate that the order is likely to have low adverse

[234] Proposed Rule 600(b)(81).

[235] A number of exchanges, for example, currently operate auctions for orders in listed options. *See, e.g.,* CBOE Rule 5.37 (Automated Improvement Mechanism (''AIM'' or ''AIM Auction'')). These auctions are not mandated by Commission rule, and trading in listed options varies in important respects from trading in NMS stocks. For example, there are far more series of listed options than NMS stocks, which contributes to a market structure in which market makers dominate liquidity provision (a ''quote-driven'' market), rather than the ''order-driven'' market that characterizes NMS stocks. Proposed Rule 615 is designed to achieve policy objectives that are particular to mandatory auctions in NMS stocks. *See also supra* section I (discussing the difference between the markets for listed options and NMS stocks).

[236] Rule 600(b)(19) defines consolidated market data to include, among other things, core data, consolidated across all national securities exchanges and national securities associations. Rule 600(b)(21) defines core data to include, among other things, auction information with respect to quotations for, and transactions in, NMS stocks.

[237] *See supra* section III.B.1 (discussing rules addressing dissemination of consolidated market data).

[238] In addition to participating in qualified auctions by submitting auction responses, institutional investors could interact with segmented orders by submitting orders, including undisplayed NBBO midpoint orders, to the continuous order book of an open competition trading center that operates qualified auctions. As discussed below in section IV.C.5, any better-priced order resting on the continuous order book would have priority over lesser-priced auction responses to trade with segmented orders in a qualified auction.

selection costs compared to other marketable order flow, such as orders routed to the continuous order books of national securities exchanges. Moreover, the identity of the originating broker likely would convey additional information concerning the level of adverse selection costs that an auction responder could expect. Data analysis indicates that adverse selection costs can vary substantially among different retail brokers.[239] Knowing the identity of the originating broker would therefore be a significant piece of information in pricing an auction response. Accordingly, if only some market participants knew the identity of the originating broker, other potential responders may not participate due to fear of the winner's curse (winning the least advantageous auctions and losing the most advantageous auctions because of an information disadvantage). Limited participation could harm the competitiveness of qualified auctions.

Paragraph (c)(1)(ii) of Proposed Rule 615 specifies that, if multiple broker-dealers fall within the proposed definition of originating broker, it would be the broker-dealer responsible for approving the opening of accounts with customers [240] (commonly performed by an introducing broker) that would be required to be identified by an open competition trading center in auction messages under Proposed Rule 615(c)(1). The business model of broker-dealers (including the types of services they offer and the nature of the commissions and fees they charge) determines the types of customers that broker-dealers will attract, and different business models may be associated with lower or higher adverse selection costs. As between an introducing broker and a clearing broker, it is the introducing broker that typically determines the business model for attracting customers. For this reason, knowing the identity of the introducing broker associated with a segmented order (*i.e.,* the broker typically with responsibility for approving the opening of the customer account) likely would be more important for market participants in assessing the potential adverse selection costs of trading with a segmented order than knowing the identity of other broker-dealers that may handle the segmented order during its lifecycle. Because the types of orders that would meet the definition of ''segmented order'' are generally associated with lower adverse selection costs,[241] most originating brokers with responsibility for approving the opening of customer accounts likely would choose to have their identity disclosed in auction message.

The Commission recognizes, however, that some originating brokers or their customers may not wish to have the identity of the originating broker for a segmented order publicly disseminated. Proposed Rule 615(c)(1)(iii) therefore would provide a choice for the originating broker. It could either allow its identity to be disclosed in an auction message or it could withhold this information by certifying that it has established, maintained, and enforced written policies and procedures reasonably designed to assure that its identity will not be disclosed, directly or indirectly, to any person that potentially could participate in the qualified auction or otherwise trade with the segmented order. If the originating broker makes this certification, paragraph (c)(1)(iii) would prohibit disclosure of the identity of the originating broker in the auction message.[242] Proposed paragraph (c)(1)(iii) would also require that the certification be communicated to the open competition trading center conducting the auction. In addition, proposed paragraph (e)(3), discussed in section IV.E below, specifies the requirements for an originating broker that makes the certification, and proposed paragraph (f)(2), discussed in section IV.F below, specifies certain trading prohibitions for any broker-dealer with knowledge of where a segmented order is to be routed for execution. The overriding purpose of these proposed requirements is to help ensure fair competition among auction responders and persons that could otherwise trade with the segmented order. If one or more auction responders or persons that could otherwise trade with the segmented order knew the identity of the originating broker, but others did not, those that knew would have a substantial information advantage in pricing their orders over those that did not. The proposed requirements would give originating brokers a choice on whether to disclose their identity, while at the same time promoting fair competition among auction responders and persons that could otherwise trade with the segmented order, both when such identity is disclosed and when it is not. Under Proposed Rule 615(c)(1), (e)(3), and (f)(2), either all auction responders and persons that could otherwise trade with the segmented order would know the identity of the originating broker, or no auction responder or person that could otherwise trade with the segmented order would be permitted to know the identity of the originating broker. In either event, the fairness of qualified auctions would not be impacted.

2. Auction Responses

Proposed Rule 615(c)(2) specifies that the time period for a qualified auction must be no shorter than 100 milliseconds (1/10th of a second) and no longer than 300 milliseconds (3/10ths of a second) after an auction message is provided for dissemination in consolidated market data. The intent of these limits is to help ensure that a wide variety of market participants will have the technological capacity to submit responses to fast automated auctions, while also helping to assure that the execution of segmented orders is not unduly delayed. Several national securities exchanges operate auctions that fall within these time periods, which indicates that the time periods are workable with technologies that currently are available to market participants (*i.e.,* the fact that multiple national securities exchanges already operate auctions in these time frames indicates that market participants generally would be able to submit auction responses within the specified time periods).[243] The Commission anticipates individual investors would manually submit to their brokers the great majority of segmented orders. Proposing to limit the auction length to no more than 300 milliseconds is designed to promote competition to obtain the best prices for segmented orders, but without a delay long enough to be inconsistent with an investor's intent to trade immediately at the best available prices.

Paragraph (c)(2) would further require that auction responses remain undisplayed during the time frame of the auction and not be disseminated thereafter. This proposed requirement is designed to prevent the market participants with the fastest systems

[239] Table 12, *infra,* section VII.B.5.

[240] *See, e.g.,* FINRA Rule 4311(c)(1)(A); *supra* note 227 and accompanying text.

[241] *See infra* section VII.B.2 discussing why certain orders are segmented because they are low-cost flow.

[242] *See infra* section IV.E discussing potential procedures for an originating broker to assure that its identity will not be disclosed.

[243] *See, e.g.,* Securities Exchange Act Release No. 91423 (Mar. 26, 2021), 86 FR 17230 (Apr. 1, 2021) (SR-CboeBYX–2020–021) (order approving Cboe BYX's proposed rule change for periodic auctions in NMS stocks with a 100 millisecond auction period); Nasdaq PHLX Rule 3, section 13(b)(1)(D) (providing that the time period for PHLX's Price Improvement XL Mechanism (''PIXL'') auctions in listed options will be no less than 100 milliseconds and no more than one second).

from obtaining an advantage by observing the pricing of auction responses and submitting their auction responses near the end of the time period for the auction. It also is designed to prevent information leakage, both during auctions themselves and by analyzing historical auction data, concerning the trading interest of market participants, particularly institutional investors, that submit auction responses.

3. Pricing Increment

Under Proposed Rule 615(c)(3), segmented orders and auction responses must be priced in an increment of no less than $0.001 (or 0.1 cent) if their prices are $1.00 or more per share, in an increment of no less than $0.0001 (or 0.01 cent) if their prices are less than $1.00 per share, or at the midpoint of the NBBO.

These proposed increments are designed to balance the objectives of being sufficiently narrow to allow frequent price improvement for segmented orders (the wider the pricing increment, the greater the minimum amount of price improvement that is required, which could limit the frequency of price improvement), while being sufficiently wide to prevent market participants from attempting to gain execution priority by pricing their auction responses in very small increments. An analysis of current wholesaler trading in NMS stocks indicates that 18.64% of the price improved shares of wholesaler principal transactions received price improvement of less than 0.1 cent.[244] Accordingly, the 0.1 cent price increment for qualified auctions would allow much of the existing price improvement to continue in qualified auctions. Moreover, as discussed in section IV.C.5 below, one of the prescribed execution priority requirements for qualified auctions in paragraph (c)(5) of Proposed Rule 615 is that the auction responses of customers, including institutional investors, would have priority over the auction responses of broker-dealers at the same price, thereby furthering the NMS objective of promoting direct interaction of investor orders without the participation of a dealer. A smaller pricing increment (such as 0.05 cent per share (or 1/20th of a cent per share) would allow more price improvement, but also would double the number of increments at which auction responses could be priced, which would enable execution priority advantages at the larger number of increments. The objective of promoting direct interaction of investor orders could be undermined if broker-dealers with the most sophisticated algorithmic trading strategies could submit auction responses with very small pricing increments designed to obtain execution priority.

4. Fees and Rebates

Proposed Rule 615(c)(4) sets forth a number of requirements that would govern the fees and rebates of open competition trading centers with respect to qualified auctions.[245] In general, these requirements are designed to provide reasonable compensation for operating a qualified auction, while maximizing an opportunity for competitive forces to generate the best possible prices for segmented orders. Qualified auctions would be a new business line for open competition trading centers (both national securities exchanges and NMS Stock ATSs), which would provide them an opportunity to compete to attract the marketable orders of individual investors that, as discussed in section VII.B.2 below, are mostly routed to, and executed by, wholesalers in the current market structure. Accordingly, the proposed requirements for fees and rebates are designed to provide sufficient financial incentives for open competition trading centers to operate qualified auctions, but the primary objective of such requirements is to promote the regulatory objectives of Proposed Rule 615—better prices for individual investors and an enhanced opportunity for investors to interact directly with the marketable orders of individual investors.

First, no fee could be charged for submission or execution of a segmented order, or for submission of an auction response. Second, the fee for execution of an auction response could not exceed $0.0005 per share for auction responses priced at $1.00 per share or more, could not exceed 0.05% of the auction response price per share for auction responses priced at less than $1.00 per share, and otherwise would have to be the same rate for executed auction responses in all auctions. Third and similarly, any rebate for the submission or execution of a segmented order or for the submission or execution of an auction response could not exceed $0.0005 per share for segmented orders or auction responses priced at $1.00 per share or more, cannot exceed 0.05% of the segmented order or auction response price per share for segmented orders or auction responses priced at less than $1.00 per share, and otherwise must be the same rate for segmented orders in all auctions and must be the same rate for auction responses in all auctions.

Proposed Rule 615 would prohibit fees for the submission or execution of segmented orders in a qualified auction. As discussed in section II above, the trading economics of executing segmented orders, particularly their low adverse selection costs, has led to a market structure where restricted competition trading centers generally do not charge fees to the broker-dealers that route such orders and, indeed, often offer PFOF to retail brokers in return for routing such orders. With Proposed Rule 615, routing segmented orders to qualified auctions would often, absent an exception, be mandated by rule—a restricted competition trading center generally would be prohibited from executing a segmented order internally without first routing such order to a qualified auction. The Commission believes that broker-dealer compliance with a new rule requiring the routing of segmented orders to qualified auctions in certain circumstances should not lead to the imposition of fees by trading centers on broker-dealers that are not charged for the execution of such orders today. Instead, as discussed below, open competition trading centers could fund their operation of qualified auctions by imposing fees on auction responses that execute against segmented orders. In this respect, the market participants that benefit from the opportunity to trade with segmented orders, with their low adverse selection costs, would pay the open competition trading center for that trading service.

With respect to auction responses, no fee could be charged for the submission of an auction response that is not executed. Such a practice potentially could be used to deter a wide range of market participants from participating in qualified auctions and thereby dampen competition to provide the best prices for segmented orders. Fees could be charged for executed auction responses, consistent with the cap on such fees, which, for most NMS stocks, would be 0.05 cent per share, also known as 5 ''mils.'' The proposed 5 mils cap on fees is designed to be sufficient to provide reasonable compensation to an open competition trading center. For example, an analysis of financial data for national securities exchanges indicates that average total net capture (the difference between fees levied and rebates paid) for such exchanges is

[244] Table 7, *infra,* section VII.B.4.

[245] The Commission also is proposing to amend rules addressing fees and rebates more generally. *See* Minimum Pricing Increments Proposal, *supra* note 98. The Commission encourages commenters to review that proposal to determine whether it might affect their comments on this proposing release.

currently around 4 mils for all trading types.[246] Accordingly, the proposed 5 mils fee cap would provide a revenue source to fund qualified auctions that is consistent with their revenue to fund their other trading services, particularly their services during continuous trading hours.[247] In addition, pursuant to Proposed Rule 615(c)(4), any fee charged for execution of an auction response must be the same rate for all auctions (*i.e.,* an open competition trading center would not be permitted to charge different fees for auctions for different securities, nor would an open competition trading center be permitted to charge different fees to different market participants or different classes of market participants, such as preferential fees based on volume). This proposed uniform rate for fees is designed to promote a level playing field among all potential market participants that may wish to trade with segmented orders. It would, for example, prohibit any volume discount that could give the largest participants an economic advantage in pricing their auction responses compared to other market participants. The uniform rate also would prevent a fee discount for the executed auction response of a broker-dealer that routed the segmented order to the qualified auction.

The proposed requirements for rebates mirror the requirements for fees in terms of the 5 mils cap and the requirement of a uniform rate for all auctions. In particular, rebates could not exceed the maximum fee for qualified auctions. The equivalent proposed 5 mils cap on rebates is designed to limit cross-subsidization of qualified auctions by the largest open competition trading centers in ways that would not be available to smaller competitors, because larger competitors may have more or larger alternative revenue sources. The uniform rate of rebates for all auctions is designed, as with the uniform rate of fees, to level the playing field among larger and smaller broker-dealers. The proposed requirements for rebates differ from those for fees, however, in that open competition trading centers would have discretion on whether to offer rebates for the submission of segmented orders and of auction responses, as well as the execution of segmented orders and of auction responses. If such rebates were offered, however, they would have to be a uniform rate among all auctions to promote a level playing field and fair competition among broker-dealers and among auction responders.

5. Auction Execution Priority

Proposed Rule 615(c)(5) would specify five requirements for the execution priority of auction responses and orders resting on the continuous order book of an open competition trading center, which can be divided into three categories. The first two would specify affirmative requirements for how priority among auction responses must be handled; the second two would specify negative requirements for how priority among auction responses cannot be handled; and the fifth requirement would address how qualified auctions must be integrated with a continuous order book operated by an open competition trading center. These five requirements would not exhaust all possible contexts for which additional priority rules may be needed, and, as discussed below, open competition trading centers would have flexibility to develop additional priority rules as long as such rules are consistent with the requirements in Proposed Rule 615(c)(5).

Pursuant to Proposed Rule 615(c)(5)(i), the first affirmative requirement would be price priority—the most favorable price for a segmented order would have priority of execution (the lowest priced auction response to a segmented order to buy and the highest priced auction response to a segmented order to sell). Price priority maximizes competitive incentives to obtain the best prices for segmented orders.

Pursuant to Proposed Rule 615(c)(5)(ii), the second affirmative requirement would be customer priority. ''Customer'' is defined in Rule 600(b)(23) of Regulation NMS to mean any person that is not a broker-dealer. When two auction responses have the best price, and one is submitted for the account of a customer and one is submitted for the account of a broker-dealer, the customer's auction response would be required to have priority. In such a case, the segmented order of an investor would interact directly with the auction response of another investor without the participation of a dealer, thereby promoting the NMS objective set forth in section 11A(a)(1)(C)(v) of the Exchange Act.

Pursuant to Proposed Rule 615(c)(5)(iii), the first negative requirement for execution priority would be the prohibition of time priority, subject only to an auction response being received by an open competition trading center within the time period prescribed in paragraph (c)(2) of Proposed Rule 615. Prohibiting time priority for equally priced auction responses eliminates the incentive for a speed race that otherwise could reward market participants with resources to spend the most on sophisticated, low-latency trading systems and connectivity.

Pursuant to Proposed Rule 615(c)(5)(iv), the second negative requirement for execution priority would be a prohibition against favoring the broker-dealer that routed the segmented order to the auction, the originating broker for the segmented order, the open competition trading center operating the auction, or any affiliate of the foregoing persons.[248] This requirement is designed to help maintain a level playing field among market participants submitting auction

[246] *See infra* section VII.C.1.a (discussing effects of 5 mils cap on competition to supply liquidity to the marketable orders of individual investors).

[247] *Id.* (net capture for the executions of orders during continuous trading hours (but not opening or closing auctions) priced at $1.00 per share or greater is likely close to 2 mils).

[248] ''Affiliate'' is proposed to be defined in Proposed Rule 600(b)(3) of Regulation NMS to mean, with respect to a specified person, any person that, directly or indirectly, controls, is under common control with, or is controlled by, the specified person. ''Control'' is proposed to be defined in Proposed Rule 600(b)(23) of Regulation NMS to mean the power, directly or indirectly, to direct the management or policies of a broker, dealer, or open competition trading center, whether through ownership of securities, by contract, or otherwise. A person is presumed to control a broker, dealer, or open competition trading center if that person: (1) is a director, general partner, or officer exercising executive responsibility (or having similar status or performing similar functions); (2) directly or indirectly has the right to vote 25% or more of a class of voting securities or has the power to sell or direct the sale of 25% or more of a class of voting securities of the broker, dealer, or open competition trading center; or (3) in the case of a partnership, has contributed, or has the right to receive upon dissolution, 25% or more of the capital of the broker, dealer, or open competition trading center. Proposed Rule 600(b)(3) and Proposed Rule 600(b)(23). These definitions are substantially the same as the definitions of ''affiliate'' and ''control'' prescribed for purposes of an NMS Stock ATS's disclosures about its operations on Form ATS–N with the following modifications: the Form ATS–N definition of ''affiliate'' uses a separately defined term ''Person'' instead of the statutory definition of ''person,'' and Form ATS–N defines ''control'' as applicable to the ''broker-dealer of the alternative trading system'' instead of as applicable to a ''broker, dealer, or open competition trading center.'' It is appropriate to use substantially similar definitions of ''affiliate'' and ''control'' in the context of Proposed Rule 615 because, for purposes of Form ATS–N, the Commission defined such terms for use with respect to disclosures designed to enable market participants to better evaluate how relationships between certain persons could affect the handling of orders on a particular NMS Stock ATS. *See* ATS–N Adopting Release, *supra* note 159, 83 FR at 88318. The substantially similar proposed definitions, as used in the context of Proposed Rule 615, are similarly designed to recognize that relationships among certain persons may impact the handling of orders, and are designed to help ensure that the execution priority rules of an open competition trading center do not undermine full competition among auction responders in qualified auctions by favoring related parties that were involved in routing and executing the order at the open competition trading center.

responses and thereby focus competition in the auctions on providing the best prices for segmented orders. Assigning priority to any firm associated with the handling of the orders or their affiliates would be one means for an open competition trading center to attempt to attract order flow by rewarding the firms that control such flow coming from the customer, which could undermine competition among auction responders to provide the best prices in qualified auctions. Given that Proposed Rule 615 would require segmented orders to be routed to qualified auctions in some contexts, the competition among open competition trading centers to attract segmented orders should be focused on generating the best prices for investors.

Finally, the execution priority requirements set forth in paragraph (c)(5)(v) of Proposed Rule 615 address how auction responses would be required to be integrated with the continuous order book of an open competition trading center. A continuous order book is proposed to be defined in Rule 600(b) of Regulation NMS as a system that allows orders for NMS stocks to be accepted and executed on a continuous basis.[249] This definition would exclude single-priced auctions that are limited to a specified time, such as the opening and closing auctions of the primary listing exchanges, and that are not continuously available for trading based on the initiative of market participants or the open competition trading center. As discussed above, all open competition trading centers would operate as automated trading centers displaying automated quotations and therefore would have facilities in which orders from market participants are accepted and executed on a continuous basis.

The proposed execution priority requirements primarily are designed to balance the objectives of obtaining the best prices for segmented orders and maintaining fair competition both in qualified auctions and on continuous order books.[250] The first such requirement is that orders resting on the continuous order book of the open competition trading center operating the qualified auction, whether displayed or undisplayed, would have priority over auction responses at a less favorable price for the segmented order. This is another application of the principle of price priority that underlies proposed paragraph (c)(5)(i).

The second requirement is that displayed orders resting on the continuous order book would be required to have priority at the same price over auction responses, while, in turn, auction responses would be required to have priority at the same price over undisplayed orders resting on the continuous order book. Rewarding the display of orders serves the purpose of promoting public price transparency, consistent with the NMS objective in section 11A(a)(1)(C)(iii) of the Exchange Act. As between undisplayed orders and auction responses, however, giving priority to auction responses at the same price would encourage participation in qualified auctions, thereby promoting the core order competition objective of Proposed Rule 615. Moreover, unlike displayed orders that can be executed immediately because they present a known opportunity to trade for market participants, undisplayed orders on continuous order books are not known to other market participants and potentially create a risk of gaming behavior by broker-dealers with knowledge of segmented orders that could undermine competition in qualified auctions. As discussed in section IV.F below, this potential gaming behavior is prohibited in paragraph (f) of Proposed Rule 615. Assigning priority to auction responses over undisplayed orders at the same price would help address the root incentives for such behavior.

While Proposed Rule 615(c) sets forth a series of execution priority requirements for qualified auctions, open competition trading centers also would have flexibility to develop additional execution priority rules for their auction mechanism, as long as they were consistent with the proposed requirements. As one example, Proposed Rule 615(c) does not prescribe execution priority when an open competition trading center receives multiple best priced responses for the account of customers because multiple possibilities would be consistent with the objectives of Proposed Rule 615. An open competition trading center would be free to develop rules for assigning execution priority among such customer responses, as long as they were consistent with Proposed Rule 615(c).[251]

Moreover, Proposed Rule 615 allows flexibility for open competition trading centers in a variety of other contexts. For example, it does not specify whether an open competition trading center may or may not simultaneously operate multiple qualified auctions for the same NMS stock, and if so, the execution priority required for auction responses across such auctions. Proposed Rule 615 also would not impose requirements for auction responses, other than the requirement in paragraph (c)(1) that an auction message initiating a qualified auction would be required to invite ''priced'' auction responses.

D. Open Competition Trading Center Requirements

Paragraph (d) of Proposed Rule 615 sets forth requirements for national securities exchanges and NMS Stock ATSs that intend to act as open competition trading centers that operate qualified auctions for segmented orders. First, it would prohibit a national securities exchange or NMS Stock ATS from operating a qualified auction unless the exchange or ATS meets the definition of open competition trading center and complies with the provisions of Proposed Rule 615 for qualified auctions, which were discussed in section IV.B.2 and IV.C above. Second, it would prohibit an open competition trading center from operating a system, other than a qualified auction, that is limited in whole or in part to the execution of segmented orders, unless any segmented order executed through the system meets requirements that parallel those specified for an exception in paragraph (b) of Proposed Rule 615.[252] This proposed prohibition is

[249] Proposed Rule 600(b)(22).

[250] Trades executed in qualified auctions would not qualify for an exception from the trade-through requirements of Rule 611 of Regulation NMS, which are discussed in section III above. Accordingly, if a qualified auction did not generate a price that was at or within the best-priced protected quotations, the open competition trading center would, absent an exception, be prohibited by Rule 611 from executing the segmented order. If a restricted competition trading center subsequently decided to execute such segmented order, it would need, absent an exception, to comply both with the trade-through requirements of Rule 611 and with Proposed Rule 615(a) by immediately executing the segmented order at a price that was equal to or better for the segmented order than the specified limit price in the qualified auction.

[251] As discussed above in section IV.B.2, national securities exchanges must file proposed rules with the Commission to reflect material changes in their rules, while NMS Stock ATSs must update their Form ATS-Ns to reflect material changes in their rules.

[252] Proposed Rule 615(b); Proposed Rule 615(d)(2)(i) through (v). Specifically, a segmented order executed through such system of an open competition trading center would be required to: (1) be received and executed during a time period when no open competition trading center is operating a qualified auction for the segmented order; (2) have a market value of at least $200,000 calculated with reference to the midpoint of the NBBO when the segmented order was received by the open competition trading center; (3) be executed by the open competition trading center at a price that is equal to or more favorable for the segmented order than the midpoint of the NBBO when the segmented order was received by the open competition trading center; (4) be a limit order with a limit price selected by the customer that is equal

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identical to the prohibition in paragraph (g) of Proposed Rule 615 that would apply to all national securities exchanges, regardless of whether they meet the definition of an open competition trading center, and is discussed further in section V.G below.

E. Originating Broker Requirements

Paragraph (e) of Proposed Rule 615 sets forth three requirements for originating brokers. First, an originating broker would be required to establish, maintain, and enforce written policies and procedures reasonably designed to identify the orders of customers as segmented orders. Given that the order competition requirement of paragraph (a) would apply solely to segmented orders, it is imperative that customer orders be properly identified as such by the originating broker, which will have the knowledge of its customer accounts necessary to make such identification. As discussed above in section IV.B.1, the first part of the proposed definition of segmented order relating to the nature of the account is based on existing SRO rules and, accordingly, is designed to facilitate ease of compliance by originating brokers. The second part of the proposed definition relating to frequency of trading in an account would be based on customer trading information that originating brokers are required to maintain.[253]

Second, an originating broker would be prohibited from routing a customer order identified as a segmented order without also identifying the order to the routing destination as a segmented order.[254] This requirement would work together with an analogous requirement in paragraph (f) of Proposed Rule 615 for all broker-dealers that route segmented orders that is discussed in section IV.F below. Together, the proposed requirements are designed to ensure that a segmented order continues to be identified as such throughout the routing chain from origination through execution. Proper marking of segmented orders would be essential for a restricted competition trading center to know that it must comply with the order competition requirement of paragraph (a). The proposed identification requirements of paragraph (e) for originating brokers and paragraph (f) for all broker-dealers are designed to assure that no segmented order reaches a restricted competition trading center without the proper identification. If there is more than one originating broker for a segmented order, the broker that carries the individual investor's customer account would likely be the originating broker that maintains the policies and procedures to identify segmented orders as such, as well as identifies and marks the orders.

Third, an originating broker that makes the certification referred to in paragraph (c)(1)(iii) of Proposed Rule 615 would be required to establish, maintain, and enforce written policies and procedures reasonably designed to assure that the identity of the originating broker will not be disclosed, directly or indirectly, to any person that potentially could participate in the qualified auction or otherwise trade with the segmented order. As discussed in section IV.C.1 above, knowing the identity of an originating broker could provide a significant information advantage to a market participant when pricing an auction response if other market participants did not have this information. The effect of the certification referred to in paragraph (c)(1)(iii) of Proposed Rule 615 would be that either all responders in a qualified auction would know the identity of the originating broker (if the certification is not made) or no responders in a qualified auction would know the identity of the originating broker (if the certification is made). In the absence of an appropriate certification from an originating broker, an open competition trading center would be required to identify the originating broker in the auction message disseminated in consolidated market data. The ''written policies and procedures'' requirement of proposed paragraph (e)(3) specifies the responsibility of an originating broker in making such a certification. As one potential example of such policies and procedures, an originating broker could provide that such originating broker will route all the segmented orders of its customers directly to an open competition trading center for a qualified auction, without disclosing the existence of such orders to any other person. Another potential example would be for the originating broker to use a single broker for routing segmented orders to open competition trading centers for qualified auctions, and the single executing broker represents in writing that it will not participate in any qualified auction for the segmented orders or otherwise trade with the segmented orders, and that it will not disclose the existence of such segmented orders to any other person.

As mentioned in section IV.B.4 above, broker business practices can vary in terms of how customer accounts are handled, and there may be multiple originating brokers for a segmented order. In addition, such brokers currently enter into agreements with one another to allocate certain responsibilities with respect to the handling of customer accounts, such as those referred to as carrying agreements. The Commission has designed Proposed Rule 615 to preserve brokers' existing flexibility to allocate responsibilities among themselves. Accordingly, paragraph (e)(4) of Proposed Rule 615 provides that, where there are multiple originating brokers for a segmented order, an originating broker shall not be deemed to be in violation of the provisions of paragraph (e)(1) through (3) arising solely from a failure to meet a responsibility that was specifically allocated by prior written agreement to another originating broker.

F. Broker-Dealer Requirements

Paragraph (f) of Proposed Rule 615 sets forth two requirements for all broker-dealers with respect to segmented orders. First, pursuant to proposed paragraph (f)(1), a broker-dealer that receives an order identified as a segmented order would be prohibited from routing such order without identifying the order to the routing destination as a segmented order. As discussed in section IV.E above, this requirement is designed to work together with an analogous requirement for originating brokers to

to or more favorable for the segmented order than the midpoint of the national best bid and national best offer when the segmented order is received by the open competition trading center; or (5) be received and executed by the open competition trading center during a time period when no open competition trading center is operating a qualified auction for the segmented order that accepts orders that are not entirely in whole shares, and be a size, selected by the customer, that is not entirely in whole shares of an NMS stock, in which case any portion of such segmented order that is less than one whole share of the NMS stock, and only such portion, may be executed through such system.

[253] *See* 17 CFR 240.17a–3(a) (requiring broker-dealers to make and keep, among other things, current blotters containing an itemized daily record of all purchases and sales of securities and the account for which each such purchase and sale was effected).

[254] 17 CFR 242.613 (Rule 613 of Regulation NMS) requires each national securities exchange and national securities association to jointly file an NMS plan governing the creation, implementation, and maintenance of a consolidated audit trail (''CAT'') which is reported to a central repository. The rule specifies the type of data to be collected and reported. Pursuant to Rule 613(c)(7), any CAT plan participant or broker-dealer that receives, originates, or handles orders in NMS stocks must report certain information regarding those orders, including the ''material terms'' of each order. Rule 613(j)(7) defines ''material terms of an order'' to include ''any special handling instructions.'' Because Proposed Rule 615 would mandate special handling for segmented orders, the identification of the order as a segmented order, any exceptions applicable to its handling, and the identity of the originating broker or an indication of a certification of anonymity would be required by current Rule 613 to be reported as material terms in each event in the lifecycle.

help assure that no segmented order reaches a restricted competition trading center, even if routed through multiple broker-dealers or trading centers, without being properly identified as a segmented order.

Second, paragraph (f)(2) of Proposed Rule 615 sets forth a requirement for all broker-dealers, which includes originating brokers, that is designed to prevent gaming behavior that could undermine fair competition in qualified auctions and on continuous order books. In particular, it would prohibit a broker-dealer with knowledge of where a segmented order is to be routed from submitting an order, or enabling an order to be submitted by any other person, to the continuous order book of an open competition trading center or of a national securities exchange that could have priority to trade with the segmented order at such open competition trading center or national securities exchange.

The prohibition of paragraph (f)(2) is designed to address two types of potential gaming behavior by broker-dealers. First, absent this proposed prohibition, a broker-dealer with knowledge that a segmented order is to be routed to a qualified auction could submit, or enable another person to submit (such as by providing information to another person), to the open competition trading center conducting such auction a displayed contra-side order that was priced at or better than the specified limit price of the segmented order. As discussed in section IV.C above, displayed orders on the continuous order book of an open competition trading center could have priority to trade with a segmented order ahead of equally priced auction responses. The submission of contra-side orders to a continuous order book to avoid participating in a qualified auction, however, could undermine fair competition in the qualified auction and therefore would be prohibited by paragraph (f)(2).

A second type of gaming behavior prohibited by paragraph (f)(2) of Proposed Rule 615 relates to segmented orders that are not routed to qualified auctions, but rather to a continuous order book of an open competition trading center or a national securities exchange. As stated in section IV.A above, the order competition requirement of paragraph (a) of Proposed Rule 615 does not apply to an open competition trading center or to a national securities exchange, regardless of whether such exchange is an open competition trading center, and therefore, a broker-dealer could route a segmented order directly to an open competition trading center or a national securities exchange.[255] However, there remains an incentive for a broker-dealer to seek to trade with a segmented order outside of the fair competition of a qualified auction by submitting a contra-side order at the same time it submits the segmented order (*i.e.,* a ''paired order'') to a continuous order book of an open competition trading center or national securities exchange with the expectation of executing against the segmented order. Paragraph (f)(2) is designed to address this potential by prohibiting a broker-dealer with knowledge of where a segmented order is to be routed from submitting, or enabling any other person to submit (such as by providing information to another person), an order to an open competition trading center or a national securities exchange that could have priority to trade with the segmented order.

In addition to the requirements for broker-dealers set forth in Proposed Rule 615, all other existing obligations of broker-dealers for customer orders, including best execution discussed in section III.B above, would continue to apply. For example, an important consideration for broker-dealers in handling a segmented order would be the relative performance of qualified auctions at different open competition trading centers in terms of their order execution quality. Broker-dealers with best execution responsibilities for segmented orders generally should consider the available information on execution quality for segmented orders at different qualified auctions. To provide broker-dealers with relevant information on qualified auctions, if Proposed Rule 615 is adopted, the effective NMS plans for NMS stocks would need to be conformed to provide for the collection and dissemination of a sale condition in transaction reports for national securities exchanges and NMS Stock ATSs indicating that the transaction was executed in a qualified auction under Proposed Rule 615(c).[256]

G. National Securities Exchange Requirements

Exchanges are excluded from the proposed definition of a restricted competition trading center because, as discussed in section III.B above, they are subject to the extensive Exchange Act requirements for access and competition. Accordingly, the order competition requirement of paragraph (a) of Proposed Rule 615 does not apply to a national securities exchange, regardless of whether such exchange meets the definition of an open competition trading center. To the extent consistent with their best execution responsibilities, broker-dealers would be permitted to route segmented orders directly to any national securities exchange without first routing the order to a qualified auction. One potential example of when such a direct route could be consistent with best execution is a fast market when prices are moving rapidly away from a segmented order (prices increasing for buy orders and prices decreasing for sell orders). In this example, a broker-dealer could determine that obtaining a better price in a qualified auction than a displayed quotation is unlikely, and the broker-dealer could route a segmented order directly to execute against the best available price available at a national securities exchange or an open competition trading center. Competition in qualified auctions, however, could be undermined if national securities exchanges and open competition trading centers were permitted to siphon segmented order flow away from qualified auctions by operating trading mechanisms that were limited, in whole or in part, to segmented orders.

Accordingly, paragraphs (d)(2) (as discussed above) and (g) of Proposed Rule 615 would prohibit all open competition trading centers and national securities exchanges from operating a system, other than a qualified auction, that is limited, in whole or in part, to the execution of segmented orders, unless any segmented order executed through such system qualifies for exceptions that are the same as those in Proposed Rule 615(b).[257] This prohibition would apply

[255] As discussed elsewhere in this release, both of these types of trading centers are subject to rigorous requirements for access and competition, and they therefore would not be prohibited from executing a segmented order without it being submitted to a qualified auction. In addition to the applicable proposed requirements under Proposed Rule 615, a broker-dealer still would be required to satisfy its best execution responsibilities if bypassing a qualified auction and routing a segmented order directly to an open competition trading center or a national securities exchange.

[256] The technical specifications of the NMS plans for disseminating consolidated market data include sale condition modifiers for trade reports that specify various types of trades, including some auction trades.

[257] Proposed Rule 615(b); Proposed Rule 615(d)(2)(i) through (v); Proposed Rule 615(g)(1) through (5); and *supra* note 252 and accompanying text. Specifically, a segmented order executed through such system of a national securities exchange would be required to: (1) be received during a time period when no open competition trading center is operating a qualified auction for the segmented order; (2) have a market value of at least $200,000 calculated with reference to the

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to many of the RLPs currently operated by national securities exchanges.[258] An example of a trading system that would not be prohibited under paragraphs (d)(2) and (g), however, would be one that is limited to the execution of segmented orders at prices equal to the NBBO midpoint, which would qualify for the exception in Proposed Rule 615(g)(3).[259]

V. Request for Comment

The Commission generally requests comment from the public on all aspects of Proposed Rule 615, including its objectives and its terms to achieve those objectives. The Commission also generally requests comment on the proposed definitions to be added to Rule 600 and their use in the context of Proposed Rule 615. More specific requests for comment are set forth below. With respect to any comments, the Commission notes that they are of the greatest assistance to this rulemaking initiative if accompanied by supporting data and analysis of the issues addressed in those comments.

1. The Commission requests comment on the operation and effectiveness of Proposed Rule 615. Would exposing segmented orders to competition in qualified auctions be likely to generate better prices for individual investors than are provided by current broker-dealer routing practices? Would the likelihood of better prices vary across different types of NMS stocks, such as those with different levels of liquidity and trading volume? Do commenters believe that the wide dissemination of auction messages for qualified auctions in NMS stocks would be likely to affect trading or quoting behavior in NMS stocks during the time period of the auction and, if so, would such an effect promote or detract from obtaining the best possible price for segmented orders in the qualified auctions?

2. Proposed Rule 615(c)(2) would prohibit display of auction responses. In the case of an execution in a qualified auction, a transaction report maintaining the anonymity of the parties would be displayed in consolidated market data. Does the proposed prohibition sufficiently mitigate the possibility of information leakage for participants in a qualified auction? Are there different or additional requirements that would better mitigate the possibility of information leakage?

3. Is focusing on the accounts of natural persons, as well as accounts held in legal form on behalf of a natural person or group of related family members, and the level of trading activity in such accounts an appropriate approach to identify orders that are included, and those that are excluded, from the proposed definition of a segmented order?

4. Should the proposed definition of ''group of related family members'' be more or less inclusive, and if so, in what regard?

5. Should the level of trading activity used to determine which accounts are associated with segmented orders be lower or higher than 40 trades per day? Is the six-month time frame is appropriate? If other metrics would be more appropriate, please explain why and, if possible, provide data to support your position.

6. Should any large orders be entirely excluded from the definition of segmented order and therefore not eligible to trade in qualified auctions, as opposed to the rule proposal which would provide an exception for orders of $200,000 or more and that allows a choice of whether to submit such orders to qualified auctions?

7. The proposed definition of an open competition trading center would require national securities exchanges to operate as an SRO trading facility that is an automated trading center and displays automated quotations that are disseminated in consolidated market data? Is this requirement appropriate or should it be modified in any respect?

8. Is requiring a minimum level of trading volume for national securities exchanges to qualify as open trading competition centers an appropriate means to achieve the objectives of Proposed Rule 615? If so, should the 1% level should be lower or higher? For example, should the 1% level be lowered to enable additional national securities exchanges to compete for segmented orders by operating qualified auctions, or should the 1% be increased to help limit the potential costs of market fragmentation? Are the other parameters of the volume threshold appropriate to achieve the objective of ensuring that qualified auctions are offered by trading centers that have sufficient volume to provide vigorous competition? Is average daily volume during at least 4 of the preceding 6 calendar months an appropriate parameter, or are there more appropriate parameters? Is there another approach that would be more effective to help limit the potential costs of market fragmentation that could be associated with the requirements of Proposed Rule 615?

9. Under the proposal, national securities exchanges would be required to operate pursuant to their own rules providing that such exchanges would comply with the requirements for qualified auctions. Would this requirement provide sufficient notice to market participants concerning the operation of qualified auctions by national securities exchanges?

10. Should an NMS Stock ATS, to meet the proposed definition of an open competition trading center, be required to display quotes through an SRO display-only facility? Also, should an NMS Stock ATS be required to operate as an automated trading center and display automated quotations that are disseminated in consolidated market data?

11. Do commenters believe that identifying an NMS Stock ATS as the venue of execution in transaction reports that are disseminated in consolidated market data would be helpful to market participants when assessing qualified auctions?

12. Should an NMS Stock ATS be required to permit any registered broker-dealer to become a subscriber, except for a broker-dealer that is subject to a statutory disqualification or, pursuant to written policies and procedures, does not meet standards of financial responsibility or operational capability?

13. Is an equal access standard appropriate for NMS Stock ATSs to meet the definition of an open competition trading center and operate qualified auctions? Alternatively,

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midpoint of the NBBO when the segmented order was received by the national securities exchange; (3) be executed by the national securities exchange at a price that is equal to or more favorable for the segmented order than the midpoint of the NBBO when the segmented order was received by the national securities exchange; (4) be a limit order with a limit price selected by the customer that is equal to or more favorable for the segmented order than the midpoint of the national best bid and national best offer when the segmented order is received by the national securities exchange; or (5) be received and executed by the national securities exchange during a time period when no open competition trading center is operating a qualified auction for the segmented order that accepts orders that are not entirely in whole shares, and be a size, selected by the customer, that is not entirely in whole shares of an NMS stock, in which case any portion of such segmented order that is less than one whole share of the NMS stock, and only such portion, may be executed through such system.

[258] As discussed in section III.B.2.c, RLPs are exchange trading mechanisms limited to retail orders, as defined in the exchanges' rules.

[259] IEX's RLP, for example, only permits retail liquidity provider orders to be midpoint peg orders. *See* Securities Exchange Act Release No. 93217 (Sep. 30, 2021), 86 FR 55663 (Oct. 6, 2021) (order approving an exemption from Rule 602 of Regulation NMS for IEX's retail price improvement program and describing that IEX's program is different because retail liquidity provider orders can only be midpoint peg orders); IEX Rules 11.190(b)(14) (Retail Liquidity Provider Order) and 11.232 (Retail Price Improvement Program). IEX has rules that will also permit orders in its RLP to be executed at prices better than the NBBO midpoint. *See* Securities Exchange Act Release No. 94884 (May 10, 2022), 87 FR 29768 (May 16, 2022) (SR–IEX–2022–04).

should other approaches be used to achieve the objective of a level playing field regarding Proposed Rule 615 between NMS Stock ATSs and national securities exchanges, given their different statutory and regulatory regimes? For example, should the existing fair access requirement in Rule 301(b)(5) of Regulation ATS be used instead of the proposed equal access requirement? Are there other aspects of access to an NMS Stock ATS operating as an open competition trading center offering qualified auctions that should be addressed by Proposed Rule 615?

14. Is requiring a minimum level of trading volume for NMS Stock ATSs an appropriate means to achieve the objectives of Proposed Rule 615? If so, should the 1% volume threshold should be lower or higher? Are the other parameters of the volume threshold appropriate to achieve the objective of ensuring that qualified auctions are offered by trading centers that have sufficient volume to provide vigorous competition? Is average daily volume during at least 4 of the preceding 6 calendar months an appropriate parameter, or are there more appropriate parameters? Is there another approach that would be more effective to help limit the potential costs of market fragmentation that could be associated with the requirements of Proposed Rule 615?

15. Would market participants have sufficient notice concerning the operation of qualified auctions by NMS Stock ATSs if they operate pursuant to an effective Form ATS–N that evidences compliance with the requirements for a qualified auction in Proposed Rule 615(c) and with the other provisions of the proposed definition of an open competition trading center?

16. Are there any other requirements, beyond those specified in the proposed definition of an open competition trading center, that national securities exchanges or NMS Stock ATSs should meet to be eligible to qualify as open competition trading centers and operate qualified auctions?

17. Should national securities exchanges that do not meet the proposed definition of an open competition trading center be excluded, as proposed, from the definition of a restricted competition trading center based on their statutory requirements relating to access and competition?

18. Does the proposed definition of originating broker appropriately capture the brokers that would make the determination of whether an order falls within the definition of a segmented order, as well as the broker that would be required to be identified in auction messages? Instead of allowing originating brokers to choose whether to be identified in auction messages, should Proposed Rule 615, as a means to promote greater uniformity of execution quality for segmented orders from different originating brokers, prohibit any identification of the originating broker in auction messages and require originating brokers to certify that their identity will not be disclosed for all segmented orders? Should originating brokers for a segmented order, other than the broker responsible for approving the opening of accounts with customers, be identified in the auction message? Should carrying or clearing brokers that are an originating broker for a segmented order also be disclosed in an auction message? Would such information be useful to market participants' decisions whether to submit auction responses and at what prices?

19. Are the five proposed exceptions in paragraph (b) of Proposed Rule 615 appropriate? Should additional exceptions be included, such as an exception for orders directed by the customer to a particular trading center?

20. Instead of providing an exception for executions of segmented orders during a time period when no open competition trading center is operating a qualified auction, should the execution of segmented orders during such a time period be prohibited? Is market value an appropriate approach to identifying large trades that should be excepted from Proposed Rule 615? If so, should the threshold amount of $200,000 be lower or higher? For example, do commenters believe that segmented orders in NMS stocks with a market value of up to $200,000 could be executed efficiently in qualified auctions at prices that mostly would be at or within the NBBO? If not, what market value should be used to achieve this objective and should it vary based on the trading characteristics of a particular NMS stock?

21. Would it be appropriate for Proposed Rule 615(b) to include an exception for executions at a price less favorable to the segmented order than a midpoint execution, so long as the segmented order is executed at a price with a specified amount of price improvement? If so, what would be the appropriate level of price improvement?

22. Is it appropriate for Proposed Rule 615(b) to include an exception for executions of a segmented order with a limit price selected by the customer that is equal to or more favorable for the segmented order than the midpoint of the national best bid and national best offer when the segmented order is received by the restricted competition trading center? Should there be an exception for a wider range of limit orders, in addition to, or instead of this proposed exception? For example, should there be an exception for all non-marketable limit orders (*i.e.,* any buy limit order with a price less than the NBO and any sell limit order with a price greater than the NBB)?

23. Is it appropriate for Proposed Rule 615(b) to include the exception for executions of segmented orders where no qualified auctions are being offered for orders that are not entirely in whole shares, and the customer selected a size for a segmented order that is not entirely in whole shares of an NMS stock, in which case any portion of such segmented order that is less than one whole share of the NMS stock, and only such portion, would not be subject to the order competition requirement of paragraph (a) of Proposed Rule 615? Would a broker-dealer's best execution responsibilities be sufficient to ensure that the fractional portion of the segmented order is executed in the best market available? Do commenters believe that, if Proposed Rule 615 were adopted, open competition trading centers would offer qualified auctions that accommodate fractional shares? If not, should a broker-dealer be required to round up a segmented order with a fractional component before submitting the order to a qualified auction, with the broker-dealer required to accept the rounded up portion of the order? Or would broker-dealers be less willing to offer their customers transactions in fractional shares if rounding up were required?

24. Should auction messages be required to include the side (buy or sell) of a segmented order? For example, if side were not included in auction messages, market participants could be allowed to provide auction responses for one or both sides, with only auction responses on the opposite side of the segmented order considered for execution. Do commenters believe that such an approach would limit the extent to which quoted price might move away from segmented orders during the pendency of a qualified auction?

25. Should the minimum or maximum time periods for qualified auctions be shorter or longer? Should a restricted competition trading center be permitted to execute a segmented order that was not executed in a qualified auction at the specified limit price as soon as reasonably possible, or should there be a specified time period for execution?

26. Should the pricing increment be smaller or larger than the proposed 0.1

cent for segmented orders and auction responses with prices of $1.00 or more per share? Would, for example, the potential benefit for segmented orders of a smaller pricing increment, such as 0.05 cent, outweigh the potential cost of less direct interaction of investor orders without the participation of a dealer?

27. Does Proposed Rule 615(c)(4) appropriately address the fees and rebates for qualified auctions? Is the proposed prohibition of any fee for the submission or execution of segmented orders appropriate? Should the proposed 5 mil cap on fees for executed auction responses priced at $1.00 per share or more be higher or lower? Should the proposed 5 mil cap on rebates for segmented orders priced at $1.00 per share or more be higher or lower? Is it appropriate to require that the rates for fees and rebates be flat in all auctions?

28. Are the execution priority requirements specified in Proposed Rule 615(c)(5) appropriate? Should auction responses of customers have priority over auction responses of broker-dealers at the same price? Is it appropriate to prohibit execution priority terms that favor the broker-dealer that routed the segmented order, the originating broker for the segmented order, and the open competition trading center operating the auction, as well as affiliates of the foregoing persons? Should the requirements for execution priority of orders resting on the continuous order book of an open competition trading center be modified? Should displayed orders on the continuous order book have priority over auction responses at the same price? Should auction responses have priority over undisplayed orders on the continuous order book at the same price?

29. Should an open competition trading center be permitted to give execution priority advantages to market makers that accept objective affirmative obligations, such as public quoting obligations or an obligation to fill segmented orders at the relevant NBBO if such orders do not otherwise receive an execution in qualified auctions? For example, Table 7 in section VII.B.4 below shows that 1.67% of marketable order shares are executed by wholesalers at prices outside the NBBO at the time the wholesaler received the order. Do commenters believe that, if Rule 615 were adopted as proposed, a larger percentage of marketable orders of individual investors would be executed at prices outside the NBBO when the order is received by a trading center?

30. Should the broker routing a segmented order to a qualified auction be required to execute the order, or any unexecuted portion thereof, at the specified limit price or some other price if the segmented order is not executed in full in the auction?

31. Should there be parameters for what the specified limit price selected by a broker routing a segmented order to a qualified auction could be? For example, should the specified limit price be required to be within a range that is tied to the midpoint of the NBBO at the time the segmented order is received?

32. Should an open competition trading center be permitted to operate multiple qualified auctions in the same NMS stock simultaneously?

33. Should open competition trading centers have flexibility to determine aspects of qualified auctions that are not specified by Proposed Rule 615? Are there additional aspects for qualified auctions that should be specified by rule? For example, are there additional aspects of execution priority that should be specified by rule or, alternatively, that open competition trading centers should have greater flexibility to determine?

34. Should open competition trading centers and national securities exchanges be allowed to continue to operate trading systems, other than qualified auctions, that are limited, in whole or in part, to the execution of segmented orders and that do not fall within one of the five exceptions in Proposed Rule 615(d)(2) and (g)? For example, should national securities exchanges be permitted to continue to operate RLPs that do not qualify for one of the exceptions in Proposed Rule 615(g)? Are there other types of limited trading facilities operated by national securities exchanges or open competition trading centers that should be permitted?

35. Is it appropriate, as provided in Proposed Rule 615(f)(4), to prohibit broker-dealers with knowledge of where a segmented order is to be routed for execution from submitting, or enabling the submission, of an order to the continuous order book of an open competition trading center that could trade with that segmented order? Do commenters believe that this prohibition could significantly interfere with broker-dealer handling of customer orders and, if so, would limiting the prohibition to the proprietary orders of a broker-dealer and its affiliates be consistent with the purposes of Proposed Rule 615?

36. Does Proposed Rule 615(e)(4) provide sufficient clarification as to which broker-dealer would be subject to the obligations of Proposed Rule 615(e) when there are multiple originating brokers for a segmented order and such originating brokers have in place a written agreement that allocates their responsibilities with respect to customer orders?

37. Does Rule 613 of Regulation NMS and the Consolidated Audit Trail NMS Plan require adequate reporting of all elements of this proposed rule so that regulators can evaluate compliance and study its effectiveness?[260]

VI. Paperwork Reduction Act Analysis

Certain provisions of Proposed Rule 615 contain ''collection of information'' requirements within the meaning of the Paperwork Reduction Act of 1995 (''PRA'').[261] The Commission is submitting these collections of information to the Office of Management and Budget (''OMB'') for review in accordance with 44 U.S.C. 3507(d) and 5 CFR 1320.11. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the agency displays a currently valid control number. The title of the new collection of information is ''Order Competition Rule.'' The requirements of this collection of information would be mandatory for originating brokers, brokers and dealers that route segmented orders, national securities exchanges and NMS Stock ATSs that operate qualified auctions as open competition trading centers, and national securities associations that provide auction message information for dissemination in consolidated market data.

A. Summary of Collection of Information

Proposed Rule 615 and the proposed related amendments would create burdens under the PRA by creating the new collections of information described below for market participants that handle or execute segmented orders, or operate qualified auctions to provide competition for segmented orders.

1. Auction Messages

Proposed Rule 615 would require an open competition trading center to comply with the requirements of paragraph (c) for operation of a qualified auction for segmented orders.[262] Pursuant to paragraph (c)(1), an open competition trading center operating a qualified auction would be required to provide an auction message announcing

[260] *See supra* note 254 (discussing the type of data to be collected and reported pursuant to the CAT NMS Plan).

[261] 44 U.S.C. 3501 *et seq.*

[262] *Supra* section IV.C.

the initiation of a qualified auction for a segmented order for dissemination in consolidated market data. Each auction message shall invite priced auction responses to trade with a segmented order and shall include, among other things, the identity of the originating broker.[263]

2. Identifying and Marking Segmented Orders

a. Identification of Segmented Orders

Paragraph (e)(1) would require originating brokers to establish, maintain, and enforce written policies and procedures reasonably designed to identify the orders of customers as segmented orders.

b. Marking Segmented Orders

Paragraph (e)(2) of Proposed Rule 615 would require originating brokers to identify a segmented order as such to any destination the broker routes the order. Additionally, pursuant to paragraph (f)(1) of Proposed Rule 615, no broker-dealer that receives an order identified as a segmented order shall route the order without identifying the order as a segmented order to the routing destination. Thus, originating brokers and other broker-dealers that route segmented orders would be required to mark segmented orders as such.

3. Originating Broker Certification

Pursuant to paragraph (e)(3), if the originating broker for a segmented order that is the originating broker responsible for approving the opening of accounts with customers determines to make the certification referenced in paragraph (c)(1)(iii) of Proposed Rule 615, the originating broker shall establish, maintain, and enforce the required policies and procedures reasonably designed to assure that the identity of the originating broker will not be disclosed.[264] As discussed above, the certification must also be communicated to the open competition trading center operating the qualified auction.[265] The Commission believes that broker-dealers would likely use order marking systems to communicate to an open competition trading center whether an originating broker has made the certification referenced in Proposed Rule 615(c)(1)(iii). Accordingly, the originating broker with responsibility for transmitting orders for a customer's account would mark segmented orders to indicate that the certification has been made, and other broker-dealers that receive and route such orders would also mark such orders accordingly. As discussed below, the Commission believes that broker-dealers would have an initial burden to modify their systems to be able to mark segmented orders as such, and an ongoing burden to mark segmented orders. The Commission also believes that broker-dealers would include in those systems modifications, the ability to communicate whether an originating broker has made the referenced certification, and on an ongoing basis would include the certification information, as applicable, when marking segmented orders. Thus, the Commission believes that the initial burden for broker-dealers to modify their systems to mark orders as segmented orders and the ongoing burden to mark segmented orders as such, as discussed below, would subsume the burden to mark orders to communicate when the certification has been made and therefore estimates no additional costs associated with communication of the certification.

4. NMS Stock ATS Policies and Procedures To Exclude Subscribers

Pursuant to paragraph (d)(1) of Proposed Rule 615, a national securities exchange or NMS Stock ATS shall not operate a qualified auction for segmented orders unless it meets the definition of open competition trading center in Proposed Rule 600(b)(64).[266] For an NMS Stock ATS to qualify as an open competition trading center eligible to operate a qualified auction, Proposed Rule 600(b)(64)(ii)(D) would require the NMS Stock ATS to permit any registered broker or dealer (other than a broker or dealer subject to a statutory disqualification) to become a subscriber of the ATS. The NMS Stock ATS could, however, pursuant to written policies and procedures, prohibit a broker or dealer from being or becoming a subscriber, or impose conditions on a broker or dealer subscriber, that does not meet standards of financial responsibility or operational capability, as are prescribed by the written policies and procedures. Thus, to be able to exclude a broker-dealer from becoming a subscriber (other than a broker or dealer subject to a statutory disqualification), or imposing conditions on such a subscriber, the NMS Stock ATS would be required to have written policies and procedures.

B. Proposed Use of Information

As discussed above,[267] Proposed Rule 615 is designed to benefit individual investors by enhancing the opportunity for their orders to receive more favorable prices than they receive in the current market structure, as well as to benefit investors generally by giving them an opportunity to interact directly with a large volume of individual investor orders that are mostly inaccessible to them in the current market structure, by requiring that individual investor orders be exposed to order-by-order competition in fair and open auctions designed to obtain the best prices before such orders could be internalized by wholesalers or any other type of trading center that restricts order-by-order competition.

1. Auction Messages

The auction messages provided under paragraph (c)(1) of Proposed Rule 615 would be disseminated in consolidated market data and would be used by market participants to determine whether to submit auction responses. As discussed above, the wide dissemination of these auction messages would promote competition by soliciting potential auction responses from a wide spectrum of market participants.[268]

2. Identifying and Marking Segmented Orders

a. Identification of Segmented Orders

The requirements of paragraph (e)(1) of Proposed Rule 615 are designed to ensure that originating brokers are able to properly identify segmented orders. Specifically, written policies and procedures established pursuant to Proposed Rule 615(e)(1) would help a broker develop a process, relevant to its customers and the nature of its business, for properly identifying the orders of its customers as segmented orders. Further, the maintenance of written policies and procedures would generally: (1) assist a broker-dealer in supervising and assessing its compliance with Proposed Rule 615; and (2) assist the Commission and SRO staff in connection with examinations and investigations.

b. Marking Segmented Orders

Marking segmented orders as such pursuant to paragraphs (e)(2) and (f)(1) of Proposed Rule 615 would inform other market participants that the orders must be handled in accordance with the requirements of Proposed Rule 615, which, as discussed above, is designed

[263] As discussed above in section IV.C.1, the identity of the originating broker is not required to be disclosed, however, if the originating broker makes the requisite certification.

[264] *Supra* section IV.E.

[265] *Supra* section IV.C.1.

[266] *Supra* section IV.B.2, and IV.D.

[267] *Supra* section I.

[268] *Supra* section IV.C.1.

to provide competition for individual investor orders in fair and open auctions.

3. Originating Broker Certification

Written policies and procedures established pursuant to Proposed Rule 615(e)(3) would help a broker develop a process, relevant to the nature of its business, to ensure that its identity will not be disclosed and to support its certification. Further, the maintenance of written policies and procedures would generally: (1) assist a broker in supervising and assessing its compliance with Proposed Rule 615(e)(3); and (2) assist the Commission and SRO staff in connection with examinations and investigations.

Communication of the certification to the relevant open competition trading center would enable the open competition trading center to comply with the requirements of Proposed Rule 615(c)(1) that an auction message disclose the identity of the originating broker for a segmented order, unless the originating broker has made the requisite certification.[269]

4. NMS Stock ATS Policies and Procedures To Exclude Subscribers

To qualify as an open competition trading center, an NMS Stock ATS would be required to permit any registered broker-dealer (other than a broker-dealer subject to a statutory disqualification) to become a subscriber of the NMS Stock ATS, and must provide equal access among all subscribers of the NMS Stock ATS.[270] These requirements are designed to help ensure a level playing field regarding Proposed Rule 615 for competition among NMS Stock ATSs and national securities exchanges, in light of the different regulatory regimes for each. Similar to the requirements for national securities exchanges, under Proposed Rule 600(b)(64)(ii)(D), NMS Stock ATSs could exclude a registered broker-dealer, or impose conditions on a broker-dealer becoming a subscriber, that does not meet certain standards of financial responsibility or operational capability, but may only do so pursuant to written policies and procedures. While national securities exchanges must prescribe rules, consistent with the Exchange Act, for denying membership to a broker-dealer, the requirements applicable to NMS Stock ATSs are less stringent.[271] Requiring NMS Stock ATSs to establish written policies and procedures would help an NMS Stock ATS to develop a process for identifying registered broker-dealers that should be excluded because they do not meet certain standards, and would help level the competitive playing field regarding Proposed Rule 615 between NMS Stock ATSs and national securities exchanges. Further, the written policies and procedures would generally: (1) assist an NMS Stock ATS in supervising and assessing its compliance with the access requirements of proposed Rule 600(b)(64)(ii)(D); and (2) assist the Commission and SRO staff in connection with examinations and investigations.

C. Respondents

A summary of the Commission's initial estimates of the number of respondents for each collection of information requirement is set forth below:

COLLECTION OF INFORMATION—ORDER COMPETITION RULE

Description of burden	Rule	Applicable respondents	Number of respondents
Dissemination of Auction Messages	Rule 615(c)(1)	National securities exchanges operating qualified auctions.	6
		National securities associations	1
		NMS Stock ATSs operating qualified auctions	3
Total			10
Policies and Procedures to Identify Segmented Orders.	Rule 615(e)(1)	Originating broker-dealers with responsibility for identifying segmented orders.	157
Identification of Segmented Orders by Originating Brokers.	Rule 615(e)(2)	Originating broker-dealers with responsibility for identifying segmented orders.	157
Marking of Segmented Orders:			
Marking of Segmented Orders by Originating Brokers.	Rule 615(e)(2)	Originating broker-dealers with responsibility for marking segmented orders.	157
Marking of Segmented Orders by Broker-Dealers.	Rule 615(f)(1)	Broker-dealers that route orders identified as segmented orders.	25
Total			182
Policies and Procedures for Rule 615(c) Certification.	Rule 615(e)(3)	Originating broker-dealers certifying that they established, maintained, and enforced policies and procedures reasonably designed to assure that their identity will not be disclosed.	20
NMS Stock ATS Policies and Procedures to Exclude Subscribers.	Rule 615(d)(1)	NMS Stock ATSs operating qualified auctions that may exclude subscribers.	3

1. Auction Messages

As discussed above,[272] the open competition trading centers that would be required to provide auction messages for dissemination in consolidated market data pursuant to paragraph (c)(1) of Proposed Rule 615 would be national securities exchanges and NMS Stock ATSs that meet certain requirements and are eligible to operate qualified auctions for segmented orders. As is currently the case for quotation and trading information in NMS stocks, auction information would be provided by national securities exchanges and FINRA, as the only national securities association, to the SIPs for

[269] As discussed above, the disclosure of the identity of the originating broker in an auction message, absent the corresponding certification, is designed to help ensure fair competition among auction responders and persons that could otherwise trade with the segmented order, while giving originating brokers a choice as to whether or not to disclose their identity. *Supra* section IV.C.1.

[270] *Supra* section IV.B.2.

[271] *Id.*

[272] *Supra* section IV.B.2.

dissemination in consolidated market data.[273]

Given that all national securities exchanges already have systems and processes for providing information for dissemination in consolidated market data as well as systems and processes for disseminating certain auction information,[274] the Commission estimates that it is likely that 6 of the 16 national securities exchanges that trade NMS stocks would choose to qualify as open competition trading centers and operate qualified auctions. Of the 16 registered national securities exchanges currently trading NMS stocks,[275] 12 are part of one of 3 corporate affiliate groups, and the Commission estimates that one of the national securities exchanges from each of the three corporate groups would likely choose to operate qualified auctions.[276] Of the four other national securities exchanges that currently trade NMS stocks, the Commission estimates that three exchanges would likely choose to operate qualified auctions.[277]

The Commission also estimates that some, but not all NMS Stock ATSs would chose to operate qualified auctions for segmented orders. One of the requirements of Proposed Rule 615 is that an open competition trading center must meet the definition set forth in Proposed Rule 600(b)(64), which would require that an NMS Stock ATS permit any registered broker or dealer (other than a broker or dealer subject to a statutory disqualification) to become a subscriber and provide equal access among all subscribers. To qualify as an open competition trading center, Proposed Rule 600(b)(64) would also require an NMS Stock ATS to display quotations through an SRO display-only facility and operate as an automated trading center that displays automated quotations disseminated in consolidated market data. Given that NMS Stock ATSs often differentiate between groups or classes of subscribers with respect to access to services and most have adopted a ''dark'' trading model,[278] of the 32 NMS Stock ATSs, the Commission estimates that approximately three are likely to make the business model modifications necessary to meet the open competition trading center definition and be eligible to operate qualified auctions.[279]

As discussed above, broker-dealers provide certain NMS stock information to FINRA through its facilities, and FINRA provides information for dissemination in consolidated market data. To qualify as open competition trading centers, the three NMS Stock ATSs would have systems and processes in place to display quotations disseminated in consolidated market data. These ATSs would provide auction message information to FINRA, and FINRA would transmit the information for dissemination in consolidated market data.

The Commission requests comment on its estimates of the number of exchanges and NMS Stock ATSs that would become open competition trading centers operating qualified auctions, including whether the estimates should be lower or higher.

2. Identifying and Marking Segmented Orders

As discussed above, Proposed Rule 615 would impose certain obligations on originating brokers, and all other broker-dealers, with respect to their handling of segmented orders. Proposed Rule 600(b)(69) defines ''originating broker'' to mean any broker with responsibility for handling a customer account,[280] and Proposed Rule 600(b)(91) defines ''segmented order'' as an order for the account of a natural person (or an account held on behalf of a natural person or group of related family members) that meets certain trading volume thresholds.[281] Most segmented orders are handled by large, customer-facing broker-dealers that accept orders from customers and then route these orders to various execution centers. Also, as discussed above, in section IV.B.4, broker business practices can vary widely in terms of how customer accounts are handled, with some brokers performing the entire function internally and others allocating various responsibilities of an originating broker to other brokers-dealers such as carrying or clearing brokers. Those originating brokers who have been assigned responsibilities that include the transmission of orders for execution would need to identify and mark segmented orders as such to comply with Proposed Rule 615.[282]

Based on FOCUS Report data,[283] the Commission estimates that as of June 30, 2022 there were 3,498 registered broker-dealers,[284] and of these there were 157 reporting that they carry public customer accounts [285] that would likely be subject to the requirements of paragraphs (e)(1) and (2) of Proposed Rule 615.

Paragraph (f)(1) of Proposed Rule 615 would also require every broker-dealer that receives a segmented order and routes that order to identify the order as such. This would include broker-dealers

[273] *Supra* sections III.B.1 and IV.C.1.

[274] *Supra* section IV.B.1. In addition to providing consolidated market data, national securities exchanges also sell their individual proprietary market data products, and their depth of book (''DOB'') products typically include, among other things, information about orders participating in auctions, including auction order imbalances. *See, e.g.,* Nasdaq Rule 123(a)(1)(B) *available at https://listingcenter.nasdaq.com/rulebook/nasdaq/rules/Nasdaq%20Equity%207#section_123_nasdaq_depth-of-book_data* (defining Nasdaq's ''Nasdaq TotalView'' data product); and *https://www.nyse.com/market-data/real-time/integrated-feed* (describing NYSE's ''NYSE Integrated'' data product).

[275] *Supra* note 82 and accompanying text.

[276] CBOE Holdings, Inc. is the parent company of Cboe BYX, Cboe BZX, Cboe EDGA, and Cboe EDGX; Nasdaq, Inc. is the parent company of Nasdaq BX, Nasdaq PhlX, and Nasdaq; Intercontinental Exchange, Inc. is the parent company of NYSE, NYSE American, NYSE Arca, NYSE CHX, and NYSE National.

[277] The remaining four national securities exchanges that trade NMS stocks are IEX, LTSE, MEMX, and MIAX PEARL, which is a subsidiary of MIAX International Holdings, Inc. Of these, based on examination of data related to national securities exchanges, for the month ended Nov. 30, 2022, only LTSE did not report more than 1% of share volume in NMS stocks. Proposed Rule 600(b)(64) requires a national securities exchange to have had an average daily share volume for NMS stocks of 1% or more during at least four of the preceding 6 calendar months to qualify as an open competition trading center eligible to operate a qualified auction. *See* Cboe, U.S. Historical Market Volume Data, *available at: https://cboe.com/us/equities/market_statistics/historical_market_volume/.*

[278] NMS Stock ATSs must publicly disclose information about their trading system and services, including differences in access, on Form ATS–N. Links to Form ATS–N filings are available on the Commission's website at *https://www.sec.gov/divisions/marketreg/form-ats-n-filings.htm. See also* ATS–N Adopting Release, *supra* note 159, 83 FR at 38886 n.1292 and accompanying text (discussing the dark trading model adopted by most NMS Stock ATSs).

[279] The Commission bases this estimate on the following considerations. While currently no NMS Stock ATS would qualify as an Open Competition Trading Center, there is currently one NMS Stock ATS that discloses that it crosses the 5% volume threshold for fair access under Regulation ATS for securities that are available for trading on its platform. This NMS Stock ATS may choose to make the necessary modifications to operate as an Open Competition Trading Center. In addition, given the low-cost nature of segmented order flow that is likely to be attractive to market participants, the Commission estimates that two additional NMS Stock ATSs would choose to make the necessary modifications to operate as Open Competition Trading Centers.

[280] *Supra* section IV.B.4.

[281] *Supra* section IV.B.1.

[282] *Supra* section IV.B.4.

[283] FOCUS Reports, or ''Financial and Operational Combined Uniform Single'' Reports, are monthly, quarterly, and annual reports that broker-dealers are generally required to file with the Commission and/or SROs pursuant to Exchange Act Rule 17a–5. *See* 17 CFR 240.17a–5.

[284] The data is obtained from FOCUS Reports, Part II filed for the second quarter of 2022.

[285] Information on the number broker-dealers that carry public customer accounts is from broker-dealers' responses on their most recently available FOCUS Report Form X–17A–5 Schedule I. Because ''public customer accounts'' may hold orders other than segmented orders, for example institutional customers would also fall within the definition of ''public customer'' for purposes of FOCUS Report Form X–17A–5 Schedule I, 157 is likely an overestimate.

that act as wholesalers that would be required to route a segmented order to be exposed in a qualified auction at a price prior to executing it, or that route the order to another execution center; and any other broker-dealer, including originating broker-dealers assigned responsibilities that include identifying and marking orders, that routes segmented orders. The Commission estimates that approximately 25 broker-dealers that do not also carry customer accounts would route retail orders.[286]

a. Identification of Segmented Orders

As discussed above, the Commission estimates that there are 157 originating brokers that would be required to establish, maintain, and enforce written policies and procedures reasonably designed to identify customer orders as segmented orders pursuant to paragraph (e)(1) of Proposed Rule 615. While there are additional broker-dealers, such as introducing brokers, that would meet the definition of ''originating broker,'' only those broker-dealers carrying customer accounts are likely to have been allocated responsibility for routing orders and therefore would have burdens and costs associated with implementing the requirements of paragraph (e)(1) of Proposed Rule 615.

The Commission requests comment on whether its estimate of the number of brokers that would fall within the scope of Proposed Rule 615(e)(1), including whether the estimate should be higher or lower.

b. Marking Segmented Orders

As discussed above, the Commission estimates that there would be 157 originating brokers that would be required to identify segmented orders as such prior to routing those orders pursuant to Proposed Rule 615(e)(2). Additionally, the Commission estimates that there would be an additional 25 broker-dealers that route customer orders, and would not also be originating brokers in the scope of paragraph (e)(2), that would be required, pursuant to Proposed Rule 615(f)(1) to identify any segmented orders received as such, when routing the order to a routing destination.

The Commission requests comment on its estimate of the number of broker-dealers that would fall within the scope of paragraphs (e)(2) and (f)(1) of Proposed Rule 615, including whether the estimate should be higher or lower.

3. Originating Broker Certification

It is likely that most originating brokers with segmented orders would choose to be identified as the originating broker of a segmented order because that information would be used by market participants to help predict the level of adverse selection costs associated with order flow from a given originating broker. Thus, originating brokers known to be associated with lower adverse selection costs would likely want auction responders to know their identity. Based on a review of data related to broker-dealers, the Commission estimates that there are approximately 1,267 broker-dealers that would meet the definition of ''originating broker'' and that have responsibility for monitoring customer accounts.[287] These broker-dealers would be required to maintain the policies and procedures required by paragraph(e)(3) of Proposed Rule 615 if they choose not to have their identity disclosed in auction messages. While it is very difficult for the Commission to know how many originating brokers would choose to certify that they established, maintained, and enforced written policies and procedures reasonably designed to assure that their identity will not be disclosed to any person that potentially could participate in the qualified auction or otherwise trade with the segmented order routed by the originating broker, the Commission preliminarily estimates that 20 of the 1,267 originating brokers would choose not to disclose their identity and would be required to establish, maintain and enforce the written policies and procedures required by paragraph (e)(3) of Proposed Rule 615. While segmented orders, by definition, are limited to orders for accounts with an average daily number of trades in NMS stocks of less than 40 in each of the six preceding months, and thereby likely associated with lower adverse selection costs, there may be some broker-dealers that have order flow associated with higher levels of adverse selection costs or who have customers or business models that preference anonymity.[288]

As discussed above, the originating broker with responsibility for transmitting orders for a customer's account would likely also mark segmented orders to indicate that the certification has been made, and other broker-dealers that receive and route such orders would also need to mark such orders accordingly. The same broker-dealers that would mark orders as segmented orders pursuant to paragraphs (e)(2) and (f)(1) of Proposed Rule 615, discussed above in section VI.C.2.b, would also likely mark orders, as applicable, to communicate the certification to the open competition trading center.

The Commission requests comment on its estimate of the number of originating brokers that would certify that they have established, maintained, and enforced written policies and procedures reasonably designed to assure that the identity of the originating broker will not be disclosed, including whether the estimate should be higher or lower. The Commission also requests comment on whether it is reasonable to estimate that such certifications would be communicated to open competition trading centers via order marking and that the same broker-dealers that would mark orders as segmented orders would also mark orders for the purpose of communicating such certifications to the open competition trading centers operating qualified auctions.

4. NMS Stock ATS Policies and Procedures To Exclude Subscribers

As discussed above, of the 32 NMS Stock ATSs, the Commission estimates that approximately 3 would operate qualified auctions. To do so, those NMS Stock ATSs would need to meet the definition of open competition trading center, and as such, would be required to have written policies and procedures to prohibit any registered broker or dealer from being or becoming a subscriber, or impose conditions upon a such a subscriber, that does not meet the standards of financial responsibility or operational capability of the NMS Stock ATS. The Commission anticipates that all three NMS Stock ATSs operating qualified auctions would have standards

[286] This estimate is based broker-dealers' responses on their most recently available FOCUS Report Form X–17A–5 Schedule I, showing that there are 25 broker-dealers that effect public customer transactions in equity securities on a national securities exchange or OTC that do not carry public customer accounts.

[287] The Commission estimates that there are approximately 157 broker-dealers that carry at least one customer account trading in NMS stocks, and 1,110 broker-dealers that introduce at least one customer account trading in NMS stocks. The estimate of 157 broker-dealers that carry at least one customer account trading in NMS stocks and options is based on the number of broker-dealers that report carrying at least one customer account on their 2021 FOCUS Report Form X–17A–5 Schedule I; and the estimate of 1,110 broker-dealers that introduce at least one customer account trading in NMS stocks and options is based on estimates using broker-dealers' FDIDs identified in CAT data during the 2021 calendar year. As CAT data includes information only about NMS stocks and options, broker-dealers that introduce or carry customer accounts trading in other assets classes are not included in these numbers.

[288] These broker-dealers are likely to be larger broker-dealers that have customers who are more informed traders. Lower-volume broker-dealers with fewer orders are not likely to have this type of customer.

for financial responsibility or operational capability for their subscribers.[289]

The Commission requests comment on whether its estimate that all NMS Stock ATSs operating qualified auctions would have standards for financial responsibility or operational capability for their subscribers is reasonable.

D. Burdens

1. Auction Messages

As discussed above, the estimated six national securities exchanges operating as open competition trading centers operating qualified auctions would be required to collect and provide the information necessary to generate auction messages in consolidated market data. These entities currently operate auctions for which messages are disseminated in their proprietary data feeds, and already provide other information regarding NMS stocks for dissemination in consolidated market data. The auction messages would be a new data element that the national securities exchanges would have to make available for inclusion in the dissemination of consolidated market data. Because the national securities exchanges currently collect and calculate data necessary to generate other elements of consolidated market data, and also currently provide auction information to subscribers of proprietary data, the requirements of Rule 615(c)(1) would likely impose minimal initial and ongoing burdens on these respondents, including any changes to their systems.

The Commission estimates that a national securities exchange would require an average of 220 initial burden hours of legal, compliance, information technology, and business operations personnel time to prepare and implement a system to collect and provide the information necessary to generate auction messages for dissemination in consolidated market data, at a monetized cost per exchange of $78,580.[290] And each national securities exchange would incur an annual average burden on an ongoing basis of 336 hours to collect and provide auction messages, at a monetized cost per exchange of $118,560.[291]

Proposed Rule 615(c)(1) would also require auction messages initiating qualified auctions held on NMS Stock ATSs operating as open competition trading centers to be provided for dissemination in consolidated market data. As discussed above, like national securities exchanges, FINRA already collects information from broker-dealers for dissemination in consolidated market data, and the addition of auction message information as a new data element would impose approximately the same burdens and costs on FINRA as for national securities exchanges.[292]

To qualify as an open competition trading center eligible to operate qualified auctions, an NMS Stock ATS would need to display quotations through an SRO display-only facility in compliance with Rule 610(b); display automated quotations disseminated in consolidated market data pursuant to Rule 603(b);[293] and provide trade reports identifying the NMS Stock ATS as the venue of execution that are disseminated in consolidated market data pursuant to Rule 603(b).[294] These ATSs would need to have systems in place to collect and calculate such information and transmit the information to FINRA for dissemination in consolidated market data. It is likely that NMS Stock ATSs that run qualified auctions would be operated by large, sophisticated broker-dealers that have in place systems that could be modified to collect and disseminate auction message information. The Commission estimates that the burdens and costs to these NMS Stock ATSs to modify their systems to also provide auction information for dissemination in consolidated data would be minimal, and would be the same as those for national securities exchanges and FINRA.[295]

The Commission estimates the initial total aggregate burden and cost for all 10 respondents would be 2,220 hours, at a monetized cost of $785,800,[296] and the ongoing total burden and cost would be 3,360 hours, at a monetized cost of $1.12 million.[297]

A summary of the initial and ongoing burdens and costs described above is set forth below:

TOTAL ESTIMATED BURDEN ASSOCIATED WITH PROVIDING AUCTION MESSAGES IN CONSOLIDATED MARKET DATA

	Respondents	Burden hours per respondent	Aggregate burden hours	Monetized cost per respondent	Aggregate monetized cost
Total Initial Burden	10	220	2,220	$78,580	$785,800
Total Ongoing Burden	10	336	3,360	118,560	1,185,600

The Commission requests comment on whether there would be different or additional burdens or costs for open competition trading centers to provide the information necessary to generate auction messages in consolidated market data. The Commission also requests comment on whether the burdens and costs for NMS Stock ATSs to provide the information necessary to generate auction messages in consolidated market data would be different from those for national securities exchanges.

[289] This estimate is based on a review of NMS Stock ATS disclosures on Form ATS–N.

[290] The Commission estimates the monetized initial burden for this requirement to be $78,580: (Compliance Manager at $344 for 105 hours) + (Attorney at $462 for 70 hours) + (Sr. Systems Analyst at $316 for 20 hours) + (Operations Specialist at $152 for 25 hours) = 220 initial burden hours, at a monetized cost of $78,580. Throughout this section VI.D, the Commission derived estimates for in-house personnel costs on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified to account for an 1,800-hour work-year and inflation, and multiplied by 5.35 to account for bonuses, firm size, employee benefits and overhead.

[291] The Commission estimates the monetized ongoing, annual burden for this requirement to be $118,560: (Compliance Manager at $344 for 192 hours) + (Attorney at $462 for 48 hours) + (Sr. Systems Analyst at $316 for 96 hours) = 336 initial burden hours, at a monetized cost of $118,560.

[292] *Supra* notes 290 and 291.

[293] The requirements of Rule 610(b) for trading centers that choose to display quotations in NMS stock are existing requirements under Regulation NMS, and the requirements of Rule 603(b) pertaining to the display of quotations from trading centers that qualify as automated trading centers, are existing requirements that are not modified by Proposed Rule 615 and the proposed new definitions under Rule 600 and do not constitute new collections of information.

[294] Proposed Rule 600(b)(64)(ii).

[295] *Supra* notes 290 and 291.

[296] The Commission estimates the monetized ongoing, annual burden for this requirement to be $785,800: $78,580 × (6 national securities exchange + 1 registered securities association + 3 NMS stock ATSs) = $785,800.

[297] The Commission estimates the monetized ongoing, annual burden for this requirement to be $1,185,600: $118,560 × (6 national securities exchange + 1 registered securities association + 3 NMS stock ATSs) = $1,185,600.

2. Identifying and Marking Segmented Orders

a. Policies and Procedures To Identify Segmented Orders

As discussed above, the 157 broker-dealers that would need to identify and mark orders to comply with paragraphs (e)(1) and (e)(2) of Proposed Rule 615 likely already would have policies and procedures to classify orders for compliance with SRO rules and other regulatory requirements, and would have access to the information that would enable them to identify orders as being for the account of a natural person or a group of related family members and to monitor the level of trading activity in the accounts of their customers, as well as systems and processes for marking orders.[298] For example, these broker-dealers either themselves collect data from their customers, or receive such information through an introducing broker for whom they are providing services. These broker-dealers will also be familiar with how to adapt their systems and processes to identify which customer accounts meet the proposed volume requirements that would cause their orders to meet the definition of segmented order in Proposed Rule 600(b)(89) and to accommodate the new order marks.

While most broker-dealers likely have capabilities to identify the characteristics of their customers' orders that would be necessary to identify orders as segmented orders, they would not have written policies and procedures regarding the identification of segmented orders, which would be a new classification for a subset of customer orders, as would be required by Proposed Rule 615(e)(1). The Commission estimates that, to initially comply with this obligation, broker-dealers would employ a combination of in-house and outside legal and compliance counsel to update existing policies and procedures.

Initial Burdens and Costs

The Commission estimates that each of the 157 broker-dealers that would be subject to the collection of information under Proposed Rule 615(e)(1) would incur an initial average internal burden of 40 hours for in-house legal and 10 hours for in-house compliance counsel to update existing policies and procedures to comply with paragraph (e)(1) of Proposed Rule 615, and an initial in-house burden of 5 hours each for a General Counsel and a Chief Compliance Officer to review and approve the updated policies and procedures, for a total of 60 burden hours, at a monetized cost of $28,800.[299] In addition, the Commission estimates a cost of $4,960 for outside counsel to review the updated policies and procedures on behalf of a broker-dealer.[300] The Commission therefore estimates the aggregate initial burden for originating brokers to be 9,420 burden hours [301] at a monetized cost of $4.52 million,[302] and the aggregate initial cost for outside counsel to be $778,720 to establish policies and procedures as required by Proposed Rule 615(e)(1).[303]

Ongoing Burdens and Costs

The Commission estimates that broker-dealers would review and update their policies and procedures for compliance with Proposed Rule 615 on an annual basis, and that they would perform the review and update using in-house personnel. The Commission estimates that each broker-dealer would annually incur an internal burden of twelve hours to review and update existing policies and procedures of 4 hours for legal personnel, 4 hours for compliance personnel, and 4 hours for business-line personnel at a monetized cost of $4,476.[304] The Commission therefore estimates an ongoing, aggregate burden for broker-dealers of 1,884 hours, at a monetized cost of $702,732.[305]

A summary of the initial and ongoing burdens and costs described above is set forth below:

TOTAL ESTIMATED OUTSIDE COSTS TO ESTABLISH POLICIES AND PROCEDURES TO IDENTIFY SEGMENTED ORDERS

	Respondents	Outside cost per respondent	Aggregate outside cost
Total Initial Outside Costs	157	$4,960	$778,720

TOTAL ESTIMATED BURDEN TO ESTABLISH AND MAINTAIN POLICIES AND PROCEDURES TO IDENTIFY SEGMENTED ORDERS

	Respondents	Burden hours per respondent	Aggregate burden hours	Monetized cost per respondent	Aggregate monetized cost
Total Initial Burden	157	60	9,420	$28,800	$4,521,600
Total Ongoing Burden	157	12	1,884	4,476	702,732

[298] *Supra* section IV.B.1 (discussing the definition of segmented order, which is designed to facilitate compliance and minimize the costs of compliance) and note 253 and accompanying text.

[299] The Commission estimates the monetized initial burden for this requirement to be: (Attorney at $462 for 40 hours) + (Compliance Counsel at $406 for 10 hours) + (Deputy General Counsel at $663 for 5 hours) + (Chief Compliance Officer at $589 for 5 hours) = 60 initial burden hours and a monetized cost of $28,800.

[300] The Commission's estimates of the relevant wage rates for outside legal services takes into account staff experience, a variety of sources including general information websites, and adjustments for inflation. The Commission estimates that the average hourly rate for legal services is $496/hour. This cost estimate is therefore based on the following calculation: (10 hours of review) × ($496/hour for outside counsel service) = $4,960 in outside counsel costs.

[301] This estimate is based on the following calculation: (60 burden hours of review per broker-dealer) × (157 broker-dealers) = 9,420 aggregate burden hours.

[302] This estimate is based on the following calculation: ($28,800 per broker-dealer) × (157 broker-dealers) = $4,521,600.

[303] This estimate is based on the following calculation: ($4,960 for outside costs per broker-dealer) × (157 broker-dealers) = $778,720 in outside counsel costs.

[304] The Commission estimates the monetized ongoing, annual burden for this requirement to be: (Attorney at $462 for 4 hours) + (Compliance Counsel at $406 for 4 hours) + (Intermediate Business Analyst at $251 for 4 hours) = 12 ongoing burden hours and $4,476.

[305] These estimates are based on the following calculations: (12 burden hours per broker-dealer) × (157 broker-dealers) = 1,884 aggregate ongoing burden hours; and $4,476 per broker-dealer × 157 broker-dealers = $702,732.

The Commission requests comment on whether there would be different or additional burdens or costs for originating brokers to establish and maintain written policies and procedures to identify segmented orders.

b. Identifying and Marking Segmented Orders

As discussed above, the Commission estimates that there are 157 broker-dealers that would need to mark segmented orders as such to comply with paragraph (e)(2) of Proposed Rule 615, and an additional 25 broker-dealers that would not be required to comply with the marking requirements of paragraph (e)(2) of Proposed Rule 615, but would be required to mark orders prior to routing as required by paragraph (f)(1) of Proposed Rule 615.[306]

Initial Burdens and Costs

For purposes of complying with Proposed Rule 615(e)(2), for an originating broker to identify whether a customer order meets the definition of ''segmented order'' and must be marked accordingly, a broker-dealer would first need to establish mechanisms to proactively and systematically identify which orders for NMS stocks are for the account of customers that are natural persons or held in a legal form on behalf of a natural person or group of related family members; and of those, which are orders for an account in which the average daily number of trades in NMS stocks was less than 40 in each of the six preceding months.[307] For purposes of this analysis, and as discussed above, the Commission believes that most broker-dealers already collect information about their customers' accounts, or receive information about customer accounts from an introducing broker, and would already have an existing technological infrastructure in place, and the Commission assumes that such infrastructure would need to be modified to effect compliance with Proposed Rule 615.

Acknowledging that costs and burdens may vary greatly according to the size or complexity of the broker-dealer and that some broker-dealers would implement the changes in-house, while others would engage a third party vendor. The Commission estimates that approximately one third of the 157 broker-dealers (or 52) would implement the changes in-house, while the remaining 105 would engage a third-party vendor. The Commission expects that the modification of a broker-dealer's existing technology performed in-house would require 260 hours at a monetized cost of $95,480.[308] The Commission estimates that the burden for a broker-dealer engaging a third-party to implement the modifications would be 50 hours at a monetized cost of $18,385,[309] and $35,000 for the third-party service provider to perform the necessary work.[310] The aggregate burden for those broker-dealers to modify existing technology to identify segmented orders that perform the modification in-house would therefore be 13,520 burden hours, at a monetized cost of $4,964,960;[311] and the aggregate costs and burdens for those broker-dealers employing a third-party service provider would be $3,675,000[312] and 5,250 burden hours, at a monetized cost of $1,930,425.[313]

For purposes of compliance with Proposed Rule 615(f)(1), a segmented order received by a routing broker-dealer would already have been identified as such by the originating broker pursuant to Proposed Rule 615(e)(2). Like originating broker-dealers, these 25 broker-dealers, would however, need to modify their systems to enable them to mark orders as segmented orders prior to routing such orders to a routing destination.

The Commission estimates that the 157 originating brokers and the additional 25 routing broker-dealers would each incur ongoing burdens to mark orders as ''segmented orders'' (and as applicable to communicate an originating broker's certification), which are discussed further below, as well as initial, one-time technology project costs to update their existing order marking systems. The Commission estimates the initial one-time technology project costs for originating brokers to add the ''segmented order'' and certification marks to their existing marking systems to comply with paragraph (e)(2) of Proposed Rule 615, and the initial one-time technology project costs for routing broker-dealers to add the ''segmented order'' and certification marks to their existing marking systems to comply with paragraph (f)(1) of Proposed Rule 615, to be $170,000 per broker-dealer,[314] for a an aggregate total cost of $30.94 million.[315]

Ongoing Burdens and Costs

The Commission estimates that a total of approximately 2.2 billion ''segmented orders'' would be entered annually.[316] This would make the average number of annual ''segmented order'' order marks by each of the 182 broker-dealers to be 11.9 million.[317] Each instance of marking an order as a ''segmented order,'' and as applicable to communicate that an originating broker has certified that it has established, maintained, and enforced the requisite policies and procedures to assure that its identity will not be disclosed, is estimated to take between approximately 0.00001158 and 0.000139 hours (0.042 and 0.5 seconds) to

[306] As discussed above, these broker-dealers would also mark orders, as applicable, to communicate that an originating broker certifies that it established, maintained, and enforced the requisite policies and procedures to assure that its identity would not be disclosed.

[307] *Supra* sections IV.B.1 and IV.E.

[308] The Commission estimates the monetized initial burden for this requirement to be: (Sr. Programmer at $368 for 160 hours) + (Sr. Database Administrator at $379 for 40 hours) + (Sr. Business Analyst at $305 for 40 hours) + (Attorney at $462 for 20 hours) = 260 initial burden hours and a monetized cost of $95,480.

[309] The Commission estimates the monetized initial burden for this requirement to be: (Sr. Business Analyst for 15 hours at $305 per hour) + (Compliance Manager for 20 hours at $344 per hour) + (Attorney for 15 hours at $462 per hour) = 50 initial burden hours at a monetized cost of $18,385.

[310] The Commission's estimate is based on prior estimates for the cost of systems modifications to capture additional order handling information. Securities Exchange Act Release No. 84528 (Nov. 2, 2018) 83 FR 58338 (Nov. 19, 2018) at 58383, n.492 and accompanying text.

[311] This cost estimate is based on the following calculation: (260 initial burden hours at a monetized cost of $95,480) × (52 broker-dealers) = 13,520 initial burden hours and a monetized cost of $4,964,960.

[312] This cost estimate is based on the following calculation: ($35,000 in third-party service provider costs per broker-dealer) × (105 broker-dealers) = $3,675,000 in aggregate outside third-party provider costs.

[313] The Commission estimates the aggregate monetized initial burden for this requirement to be: (50 initial burden hours at a monetized cost of $18,385) × (105 broker-dealers) = 5,250 initial burden hours and a monetized cost of $1,930,425.

[314] This estimate is based on industry sources of the cost to program systems to add a new marking classification and adjusted for inflation. *See, e.g.,* Securities Exchange Act Release No. 94313 (Feb. 25, 2022), 87 FR 14950, 14976 (Mar. 16, 2022) (proposing amendments to Regulation SHO) (''Regulation SHO Amendment Proposal'').

[315] This cost estimate is based on the following calculation: ($170,000 system project costs per broker-dealer) × (157 originating broker-dealers + 25 routing broker-dealers) = $30,940,000 in aggregate system project costs.

[316] This estimate is based on CAT data for individual investor stock orders handled by wholesalers during Q1 2022. *See* Tables 7 and 10, *infra,* sections VII.B.4 and VII.B.5 (showing a total of approximately 271,310,000 orders handled during the period). Because as discussed in section VII.B.4 below, this number excludes certain orders, it likely significantly understates the total number of individual investor orders handled by wholesalers. We have therefore doubled the number for purposes of our estimate, and multiplied by four to arrive at an estimated annual number of segmented orders of 2,170,480,000.

[317] This figure was calculated as follows: 2,170,480,000 ''segmented orders'' orders requiring order marking divided by 182 broker-dealers.

complete.[318] Thus, it would take each of the 182 broker-dealers between approximately 138 to 1,658 hours to mark segmented orders annually;[319] and the Commission estimates the aggregate burden to be between approximately 25,134 and 301,697 hours.[320] This estimate is based on a number of factors, including: previously estimated burdens for the current marking requirements of other Federal securities rules and regulations;[321] that broker-dealers should already have the necessary mechanisms and procedures in place and already be familiar with processes and procedures to comply with other marking requirements under Federal securities rules and regulations (such as the requirements of Rule 200(g) of Regulation SHO); and that broker-dealers should be able to continue to use the same or similar mechanisms, processes and procedures to comply with Proposed Rule 615.

A summary of the estimated initial and ongoing burdens and costs described above is set forth below:

TOTAL ESTIMATED INITIAL BURDENS AND COSTS TO IDENTIFY SEGMENTED ORDERS

	Respondents	Burden hours	Monetized cost per respondent	Third-party cost	Aggregate burden hours	Aggregate cost
Initial Burden to Modify In-house	52	260	$95,480		13,520	$4,964,960
Initial In-house Burden in connection with use of Third-party	105	50	18,385		5,250	1,930,425
Outside Costs for Third-party Services	105			$35,000		3,675,000

TOTAL ESTIMATED INITIAL SYSTEM MODIFICATION COSTS TO MARK SEGMENTED ORDERS

	Respondents	Cost per respondent	Aggregate cost
Initial Technology Costs	182	$170,000	$30,940,000

TOTAL ESTIMATED ONGOING BURDEN TO MARK SEGMENTED ORDERS

Originating brokers with individual accounts and routing brokers	Annual segmented orders	Annual segmented orders per originating broker	Estimated burden hours per segmented order	Total annual industry burden hours	Annual burden per originating broker
182	2,170,480,000	11,925,714	0.00001158 to 0.000139	25,134 to 301,697	138.10 to 1,657.68.

The Commission requests comment on whether there would be different or additional burdens or costs for brokers to identify and mark segmented orders as such. Would the burdens and be lower or higher? Are broker-dealers more likely to perform these function in-house, or use third-party service providers? Should the estimated cost to employ a third-party service provider be lower or higher?

3. Originating Broker Certification

Those originating brokers that do not want their identity to be disclosed in the auction message initiating a qualified auction would be required to establish, maintain and enforce written policies and procedures reasonably designed to assure that the identity of the originating broker will not be disclosed, directly or indirectly, to any person that potentially could participate in the qualified auction or otherwise trade with the segmented order. The Commission believes that originating brokers choosing to make certifications referred to in Proposed Rule 615(c)(1)(iii) would be familiar with how to adapt their systems and processes to assure that the identity of the originating broker is not disclosed, in compliance with the requirements of Proposed Rule 615(e)(3). The Commission acknowledges that policies and procedures may vary greatly by broker-dealer, given the differences in size and the complexity of broker-dealer business models. Accordingly, the Commission believes that the need to update policies and procedures, as well as the ongoing compliance costs, might also vary greatly.

Initial Burdens and Costs

The Commission estimates that there would be 20 broker-dealers that would chose to make a Proposed Rule 615(c)(1)(iii) certification. To initially comply with the obligation to establish written policies and procedures to comply with Proposed Rule 615(e)(3), broker-dealers would employ a combination of in-house and outside

[318] The upper end of this estimate—0.5 seconds—is based on the same time estimate for marking sell orders ''long'' or ''short'' under Rule 200(g) of Regulation SHO. *See* Regulation SHO Amendment Proposal, *supra* note 314, 87 FR at 14975 (citing Securities Exchange Act Release No. 50103 (July 28, 2004), 69 FR 48008, 48023 (Aug. 6, 2004) (''Regulation SHO Adopting Release''). *See also* Securities Exchange Act Release No. 48709 (Oct. 28, 2003) 68 FR 62972, 63000 n. 232 (Nov. 6, 2003) and Securities Exchange Act Release No. 59748 (Apr. 10, 2009), 74 FR 18042, 18089 (Apr. 20, 2009) (providing the same estimate—0.5 seconds—for marking sell orders ''short exempt'' under Rule 200(g) of Regulation SHO)). The lower end of this estimate—0.042 seconds—is based on a Commission estimate that computing speeds are twelve times faster today than they were in 2007. Regulation SHO Amendment Proposal, *supra* note 314, 87 FR at 14975, 15000 (stating that according to an industry performance evaluation for server processors, computing speed has increased by at least 12 times since 2007 (the earliest year in the data and citing Year on Year Performance (for server processors), PassMark Software Pty. Ltd., *available at https://www.cpubenchmark.net/year-on-year.html*).

[319] These figures were calculated as follows: (11,925,714 ''segmented orders'' orders per broker-dealer) × (0.00001158 hours) = 138.10 hours; and (11,925,714 ''segmented orders'' orders per broker-dealer) × (0.000139 hours) = 1,657.67 hours.

[320] These figures were calculated as follows: (2,170,480,000 ''segmented orders'' orders requiring order marking) × (0.00001158 hours) = 25,134.16 hours; and (2,170,480,000 ''segmented orders'' orders) × (0.000139 hours) = 301,696.70 hours.

[321] *See, e.g.,* Regulation SHO Amendment Proposal, *supra* note 314, 87 FR at 14975 (discussing estimated marking requirements to comply with Rule 200(g) of Regulation SHO which requires broker-dealers to mark sell orders ''long,'' ''short,'' or ''short exempt'').

legal and compliance counsel to update their existing policies and procedures. The Commission estimates that each of these 20 broker-dealers would incur a one-time average internal burden of 40 hours for in-house legal and 10 hours for in-house compliance counsel to update existing policies and procedures to comply with paragraph (e)(3) of Proposed Rule 615, and a one-time burden of 5 hours each for a General Counsel and a Chief Compliance Office to review and approve the updated policies and procedures, for a total of 60 burden hours.[322] In addition, the Commission estimates a cost of $4,960 for outside counsel to review the updated policies and procedures on behalf of a broker-dealer.[323] The Commission therefore estimates the aggregate initial burden for originating brokers to be 1,200 burden hours [324] at a monetized cost of $576,000,[325] and the aggregate total cost for outside counsel to be $99,200 to establish policies and procedures as required by Proposed Rule 615(e)(3).[326]

Ongoing Burdens and Costs

The Commission estimates that broker-dealers would review and update their policies and procedures for compliance with Proposed Rule 615 on an annual basis, and that they would perform the review and update using in-house personnel. The Commission estimates that each broker-dealer would annually incur an internal burden of twelve hours to review and update existing policies and procedures: four hours for legal personnel, four hours for compliance personnel, and four hours for in-line business personnel, at a monetized cost of $4,476.[327] The Commission therefore estimates an ongoing, aggregate burden for broker-dealers of approximately 240 hours [328] and a monetized cost of $89,520.[329] The ongoing burden to communicate certifications is included with the cost for ''segmented order'' marking discussed above in section VI.D.2.b. A summary of the estimated initial and ongoing burdens and costs described above in this section VI.D.3 are set forth below:

TOTAL ESTIMATED OUTSIDE COSTS TO ESTABLISH POLICIES AND PROCEDURES REASONABLY DESIGNED TO ASSURE THAT THE ORIGINATING BROKER OF A SEGMENTED ORDER WILL NOT BE DISCLOSED

	Respondents	Outside cost per respondent	Outside aggregate cost
Initial Outside Costs	20	$4,960	$99,200

TOTAL ESTIMATED BURDEN TO ESTABLISH AND MAINTAIN POLICIES AND PROCEDURES REASONABLY DESIGNED TO ASSURE THAT THE ORIGINATING BROKER OF A SEGMENTED ORDER WILL NOT BE DISCLOSED

	Respondents	Burden hours per respondent	Aggregate burden hours	Monetized cost per respondent	Aggregate monetized cost
Initial Burden	20	60	1,200	$28,800	$576,000
Ongoing Burden	20	12	160	4,476	89,520

The Commission requests comment on whether there would be different or additional burdens or costs for originating brokers to establish and maintain written policies and procedures reasonably designed to assure that its identity will not be disclosed. For example, do brokers have existing policies and procedures related to ensuring confidentiality in other contexts that could be expanded upon or are there are additional burdens and costs associated with review of a broker's internal systems that should be factored into the Commission's estimate? Are originating broker's likely to perform the function of establishing and maintaining these policies and procedures in-house or would they employ third-party service providers, such as outside counsel? Would originating brokers also have costs to modify their internal systems to prevent disclosure of the identity of the originating broker in support of a Proposed Rule 615(c)(1)(iii) certification or other costs in support of such a certification?

4. NMS Stock ATS Policies and Procedures for Excluding Subscribers

The Commission believes that NMS Stock ATSs—in particular those whose broker-dealer operators are large, multi-service broker-dealers—generally have,[330] and likely maintain in writing, standards of financial responsibility and operational capability for subscribers to their system, and also generally have policies and procedures for admitting new persons as subscribers or limiting access to services. NMS Stock ATSs are not, however, currently required to have written policies and procedures for granting access to their trading system, unless they meet the fair access threshold of Rule 301(b)(5).[331] NMS Stock ATSs are, however, required to disclose on Form ATS–N whether there are any conditions the ATSs requires a person to satisfy to become a subscriber and whether there are any limitations

[322] The Commission estimates the monetized ongoing, annual burden for this requirement to be: (Attorney at $462 for 40 hours) + (Compliance Counsel at $406 for 10 hours) + (Deputy General Counsel at $663 for 5 hours) + (Chief Compliance Officer at $589 for 5 hours) = 60 initial burden hours and $28,800.

[323] This cost estimate is based on the following calculation: (10 hours of review) × ($496 per hour for outside counsel service) = $4,960 in outside counsel costs.

[324] This estimate is based on the following calculation: (60 burden hours of review per broker-dealer) × (20 broker-dealers) = 1,200 aggregate burden hours.

[325] This estimate is based on the following calculation: ($28,800 per broker-dealer) × (20 broker-dealers) = $576,000.

[326] This estimate is based on the following calculation: ($4,960 for outside costs per broker-dealer) × (20 broker-dealers) = $99,200 in outside counsel costs.

[327] The Commission estimates the monetized ongoing, annual burden for this requirement to be: (Attorney at $462 for 4 hours) + (Compliance Counsel at $406 for 4 hours) + (Compliance Counsel at $406 for 4 hours) + (Intermediate Business Analyst at $251 for 4 hours) = 12 ongoing burden hours and $4,476.

[328] This estimate is based on the following calculation: (12 burden hours of review per broker-dealer) × (20 broker-dealers) = 240 aggregate burden hours.

[329] The Commission estimates the monetized ongoing, annual burden for this requirement to be: ($4,476 per broker-dealer) × 20 broker-dealers = $89,520.

[330] This belief is based on a review of NMS Stock ATS disclosures on Form ATS–N.

[331] *See supra* note 214 and accompanying text. As discussed above, currently only one NMS Stock ATS discloses that it meets the fair access threshold. *Supra* section IV.B.2.b.

on access to services.[332] The Commission therefore estimates that the burdens and cost for an NMS Stock ATS to comply with Proposed Rule 600(b)(64)(ii)(D) to qualify as an open competition trading center eligible to operate a qualified auction pursuant to Proposed Rule 615(d)(1) to be minimal. The Commission acknowledges that policies and procedures may vary greatly by NMS Stock ATS, given the differences in size and the complexity of business models. Accordingly, the Commission would expect that the need to update policies and procedures, as well as the ongoing compliance costs, might also vary. As discussed above, the Commission estimates that three NMS Stock ATSs may determine to modify their systems to operate as open competition trading centers and operate qualified auctions. To comply with this obligation, these NMS Stock ATSs would likely employ in-house legal and compliance counsel.[333]

Initial Burdens and Costs

For NMS Stock ATSs that have not recorded in writing their policies and procedures to prohibit any registered broker or dealer from being or becoming a subscriber, or impose conditions upon such a subscriber, that does not meet the standards of financial responsibility or operational capability as are prescribed by such written policies and procedures, the Commission estimates the initial burden and cost for an NMS Stock ATS that choses to comply with Proposed Rule 600(b)(64)(ii)(D) to be minimal. The Commission estimates that the initial burden for an NMS Stock ATS to review its existing policies and procedures for consistency with the proposed rule, to make modifications as appropriate, and to put the policies and procedures in writing would be approximately 8 hours, at a monetized cost of $3,106.[334] Thus, the Commission estimates the aggregate initial burden to be 24 hours, at a monetized cost of $9,318.[335]

Ongoing Burdens and Costs

For purposes of this analysis, the Commission has assumed that NMS Stock ATSs would review and update their policies and procedures for compliance with Proposed Rule 600(b)(64)(ii) on an annual basis, and that they would perform the review and update using in-house personnel. The Commission estimates that each NMS Stock ATS would annually incur an internal burden of 8 hours to review and update existing policies and procedures, made up of four hours for legal personnel and four hours for compliance personnel, at a monetized cost of $2,680.[336] The Commission therefore estimates an ongoing, aggregate burden for NMS Stock ATSs of approximately 24 hours at a monetized cost of $8,040.[337]

A summary of the estimated initial and ongoing burdens and costs described above is set forth below:

TOTAL ESTIMATED BURDEN TO ESTABLISH AND MAINTAIN POLICIES AND PROCEDURES TO EXCLUDE SUBSCRIBERS BASED ON FINANCIAL RESPONSIBILITY OR OPERATIONAL CAPABILITY STANDARDS

	Respondents	Burden hours per respondent	Aggregate burden hours	Monetized cost per respondent	Aggregate monetized cost
Initial Burden	3	8	24	$3,106	$9,318
Ongoing Burden	3	8	24	2,680	8,040

The Commission is requesting comment on whether NMS Stock ATSs that would operate as open competition trading centers operating qualified auctions would have different or additional burdens and costs to maintain written policies and procedures to exclude a broker-dealer subscriber, or impose conditions on such a subscriber, that does not meet standards of financial responsibility and operational capability.

E. Collection of Information Is Mandatory

The collections of information required by Proposed Rule 615(c)(1) would be mandatory for national securities exchanges and NMS Stock ATSs that operate qualified auctions, and the one national securities association. The collections of information required by Proposed Rule 615(e)(1) and (2) would be mandatory for broker-dealers that meet the proposed definition of ''originating broker.'' The collection of information required by Proposed Rule 615(e)(3) would be mandatory for originating brokers that communicate a certification to an open competition trading center pursuant to Proposed Rule 615(c)(1). The collection of information required by Proposed Rule 615(f)(1) would be mandatory for broker-dealers that receive and route segmented orders. The collection of information required by Proposed Rule 615(d)(1), in conjunction with Proposed Rule 600(b)(64)(ii)(D), would be mandatory for NMS Stock ATSs that operate as open competition trading centers and prohibit any broker or dealer from becoming a subscriber, or impose conditions upon such a subscriber, based on standards of financial responsibility or operational capability.

F. Confidentiality of Information Collected

The Commission would not typically receive confidential information as a result of Proposed Rule 615 or the related proposed amendments. To the

[332] *See supra* note 214.

[333] The Commission based its estimate on the burden hour estimate provided in connection with the adoption of amendments to Rule 301(b)(10), which as amended requires all ATSs to maintain in writing their safeguards and procedures to protect subscribers' confidential trading information, as well as the oversight procedures to ensure such safeguards and procedures are followed. *See* ATS–N Adopting Release, *supra* note 278, 83 FR at 38868.

[334] This estimate is based on the following: (Compliance Attorney at $406 for 7 hours) + (Sr. Compliance Examiner at $264 for 1 hour) = 8 burden hours and a monetized cost of $3,106.

[335] These estimates are based on the following calculations: (8 burden hours per NMS Stock ATS) × (3 NMS Stock ATSs) = 24 burden hours; and ($3,106 per NMS Stock ATS) × (3 NMS Stock ATSs) = $9,318.

[336] The Commission estimates the monetized ongoing burden for this requirement to be: (Compliance Attorney at $406 for 4 hours) + (Sr. Compliance Examiner at $264 for 4 hours) = 8 initial burden hours and a monetized cost of $2,680).

[337] These estimates are based on the following calculations: (8 burden hours per NMS Stock ATS) × (3 NMS Stock ATSs) = 24 burden hours; and at ($2,680 per NMS Stock ATS) × 3 NMS Stock ATSs = $8,040.

extent that the Commission receives—through its examination and oversight program, through an investigation, or by some other means records or disclosures from a broker-dealer that relate to or arise from Proposed Rule 615 or the related amendments that are not publicly available, such information would be kept confidential, subject to the provisions of applicable law.[338]

1. Auction Messages

As discussed above, auction messages initiating a qualified auction would be publicly disseminated in consolidated market data. These messages would include the identity of the open competition trading center, symbol, side, size, limit price, and identify of the originating broker, unless the originating broker made the certification specified in paragraph (c)(1)(iii) of Proposed Rule 615.

2. Identifying and Marking Segmented Orders

The identification of an order as a segmented order would be made available to any destination to which the order has been routed. The information would also be available to the Commission and its staff, and to other regulators.

3. Originating Broker Certification

If an originating broker determines to make a certification referred to in paragraph (c)(1)(iii) of Proposed Rule 615, such certification must be communicated to the open competition trading center operating the applicable qualified auction, and any interim broker-dealer routing a segmented order associated with a certification would also need to be made aware of the certification for purposes of communicating the certification to the open competition trading center. The information would also be available to the Commission and its staff, and to other regulators. Also, the originating broker's written policies and procedures pursuant to Proposed Rule 615(e)(3) would be available to the Commission and its staff, and to other regulators.

4. NMS Stock ATS Policies and Procedures To Exclude Subscribers

An NMS Stock ATSs' written policies and procedures to comply with Proposed Rule 600(b)(64)(ii)(D), if necessary, to qualify as an open competition trading center eligible to operate a qualified auction pursuant to Proposed Rule 615(d)(1) would be available to the Commission and its staff, and to other regulators. As described above, NMS Stock ATSs are also required to publicly disclose certain information on Form ATS–N.[339]

G. Retention Period for Recordkeeping Requirements

Proposed Rule 615 and the related amendments, would not establish any new record retention requirements. National securities exchanges and national securities associations are required to retain records and information pursuant to 17 CFR 240.17a–1 (''Rule 17a–1''), and broker-dealers are required to retain records and information pursuant to 17 CFR 240.17a–4 (''Rule 17a–4'').

H. Request for Comments

The Commission requests comment on whether the estimates for burden hours and costs are reasonable. Pursuant to 44 U.S.C. 3506(c)(2)(B), the Commission solicits comments to: (1) evaluate whether the proposed collections of information are necessary for the proper performance of the functions of the Commission, including whether the information would have practical utility; (2) evaluate the accuracy of the Commission's estimate of the burden of the proposed collections of information; (3) determine whether there are ways to enhance the quality, utility, and clarity of the information to be collected; and (4) determine whether there are ways to minimize the burden of the collections of information on those who are to respond, including through the use of automated collection techniques or other forms of information technology.

Persons submitting comments on the collection of information requirements should direct them to the Office of Management and Budget, Attention: Desk Officer for the Securities and Exchange Commission, Office of Information and Regulatory Affairs, Washington, DC 20503, and should also send a copy of their comments to Secretary, Securities and Exchange Commission, 100 F Street NE, Washington, DC 20549–1090, with reference to File Number S7–31–22. Requests for materials submitted to OMB by the Commission with regard to this collection of information should be in writing, with reference to File Number S7–31–22 and be submitted to the Securities and Exchange Commission, Office of FOIA/PA Services, 100 F Street NE, Washington, DC 20549–2736. As OMB is required to make a decision concerning the collection of information between 30 and 60 days after publication, a comment to OMB is best assured of having its full effect if OMB receives it within 30 days of publication.

[338] *See, e.g.,* 5 U.S.C. 552 *et seq.;* 15 U.S.C. 78x (governing the public availability of information obtained by the Commission).

[339] *Supra* note 278.

VII. Economic Analysis

A. Introduction

The Commission is mindful of the economic effects that may result from Proposed Rule 615, and the amendments proposed in this release (the ''Proposal''), including the benefits, costs, and the effects on efficiency, competition, and capital formation. Exchange Act section 3(f) requires the Commission, when it is engaged in rulemaking pursuant to the Exchange Act and is required to consider or determine whether an action is necessary or appropriate in the public interest, to consider, in addition to the protection of investors, whether the action will promote efficiency, competition, and capital formation.[340] In addition, Exchange Act section 23(a)(2) requires the Commission, when making rules pursuant to the Exchange Act, to consider among other matters the impact that any such rule would have on competition and not to adopt any rule that would impose a burden on competition that is not necessary or appropriate in furtherance of the purposes of the Exchange Act.[341] The following economic analysis identifies and considers the costs and benefits—including the effects on efficiency, competition, and capital formation—that may result from the Proposal.

Investors participate in capital markets to save for the future, to diversify, and to maximize returns given a desired level of risk, among other reasons. This participation can involve both trades based on information and trades based on liquidity needs. Many individuals participate indirectly in equity markets, such as through mutual funds or through pension funds. However, many individuals participate directly in equity markets, and this direct participation has grown in recent years.[342] While some of this direct participation may be transitory, forces operating over the long run, such as technological improvements, may lead the trend to continue.

This increase in participation, coming on top of various other trends discussed below, motivates concern over the current isolation of retail orders. At present, the vast majority of retail orders (over 90% of marketable NMS stock orders) are routed to wholesalers, where they are frequently executed in isolation, on a captive basis.[343] This execution is subject to competitive forces that apply at the level of average execution quality. Execution of these orders is not subject to order-by-order competition that occurs when order interactions are subject to exchange protocols. The empirical analysis below suggests that this results in suboptimal execution quality compared to an alternative market structure in which the marketable orders of individual investors were subject to order-by-order competition.[344] While wholesalers generally achieve price improvement relative to the NBBO, Commission analysis indicates that there is the potential for individual investors to receive additional price improvement in line with the low adverse selection risk of individual investor order flow. While acknowledging there is substantial uncertainty in the eventual outcome, the Commission estimates that qualified auctions as designed by the Proposal would result in additional price improvement for the marketable orders of individual investors that could reduce the average transactions costs of these orders by 0.86 basis points (''bps'') to 1.31 bps.[345] The Commission estimates that segmented orders that would be eligible to be included in qualified auctions could account for 7.3% [346] to 10.1%[347] of total executed dollar volume. Given this estimate, the Commission preliminarily estimates that the Proposal could potentially result in a total average annual savings in individual investor transaction costs ranging from $1.12 billion to $2.35 billion.[348] These estimated gains would be generated primarily through increased competition to supply liquidity to marketable orders of individual investors, which in turn would lower transaction costs for individual investors, potentially enhance order execution quality for institutional investors, and improve price discovery. More generally, it would broaden the set of market participants that directly interact with individual investor orders of NMS stocks.[349] For example, Commission analysis indicates that there is often liquidity available at the NBBO midpoint on exchanges or NMS Stock ATSs when a wholesaler executes the marketable orders of individual investors at prices less favorable (for the customer) than the NBBO midpoint.[350] Qualified auctions would act as a coordination mechanism and make the submitters of these resting midpoint orders aware there was an individual investor order they could potentially trade with. By increasing competition and enhancing the direct exposure of individual investor orders to a broader spectrum of market participants, the Proposal would help achieve the objectives for an NMS set forth in section 11A of the Exchange Act.[351]

The Proposal could have additional benefits with respect to trading costs, liquidity, and capital formation, though the Commission acknowledges that these are uncertain. The large

[340] *See* 15 U.S.C. 78c(f).

[341] *See* 15 U.S.C. 78w(a)(2).

[342] *See, e.g.,* SIFMA Insights, *Gauging the New Normal for Volatility, Volumes, Market Levels & Retail Investor Participation* (May 2021), *available at https://www.sifma.org/wp-content/uploads/2021/05/SIFMA-Insights-Market-Structure-Survey-FINAL-FOR-WEB.pdf*; *see also* Jennifer J. Schulp, *GameStop and the Rise of Retail Trading,* 41 Cato J. 511 (2021). For example, one study estimates that retail market share has increased from around 23% (as a percentage of share volume) in Jan. 2020 to around 34% by July 2021; *see* Rosenblatt Securities, *How Can the Buy Side Interact with Retail Flow?* (Feb. 14, 2022), *available at https://www.rblt.com/market-reports/how-can-the-buy-side-interact-with-retail-flow*.

[343] *See* analysis in *infra* Table 3. In the current market structure, retail brokers provide wholesalers with large blocks of orders, leaving it to the discretion of wholesalers how to execute each order, consistent with their best execution responsibilities. Broker-dealers are required to provide best execution for customer orders, both pursuant to common law and FINRA rules. *See* discussion of broker-dealer best execution responsibilities in *supra* section III.B.2. The obligation for wholesalers to provide best execution is required under FINRA Rule 5310 (Best Execution and Interpositioning). *See also supra* note 133. The Commission is also separately proposing a new rule addressing the best execution obligations of broker-dealers. *See* Regulation Best Execution Proposal, *supra* note 130. The Commission encourages commenters to review that proposal to determine whether it might affect their comments on this proposal.

[344] *See infra* section VII.B.4 for analysis and discussion of the potential adverse execution quality effects from the isolation of individual investor marketable orders.

[345] *See* analysis in Table 19 and corresponding discussion in *infra* section VII.C.1.b. This estimate accounts only for potential changes in individual order transaction costs and assumes the PFOF wholesalers currently pay to retail brokers would be converted into additional price improvement for the individual investor order, and does not include costs that may arise in the form of potential increases in (or the return of) commissions retail brokers charge to individual investors or other reductions in the services that retail brokers currently offer. *See infra* note 514 for further discussion.

[346] *See infra* note 533.

[347] *See infra* note 535.

[348] *See* analysis in Table 19 and corresponding discussion in *infra* section VII.C.1.b.

[349] As discussed above, Proposed Rule 615 covers only NMS stocks, and as such, the economic analysis includes quantitative and qualitative analysis of only NMS stocks.

[350] Commission analysis of CAT data in *infra* Table 20 found that, on average, 51% of the shares of individual investor marketable orders internalized by wholesalers are executed at prices less favorable than the NBBO midpoint. Out of these individual investors shares that were executed at prices less favorable than the midpoint, on average, 75% of these shares could have hypothetically executed at a better price against the non-displayed liquidity resting at the NBBO midpoint on exchanges and NMS Stock ATSs. *See infra* section VII.C.1.b for further discussion on the analysis in Table 20.

[351] *See* discussion in *supra* section III.A.

percentage of individual investor orders executed off-exchange confers a substantial competitive advantage on wholesalers and other market makers with a significant presence both on and off-exchange, as they observe order flow more quickly and in a more granular fashion than others. This advantage contributes to asymmetric information and increased adverse selection on exchanges. Such adverse selection may reduce market quality for all participants and may ultimately reduce efficiency and lower capital formation.

The Commission acknowledges considerable uncertainty in the costs that would arise from Proposed Rule 615, due to whether the current market practice of routing through wholesalers would persist. First, the Proposal would likely cause wholesalers and some retail brokers to incur significant adjustment costs to their operations, as well as a possible decline in profitability. The Proposal could also result in costs to individual investors, such as some retail brokers potentially resuming charging commissions for NMS stock trades, although the likelihood of this may be low.[352] There may also be an increase in trading costs for retail broker customers that carry greater adverse selection risks and individual investors whose orders would not meet the definition of a segmented order because they averaged 40 or more daily trades in NMS stocks over the six preceding calendar months.[353] Retail brokers could also experience costs from wholesalers reducing the amount of PFOF they pay to retail brokers or from reducing or charging for the order handling services they offer to retail brokers, which could ultimately be passed on to individual investors.

Open competition trading centers would also face costs associated with creating qualified auctions, as would broker-dealers and trading centers that would incur costs related to establishing policies and procedures for identifying and handling segmented orders and identifying the originating retail brokers that submit segmented orders.[354] There would also be compliance costs faced by the respective NMS plans and FINRA to update the consolidated market data feed and ADF to broadcast qualified auction messages. There may also be a decrease in displayed liquidity if qualified auctions attract liquidity away from exchange Limit Order Books (''LOBs''). However, because the majority of individual investor orders are already segmented from exchange LOBs, there is the potential that the effect of qualified auctions on LOB liquidity may not be significant.[355]

The Commission recognizes that there would likely be significant competitive effects associated with the introduction of qualified auctions as mandated by Proposed Rule 615. Qualified auctions could reduce wholesaler market share for the execution of the orders of individual investors, which could result in the transfer of revenue and profit from wholesalers to other market participants that end up supplying more liquidity to the marketable orders of individual investors. Proposed Rule 615 could also affect competition in the market for trading services by enhancing the competitive position of exchanges and ATSs that operate qualified auctions relative to wholesalers as well as exchanges and ATSs that do not meet the criteria to operate qualified auctions. The introduction of qualified auctions would likely lead to a reduction of PFOF in equity markets, which in turn may weaken the competitive position of retail brokers that are dependent on PFOF revenue but strengthen the competitive position of retail brokers that are not. In addition, Proposed Rule 615 could also increase competition for market access among routing broker-dealers if the competitive position of wholesalers declines, and retail brokers that had previously relied on wholesalers for routing services, choose to route their own orders to qualified auctions.

The Commission has considered the economic effects of the Proposal and wherever possible, the Commission has quantified the likely economic effects of the Proposal. The Commission is providing both a qualitative assessment and quantified estimates of the potential economic effects of the Proposal where feasible. The Commission has incorporated data and other information to assist it in the analysis of the economic effects of the Proposal. However, as explained in more detail below, because the Commission does not have, and in certain cases does not believe it can reasonably obtain, data that may inform the Commission on certain economic effects, the Commission is unable to quantify certain economic effects. Further, even in cases where the Commission has some data, quantification is not practicable due to the number and type of assumptions necessary to quantify certain economic effects, which render any such quantification unreliable. The Commission's inability to quantify certain costs, benefits, and effects does not imply that the Commission believes such costs, benefits, or effects are less significant. The Commission requests that commenters provide relevant data and information to assist the Commission in quantifying the economic consequences of the Proposal.

B. Baseline

The baseline against which the costs, benefits, and the effects on efficiency, competition, and capital formation of the Proposal are measured consists of the existing routing practices and execution quality for the marketable orders of individual investors, the current state of interactions between institutional investors and the orders of individual investors, and the current business practices of retail brokers. These aspects of the baseline are framed by the statutory and regulatory baseline described above.[356]

[352] *See* discussion of potential changes in retail broker commissions in *infra* section VII.C.2.b.ii.

[353] *See supra* note 186 and corresponding text discussing the definition of ''segmented order.''

[354] If NMS Stock ATSs opted to operate qualified auctions, they may also incur costs to update their business models and systems in order to meet the requirements to be an open competition trading center. *See infra* section VII.C.2.e.

[355] *See* discussion on the effects of the Proposal on exchange LOB liquidity in *infra* section VII.C.2.g.

[356] The regulatory baseline includes the changes to the current arrangements for consolidated market data in the MDI Rules; but those amendments have not been implemented, so they likely have not affected market practice. *See supra* section III.B.1 and *infra* section VII.B.7. Where implementation of the changes may affect certain numbers in the baseline, the description of the baseline below notes those effects.

Retail brokers route most of their customers' marketable order flow to wholesalers.[357] Wholesalers do not typically directly charge retail brokers for their order routing and execution services. In fact, they may pay some retail brokers for the opportunity to handle their order flow with PFOF. Typically, wholesalers' vertical integration of routing and execution services for the orders of individual investors provides them flexibility with regard to their handling of order flow. They utilize sophisticated algorithmic trading technology to deliver their services.[358] In particular, wholesalers determine which orders to internalize (*i.e.,* execute in a principal capacity) and which to execute in a riskless principal or agency capacity.[359] Commission analysis indicates that wholesalers internalize over 90% of the dollar volume from individual investor marketable orders that are routed to them and executed.[360]

The wholesaler business model relies in part on the ability to segment the order flow of individual investors, which typically have lower adverse selection risk than the orders of other types of market participants.[361] Wholesalers are market makers that can identify orders with low adverse selection risk.[362] Through segmentation, wholesalers typically internalize marketable orders with lower adverse selection risk and generally execute them at prices better than the current NBBO, *i.e.,* because of segmentation, wholesalers are typically able to execute the marketable orders of individual investors at better prices than these orders would receive if they were routed to an exchange. An analysis of marketable NMS stock orders presented in Table 10 below indicates that the orders that wholesalers internalize present lower adverse selection risk and receive higher execution quality relative to marketable orders wholesalers receive and execute in a riskless principal or agency capacity.[363] Furthermore, results from Table 13 below show that wholesalers internalize a lower share of orders from retail brokers with the highest adverse selection risk. Additional results [364] show that, relative to orders executed on exchanges, orders internalized by wholesalers are associated with lower price impacts (*i.e.,* lower adverse selection risk),[365] lower effective half-spreads (*i.e.,* higher price improvement),[366] and higher realized half-spreads (*i.e.,* higher potential profitability).[367]

Though wholesaler internalization generates price improvement for individual investors relative to the NBBO, the Commission posits that the potential isolation of marketable order flow routed to wholesalers results in suboptimal price improvement for individual investor orders relative to what the Commission estimates would be achieved under the Proposal. Specifically, due to the isolation of this order flow by wholesalers from order-by-order competition, the amount of price improvement individual investors receive does not fully compensate for the lower adverse selection risk of their orders. Commission analyses presented below provide results that support this point.[368]

The baseline section below is organized as follows. The baseline first discusses relevant features of trading services, including segmentation and interactions between institutional and retail order flows. Next, the baseline presents the Commission's empirical findings on execution quality. The

[357] Commission analysis of broker-dealer Rule 606 report order routing data in *infra* Table 3 indicates that retail brokers route over 90% of their marketable orders to wholesalers.

[358] Wholesalers, similar to OTC market makers and exchange liquidity suppliers must establish connections with the numerous venues in which they wish to operate and provide liquidity. They also typically design smart order routers that can locate and provide liquidity in real time, as well as maintain fast data processing capabilities that enable them to respond to market conditions while abiding by the relevant trade execution regulations. Wholesalers also face the costs associated with price risk. As wholesalers trade against market participants, they takes positions at the opposite side, accumulating inventory. Holding inventory exposes wholesaler profits to inventory (price) risk, where the value of inventory, and hence, that of the wholesaler's holdings may fluctuate as security prices vary. Scaling up the size of the business to ensure steady incoming flow from opposite sides of the markets is a common strategy pursued by wholesalers. This strategy enables them to execute buy and sell transactions, offsetting order flow from opposite sides, reducing the possibility of accumulating prolonged unwanted inventory. However, among other costs, scaling up requires more comprehensive, efficient connectivity networks and adds to the costs of establishing and maintaining such networks.

[359] *See* discussion in *infra* section VII.B.5.a.

[360] *See* analysis in *infra* Table 10.

[361] Wholesalers and other liquidity providers (including other market-makers) face adverse selection risk when they accumulate inventory, for example by providing liquidity to more informed traders, because of the risk of market prices moving away from wholesalers and other market makers before they are able to unwind their positions. Wholesalers and other market makers are usually not privy to the motives or information of the investors with whom they are trading. As such, should the liquidity provider trade with an investor possessing short-lived price information about the security price, it is exposing its inventory to adverse selection risk. Hence, liquidity providers, including wholesalers and other market-makers normally choose their trading strategies to minimize their interaction with order flow with increased adverse selection risk. Wholesalers do this by attracting marketable orders of individual investors, known to be the order flow with the lowest adverse selection risk.

[362] *See infra* note 405 and corresponding discussion. Adverse selection risk is based on various characteristics of the order, including the identity of the originating broker.

[363] *See* analysis in *infra* Table 10.

[364] *See infra* Table 6 and *infra* Table 7 and corresponding discussion in section VII.B.4 for a comparison of exchange and wholesaler execution quality.

[365] *See supra* notes 47–48 and accompanying text for a definition and discussion of price impact as a measure of adverse selection risk. By measuring the difference between the NBBO midpoint at the time of execution and the NBBO midpoint some fixed period of time after the transaction (*e.g.,* one minute), price impact measures the extent of adverse selection costs faced by a liquidity provider. For example, if a liquidity provider provides liquidity by buying shares from a trader who wants to sell, thereby accumulating a positive inventory position, and then wants to unwind this inventory position by selling shares in the market, it will incur a loss if the price has fallen in the meantime. In this case, the price impact measure will be positive, reflecting the liquidity provider's exposure to adverse selection costs.

[366] *See also* results in Thomas Ernst & Chester Spatt, *Payment for Order Flow and Asset Choice* (last revised Mar. 13, 2022) (unpublished manuscript), *available at https://ssrn.com/abstract=4056512* (retrieved from SSRN Elsevier database) (hereinafter ''Ernst and Spatt Working Paper''). *See supra* note 46 and accompanying text for a definition and discussion of effective half-spreads. The effective half-spread is calculated by comparing the trade execution price to an estimate of the stock's value (*i.e.,* the midpoint of the prevailing NBBO at the time of order receipt) and thus captures how much more than the stock's estimated value a trader has to pay for the immediate execution of their order. The effective spread will be smaller (or less positive) when the execution price is closer to the NBBO midpoint, reflecting price improvement received on that order. *See, e.g.,* Bjorn Hagströmer, *Bias in the Effective Bid-Ask Spread,* 142 J. Fin. Econ. 314 (2021). For the remainder of this analysis, we will use the term ''effective spread'' to refer to the ''effective half-spread'' as defined in *supra* section II.D.1.

[367] *See supra* notes 49–50 and accompanying text for a definition and discussion of realized half-spreads. *See, e.g.,* Securities Exchange Act Release No. 43590 (Nov. 17, 2000), 65 FR 75423–75424 (Dec. 1, 2000) (Disclosure of Order Execution and Routing Practices) (''The smaller the average realized spread, the more market prices have moved adversely to the market center's liquidity providers after the order was executed, which shrinks the spread 'realized' by the liquidity providers. In other words, a low average realized spread indicates that the market center was providing liquidity even though prices were moving against it for reasons such as news or market volatility.''); *see also* Larry Harris, *Trading and Exchanges: Market Microstructure for Practitioners* (2003) at 286. *See infra* note 420 discussing the limitations of realized spreads for estimating the profits earned by market makers. For the remainder of this analysis, we will use the term ''realized spread'' to refer to the ''realized half-spread'' as defined in *supra* section II.D.1.

[368] *See infra* sections VII.B.4 and VII.B.5.

section ends with a discussion of retail broker services and rules addressing consolidated market data.

1. Competition for Liquidity Provision in NMS Stocks

Investors trade for a variety of reasons, whether because of informational advantages or because of hedging and liquidity needs. In an idealized competitive market, these investors would meet and trade amongst themselves, without the need of an intermediary. In such cases, trades would occur at the midpoint and neither side would pay the spread. In real-life markets, not all investors meet at the same time. Furthermore, investors may avoid trading with one another if they believe their counterparty has information that they do not, as opposed to trading for liquidity reasons. Moreover, investors often utilize the technology and services of a broker-dealer in order to find and interact efficiently with the trading interest of other investors. For these reasons, there are broker-dealers who incur fixed costs for routing orders and charge a spread for acting as a dealer and supplying liquidity when end investors are not available to directly trade with each other.

Market centers compete to attract order flow from these broker-dealers. As shown in Table 1, in Q1 of 2022, NMS stocks were traded on 16 registered securities exchanges,[369] and off-exchange at 32 NMS Stock ATSs and at over 230 other FINRA members, including OTC market makers.[370] OTC market makers include the 6 wholesalers that internalize the majority of individual investor marketable orders.[371] These numerous market centers match traders with counterparties, provide a framework for price negotiation and/or provide liquidity to those seeking to trade.

TABLE 1—NMS STOCK TRADED SHARE VOLUME PERCENTAGE OF ALL NMS STOCKS BY MARKET CENTER TYPE

Market center type	Venue cnt	Share volume (percent)	Off-exchange share volume (percent)
Exchanges	16	59.7	.....
NMS Stock ATSs	32	10.2	25.2
Wholesalers [a]	6	23.9	59.4
Other FINRA Members	232	6.3	15.6

This table reports the percentage of all NMS stock executed share volume and the percentage of NMS stock share volume executed off-exchange for different types of market centers for Q1 2022. Venue Cnt lists the number of venues in each market center category. Share Volume Pct is the percentage of all NMS stock share volume (on plus off-exchange) executed by the type of market center. Off-Exchange Share Volume Pct is the percentage of off-exchange share volume executed by the type of market center. Exchange share volume and total market volume are based on CBOE Market Volume Data on monthly share volume executed on each exchange and share volume reported in FINRA Trade Reporting Facilities (TRFs).[b] NMS Stock ATS, wholesaler and FINRA member share volume are based on monthly FINRA OTC Transparency data on aggregated NMS stock trading volume executed on individual ATSs and over-the-counter at Non-ATS FINRA members.[c] Off-Exchange Share Volume Pct is calculated by dividing the NMS Stock ATS, wholesaler and FINRA member share volume from the FINRA Transparency Data by the total TRF share volume reported in CBOE Market Volume Data.

[a] *See supra* note 371 for details regarding how FINRA member OTC market makers are classified as wholesalers for purposes of this release.

[b] Cboe, U.S. Historical Market Volume Data, *available at https://cboe.com/us/equities/market_statistics/historical_market_volume/.* Trade Reporting Facilities (TRFs) are facilities through which FINRA members report off-exchange transactions in NMS stocks, as defined in SEC Rule 600(b)(47) of Regulation NMS. *See https://www.finra.org/filing-reporting/trade-reporting-facility-trf.*

[c] FINRA OTC (Non-ATS) Transparency Data Monthly Statistics, *available at https://otctransparency.finra.org/otctransparency/OtcData;* FINRA ATS Transparency Data Monthly Statistics, *available at https://otctransparency.finra.org/otctransparency/AtsBlocksDownload.* The FINRA OTC (Non-ATS) Transparency Data may not contain all share volume transacted by a wholesaler or FINRA member because FINRA aggregates security-specific information for firms with ''de minimis'' volume outside of an ATS and publishes it on a non-attributed basis.

Market centers' primary customers are broker-dealers that route their own orders or their customers' orders for execution. Market centers may compete with each other for these broker-dealers' order flow on a number of dimensions, including execution quality. They also may innovate to differentiate themselves from other trading centers to attract more order flow. While registered exchanges cater to a broader spectrum of investors, ATSs and OTC market makers, including wholesalers, tend to focus more on providing trading services to either institutional or individual investor orders.

Table 1 displays NMS stock share volume percentage by market center

[369] Most of these 16 registered securities exchanges are owned by three exchange groups. Currently, the CBOE exchange group owns: Cboe BYX Exchange, Inc. (''Cboe BYX''), Cboe BZX Exchange, Inc. (''Cboe BZX''), Cboe EDGA Exchange, Inc. (''Cboe EDGA''), and Cboe EDGX Exchange, Inc. (''Cboe EDGX''); the Nasdaq exchange group owns: Nasdaq BX, Inc. (''Nasdaq BX''), Nasdaq PHLX LLC (''Nasdaq Phlx''), and The Nasdaq Stock Market LLC (''Nasdaq''); and the NYSE exchange group owns: NYSE, NYSE American LLC (''NYSE American''), NYSE Arca, Inc. (''NYSE Arca''), NYSE Chicago, Inc. (''NYSE CHX''), and NYSE National, Inc. (''NYSE National''). Other registered securities exchanges that trade NMS stocks and do not belong to one of these exchange groups include: Investors Exchange LLC (''IEX''), Long-Term Stock Exchange, Inc. (''LTSE''), MEMX LLC (''MEMX''), and MIAX Pearl, LLC (''MIAX PEARL'').The Commission approved rules proposed by BOX Exchange LLC (''BOX'') for the listing and trading of certain equity securities that would be NMS stocks on a facility of BOX known as BSTX LLC (''BSTX''), but BSTX is not yet operational. *See* Securities Exchange Act Release Nos. 94092 (Jan. 27, 2022), 87 FR 5881 (Feb. 2, 2022) (SR–BOX–2021–06) (approving the trading of equity securities on the exchange through a facility of the exchange known as BSTX); 94278 (Feb. 17, 2022), 87 FR 10401 (Feb. 24, 2022) (SR–BOX–2021–14) (approving the establishment of BSTX as a facility of BOX). BSTX cannot commence operations as a facility of BOX until, among other things, the BSTX Third Amended and Restated Limited Liability Company Agreement approved by the Commission as rules of BOX is adopted. *Id.* at 10407.

[370] *See supra* section II.B for further details on the types of trading centers that execute trades in NMS stocks. *See also* Form ATS–N Filings and Information (for a list of ATSs that trade NMS stocks and have a Form ATS–N filed with the Commission), *available at https://www.sec.gov/divisions/marketreg/form-ats-n-filings.htm.* Some academic studies attribute the fragmented nature of the market for NMS stocks, in part, to certain provisions of Regulation NMS. *See, e.g.,* Maureen O'Hara & Mao Ye, *Is Market Fragmentation Harming Market Quality?,* 100 J. Fin. 459 (2011); Amy Kwan, Ronald Masulis & Thomas H. McInish, *Trading Rules, Competition for Order Flow and Market Fragmentation, 115* J. Fin. 330 (2015).

[371] The six OTC market makers that are classified as wholesalers for purposes of this release are the OTC market makers to which the majority of marketable orders originating from retail brokers were routed as identified from information from retail broker Rule 606(a)(1) reports from Q1 2022. These market makers also reported executing a significant percentage of shares routed to them on their Rule 605 reports. Rule 606(a)(1) requires broker-dealers to produce quarterly public reports containing information about the venues to which the broker-dealer regularly routed non-directed orders for execution, including any payment relationship between the broker-dealer and the venue, such as any PFOF arrangements. *See* 17 CFR 242.606(a)(1).

type for Q1 2022. Exchanges execute approximately 60% of total share volume in NMS stocks, while off-exchange market centers execute approximately 40%. The majority of off-exchange share volume is executed by wholesalers, who execute almost one quarter of total share volume (23.9%) [372] and about 60% of off-exchange share volume.[373] NMS Stock ATSs execute approximately 10% of total NMS stock share volume and 25% of off-exchange share volume. Other FINRA members, besides wholesalers and ATSs, execute approximately 15% of off-exchange share volume.

There is evidence that the percentage of trading volume executed off-exchange has been increasing over time. One industry group study found that volume traded off-exchange as a percent of total volume has increased since 2018, when off-exchange trading was 36.8% of total volume.[374] According to another study by an exchange, an increase in orders executed by off-exchange venues other than ATSs has been the driving factor behind this increase in off-exchange trading, which has been particularly significant for lower-priced stocks.[375] At the same time, some have highlighted a decline in liquidity displayed at or near the NBBO on exchanges.[376] Industry participants have raised concerns regarding a ''monopolistic environment,'' in which information off-exchange becomes sufficiently concentrated and determinative as to widen spreads on exchange.[377] For example, a liquidity provider deciding whether to rest an order on the book would face the possibility of a wholesaler or other off-exchange market maker gleaning information from the posted liquidity to determine a price to execute off-exchange that accounts for the lack of adverse selection risk in off-exchange flow.[378] This limits the execution possibilities on exchange. On the other hand, any posted liquidity (which grants an option to liquidity demanders or to those engaged in latency arbitrage) is vulnerable to being ''picked off''—namely executed against exactly when the price is (in the case of a resting buy order) moving lower or (in the case of a sell order) moving higher. These dynamics lower the incentives to post liquidity on exchange.

Exchanges (via their rules) and ATSs determine how orders compete with each other, wherein liquidity suppliers set prices and wait for execution at their prices by liquidity demanders. This interaction between liquidity providers and demanders encompasses order-by-order competition. Unlike exchanges, for which each exchange's rules determine competition in a non-discretionary fashion, wholesalers execute or route orders in a discretionary fashion.[379] While some orders may be routed to a central limit order book against which institutional investors may execute (on the discretion of the wholesaler), institutional investors generally consider order flow routed to a wholesaler to be ''inaccessible.'' [380]

As a proxy for expected execution quality, quoted prices are a dimension on which exchanges compete to attract order flow. Specifically, exchanges are required to post the best bid and ask prices available on the exchange at that time,[381] and broker-dealers can observe those prices and choose to route orders to the exchange posting the best prices at a given point in time. However, others who provide trading services, such as ATSs and OTC market makers, do not usually compete on this dimension.[382] In other words, wholesalers generally do not compete for order flow by posting competitive prices the way exchanges do. They do not display or otherwise advertise the prices at which they are willing to internalize individual investor orders at a given point in time. This suggests that wholesalers attract order flow by offering retail brokers more than just competitive prices at a point in time on a specific order. Instead, wholesalers generally attract order flow by offering to on average execute orders at prices that are better than displayed prices. Additionally, wholesalers bundle their market access services with execution services, thereby vertically fully integrating order handling and execution services for their retail broker customers.

2. Segmentation of Individual Investor Order Flow

Individual investor orders typically carry lower adverse selection risk, in part because individual investors may

[372] Of the six wholesalers identified in Q1 2022, two accounted for approximately 66% of wholesalers' total executed share volume of NMS stocks. One study finds that the concentration of wholesaler internalization, as measured by the Herfindahl-Hirschman Index (HHI) of share volume executed across wholesalers, has increased from 2018 to 2021. *See* Edwin Hu & Dermot Murphy, *Competition for Retail Order Flow and Market Quality* (last revised Oct. 7, 2022) (unpublished manuscript), *available at https://ssrn.com/abstract=4070056* (retrieved from Elsevier database).

[373] The share volume reported for wholesalers in FINRA OTC Transparency Data includes both individual investor orders executed by wholesalers in a principal capacity as well as other orders executed by wholesalers in a principal capacity, such as institutional orders executed on their SDPs. It does not include share volume that they executed in a riskless principal capacity or share volume that was routed and executed at another market center.

[374] *See* SIFMA Insights, *Analyzing the Meaning Behind the Level of Off-Exchange Trading* (Sept. 2021), *available at https://www.sifma.org/wp-content/uploads/2021/09/SIFMA-Insights-Analyzing-Off-Exchange-Trading-09-2021.pdf.* The study found off-exchange trading to be 44.2% of total YTD trading volume as of Sept. 2021.

[375] *See* NYSE Data Insights, *Market Volume and Off-Exchange Trading: More than a Retail Story* (June 15, 2020), *available at https://www.nyse.com/data-insights/market-volume-and-off-exchange-trading.* In particular, the study found that, for stocks priced lower than $5, off-exchange trading market share increased from 45.4% in Oct. 2019 to 54.8% in June 2020, and that ATS market share decreased from 14.2% to 11.5% of consolidated average daily volume and non-ATS OTC market share increased from 20.5% to 27.8% over the same time period.

[376] *See, e.g.,* Gunjan Banerji, *Buying or Selling Stocks? It Isn't Always Easy,* Wall St., J., Jan. 2, 2020, showing a greater than 90% reduction in the number of shares available at the best prices in the SPDR S&P 500 ETF from 2007 to 2018, as one example of the overall reduction in market liquidity. Furthermore, in a comment letter to the Commission responding to comments on an SRO proposed rule change, an exchange found that the COVID crisis lead to a further substantial decrease in the depth of liquidity at the NBBO, as the average displayed quote size declined by 69% from Jan. to Mar. 2020 for S&P 500 stocks. *See* Letter from John Ramsay, Chief Market Policy Officer, Investors Exchange LLC to Ms. Vanessa Countryman, Secretary, U.S. Securities and Exchange Commission, dated May 10, 2020 (File No. SR–IEX–2019–15), *available at https://www.sec.gov/comments/sr-iex-2019-15/sriex201915-7169827-216633.pdf.*

[377] *See* Hitesh Mittal & Kathryn Berkow, *The Good, The Bad & The Ugly of Payment for Order Flow* (May 3, 2021), *available at https://bestexresearch.com/the-good-the-bad-the-ugly-of-payment-for-order-flow/.*

[378] Mitigating this information asymmetry is that off-exchange trades also print to a consolidated post-trade tape, though with latency compared with on-exchange trades.

[379] A study estimates that the volume of individual investor orders executed by wholesalers accounted for approximately 16% to 17% of consolidated share volume during Q1 2022. *See* Rosenblatt Securities, *An Update on Retail Market Share in US Equities* (June 24, 2022), *available at https://www.rblt.com/market-reports/trading-talk-an-update-on-retail-market-share-in-us-equities.* However, wholesalers are not completely focused on individual investor order flow and some do offer services to institutional order flow. *See infra* section VII.B.3 for a discussion of their interaction with institutional order flow.

[380] *See supra* note 37 (citing Jennifer Hadiaris, *Cowen Market Structure: Retail Trading—What's going on, what may change, and what can you do about it?,* Cowen (Mar. 23, 2021), *available at https://www.cowen.com/insights/retail-trading-whats-going-on-what-may-change-and-what-can-institutional-traders-do-about-it/*). Further, wholesalers are also not subject to a statutory or regulatory requirement to provide fair access. *See supra* section III.B.3 for further discussion of requirements that do and do not apply to wholesalers.

[381] *See* Rule 602 of Regulation NMS.

[382] ATSs typically compete for institutional order flow by offering innovative trading features such as distinct trading protocols and segmentation options. They may also compete on fees. In addition, they could include their ATS access in the broader set of bundled services that the broker-dealer director of the ATS offers to their institutional investors.

have less information on market conditions than other market participants and in part because their orders tend to be small. Both of these factors make individual investor orders less likely to be followed by orders in the same direction.[383] The lower adverse selection risk of individual investor orders makes them more valuable for segmentation by liquidity providers that want to execute these orders in a principal capacity, since they are less costly to liquidity providers such as wholesalers to execute (*i.e.,* have lower price impacts) than orders with higher adverse selection risk. Due to this lower cost, wholesalers are able to provide price improvement to these orders and still earn higher profits, as discussed in *supra* section II.D.2.

Regulation NMS allows an order to be executed off-exchange, provided that an off-exchange trading venue executes the order at a price equal to the NBBO or better.[384] To the extent that a liquidity provider is able to segment [385] low-risk individual investor order flow, this order flow can be executed against with higher profitability for the liquidity provider. Since exchanges are limited in their ability to segment order flow (with the exception of retail liquidity programs),[386] the ability of off-exchange venues to segment orders is one reason why orders are routed off-exchange. Furthermore, off-exchange trading venues are often more flexible in determining prices than national securities exchanges.[387]

The ability to segment is one reason why many individual investor orders are executed off-exchange. Another reason is potential efficiency in outsourcing routing services. Maintaining market access at many venues is costly, so broker-dealers have an incentive to use the services of other broker-dealers who maintain market access at most, if not all, market centers. Wholesalers are the dominant providers of market access for retail brokers and bundle their market access services with execution services. Yet another reason arises from economies of scale stemming from the information that can be gleaned from large quantities of individual orders.[388] Because of the profitability in these segmented orders, wholesalers will sometimes pay for them, a practice known as payment for order flow. For some retail brokers, this may create an additional incentive for routing to the wholesalers.

a. Routing and Market Access

Most individual investor orders are non-directed, so individual investor order routing choices are largely made by retail brokers. Specifically, retail brokers choose how to access the market in order to fill their individual investor customers' orders. Many broker-dealers that handle customer accounts, including many retail brokers, do not directly access national securities exchanges or ATSs for their orders, relying on other broker-dealers to facilitate market access for them.[389] For example, only members of exchanges or subscribers to (or owners of) ATSs can directly access those particular market centers.[390] As a result, some broker-dealers that are exchange members or ATS subscribers/owners provide access to other brokers-dealers by rerouting their customer orders to these market centers. The broker-dealers (including wholesalers) who provide market access can choose to compete on a number of dimensions, such as by charging lower fees or paying for order flow, by facilitating better execution quality, and by providing other valued services.[391]

Retail brokers may route to wholesalers because the cost of sending orders to wholesalers is lower than the various alternatives available to their customers for market access. While some broker-dealers have SORs,[392] exchange memberships, and ATS subscriptions, and are thus able to provide market access to retail brokers, these other broker-dealers incur costs in handling order flow for retail brokers in the form of exchange access fees, ATS access fees, and administrative and regulatory costs such as recordkeeping and the risk management controls of Rule 15c3–5. While wholesalers could incur some of these marginal costs as well, they benefit on the margin from individual investor order flow because they have the option to internalize the most profitable of that order flow, *i.e.,* the individual investor orders with the lowest adverse selection risk.[393] This ability to capture, identify, and internalize profitable orders from individual investors allows wholesalers to provide market access to retail brokers at low explicit cost, either by providing PFOF or by not charging retail brokers explicitly for market access. This service of obtaining market access on behalf of retail brokers assists retail brokers by allowing them to avoid routing expenses (even in cases where the wholesaler further routes the order instead of internalizing) or costly liquidity searches, and may increase retail brokers' reliance on wholesalers beyond any payment they receive for routing their order flow to wholesalers.

Indeed, Table 2 shows that retail brokers who accept PFOF (''PFOF brokers'') pay less to route their orders to wholesalers than to route them elsewhere.[394] In fact, they are paid to route their order flow to wholesalers for every order type reported in the table. On average, rates paid by wholesalers for both market and marketable limit orders are higher than those paid by alternative venues, with wholesalers paying an average of 13 cents per 100 shares for market orders and 12.6 cents for marketable limit orders across S&P 500 and non-S&P 500 stocks during Q1 2022. In contrast, exchanges, on average, charged PFOF brokers when they routed their marketable order flow to exchanges. This likely indicates that most of the volume that PFOF brokers sent to exchanges was routed to maker-taker exchanges (where fees are assessed on marketable orders).[395] Furthermore,

[383] While this characterization of individual orders is generally true, there are also individual investors that are highly sophisticated and informed of market conditions. *See infra* section VII.B.5.b for an empirical analysis and discussion of variation in execution quality based on variation in adverse selection risk of retail broker order flow.

[384] *See supra* section III.B.2.b.

[385] *See supra* section I for a definition of segmentation.

[386] *See infra* section VII.B.2.c.

[387] For example, Rule 612 does not prevent wholesalers, after they receive an order from a broker, from choosing to execute that order in a transaction at a sub-penny price. *See supra* note 148 and corresponding discussion.

[388] *See infra* note 406 for a discussion of the informational advantages that routing can provide to wholesalers.

[389] Providing market access can mean rerouting customer orders and it can also involve sponsoring access for the broker to send customer orders directly to a market center.

[390] The number of broker-dealers providing access is thus limited due to the expenses of being an exchange member and ATS subscriber. In addition, membership on an exchange also gives the broker-dealer access to exchange-provided order routers that re-route orders to other exchanges at a per-order fee. Thus, membership on one exchange can effectively provide access, though not directly, to all exchanges.

[391] Although some retail brokers are members of exchanges, they may still prefer to rely on wholesalers' expertise for the handling and routing of their customers' orders.

[392] Individual investors and professional traders relying on displayed screens to access financial markets generally do not have access to these low-latency (algorithmic, high speed) technologies.

[393] *See infra* section VII.B.2.b for further discussion of wholesaler internalization.

[394] In Table 2, average payment rates reported in Rule 606 reports for PFOF brokers in S&P 500 stocks and non-S&P 500 stocks in Q1 2022 are broken down by trading venue and order type, with rates given in cents per 100 shares.

[395] Furthermore, wholesaler rates for non-marketable orders are more than double the rates for marketable orders, averaging 27.1 cents per hundred shares compared to 13 cents for market orders and 12.6 cents for marketable limit orders. Additionally, Table 2 shows that the average payment rates PFOF brokers receive from routing

Continued

since retail brokers that do not accept PFOF (''non-PFOF brokers'') also incur fees when they route marketable orders to exchanges, they are also incentivized to route their marketable order flow to wholesalers, who do not charge them explicit costs to route and execute their orders.

TABLE 2—AVERAGE RULE 606 PAYMENT RATES FOR Q1 2022 TO PFOF BROKERS BY TRADING VENUE TYPE

		Market orders	Marketable limit orders	Non-marketable limit orders	Other orders
S&P 500	Exchange	−5.9	−23.9	30.9	20.8
	OTC Market Maker—Wholesaler	15.2	21.8	41.1	24.1
	Other	4.5	−0.6	−0.6	7.5
Non-S&P 500	Exchange	−14.9	−15.3	17.9	16.5
	OTC Market Maker—Wholesaler	12.5	11.8	24.6	10.1
	Other	1.5	−3.7	−4.6	1.5
Combined	Exchange	−12.4	−15.7	19.3	17.1
	OTC Market Maker—Wholesaler	13.0	12.6	27.1	11.9
	Other	1.7	−3.7	−4.5	2.0

This table shows the average payment rates (in cents per 100 shares) made from different types of trading venues in Q1 2022 to 14 retail PFOF brokers from wholesalers based on their Rule 606 reports. The table breaks out average rates from exchanges, wholesalers, and other trading venues for market orders, marketable limit orders, non-marketable limit orders, and other orders in S&P 500 stocks and non-S&P 500 stocks. Other venues include any other venue to which a retail broker routes an order other than a wholesaler or an exchange. The 43 broker-dealers were identified from the 54 retail brokers used in the CAT retail analysis (*see infra* note 466). This analysis uses the retail broker's Rule 606 report if it publishes one or the Rule 606 report of its clearing broker if it did not publish a Rule 606 report itself (the sample of 43 broker-dealer Rule 606 reports include some broker-dealers that were not included in the CAT analysis because some clearing broker Rule 606 reports are included). Some broker-dealers reported handling orders only on a not held basis and did not have any Rule 606.

Table 3 reflects that wholesalers dominate the business of providing market access for retail brokers and indicates that PFOF is a factor in retail broker routing decisions.[396] Data from Table 3 indicates that orders of individual investors for NMS stocks are primarily routed to wholesalers, although a small fraction of individual investor orders are routed to exchanges and other broker-dealers providing market access or other market centers (*i.e.,* ATSs), some of which may be affiliated with the broker that received the original order.

TABLE 3—RETAIL BROKER ORDER ROUTING IN NMS STOCKS FOR Q1 2022, COMBINING PFOF AND NON-PFOF BROKERS

Venue type	Market (percent)	Marketable limit (percent)	Non-marketable limit (percent)	Other (percent)	Total (percent)
Panel A: Non S&P 500 Stocks					
Other	6.0	4.7	3.1	1.5	3.6
Exchange	0.2	5.5	22.5	0.8	8.5
Wholesaler	93.9	89.8	74.4	97.6	87.9
Total	26.5	12.6	33.6	27.3	100.0
Panel B: S&P 500 Stocks					
Other	6.6	5.9	1.8	1.7	3.6
Exchange	0.2	4.6	25.1	0.8	9.1
Wholesaler	93.3	89.6	73.1	97.5	87.3
Total	30.6	9.6	33.5	26.4	100.0

This table aggregates Rule 606 reports from retail brokers and shows the percentage of market orders, marketable limit orders, non-marketable limit orders, and other orders that retail brokers route to different types of venues in Q1 2022. Other venues include any other venue to which a retail broker routes an order other than a wholesaler or an exchange. Order type classifications are based on the order types broker-dealers are required to include in their Rule 606 reports.

non-marketable limit orders to wholesalers is greater than the average rates they receive from routing them to exchanges. This may be driven by wholesalers passing through exchange rebates for these orders, for which they may receive higher volume-based tiering rates compared to retail brokers, back to broker-dealers.

[396] Table 3 summarizes order routing decisions of 43 of the most active retail brokers about non-directed orders; *see infra* note 466. Routing choices are summarized separately for 14 PFOF brokers in equity markets and non-PFOF brokers. Note that some brokers do not accept PFOF for orders in equities but do accept PFOF for orders in options. Consistent with Rule 606, routing statistics are aggregated together in Rule 606 reports based on whether the stock is listed in the S&P500 index. Rule 606 reports collect routing and PFOF statistics based on four different order types for NMS stocks: (1) market orders, resulting in immediate execution at the best available price; (2) marketable limit orders, resulting in immediate execution at the best price that is not worse that the order's quoted limit price; (3) non-marketable limit orders whose quoted limit price less aggressive than the NBBO, often preventing immediate execution; and (4) all other orders. *See supra* note 371 for a summary of the requirements of Rule 606(a)(1) of Regulation NMS

Table 3 aggregates routing information from 43 broker-dealer Rule 606 reports from Q1 2022. The 43 broker-dealers were identified from the 54 retail brokers used in the CAT retail analysis (*see infra* note 466). This analysis uses the retail broker's Rule 606 report if it publishes one or the Rule 606 report of its clearing broker if it did not publish a Rule 606 report itself (the sample of 43 broker-dealer Rule 606 reports include some broker-dealers that were not included in the CAT analysis because some clearing broker Rule 606 reports are included). Some broker-dealers reported handling orders only on a not held basis and did not have any Rule 606 reports. Because Rule 606 only include percentages of where their order flow is routed and not statistics on the number of orders, the reports are aggregated together using a weighting factor based on an estimate of the number of non-directed orders each broker-dealer routes each month. The number of orders is estimated by dividing the number of non-directed market orders originating from a retail broker in a given month (based on estimates from CAT data) by the percentage of market orders as a percent of non-directed orders in the retail broker's Rule 606 report (the weight for a clearing broker consists of the aggregated orders from the introducing brokers in the CAT retail analysis that utilize that clearing broker).

TABLE 4—RETAIL BROKER ORDER ROUTING IN NMS STOCKS FOR MARCH 2022

Venue type	Market (percent)	Marketable limit (percent)	Non-marketable limit (percent)	Other (percent)	Total (percent)
Panel A: Non-S&P 500 Stocks Non-PFOF Brokers					
Other	24.1	22.3	4.2	41.6	16.0
Exchange	<0.1	25.3	80.8	19.7	39.8
Wholesaler	76.0	52.4	15.0	38.8	44.2
Total	38.4	12.4	44.2	5.0	100.0
PFOF Brokers					
Other	<0.1	1.2	2.8	0.3	1.1
Exchange	0.2	1.5	5.8	0.2	2.1
Wholesaler	99.7	97.3	91.4	99.5	96.8
Total	24.1	12.7	31.5	31.8	100.0
Panel B: S&P 500 Stocks Non-PFOF Brokers					
Other	24.8	27.0	3.2	23.4	15.4
Exchange	<0.1	19.6	83.2	8.2	39.0
Wholesaler	75.2	53.4	13.6	68.3	45.6
Total	39.0	9.2	43.8	8.0	100.0
PFOF Brokers					
Other	<0.1	0.5	1.3	0.3	0.6
Exchange	0.2	0.9	3.4	0.3	1.3
Wholesaler	99.8	98.6	95.3	99.5	98.2
Total	28.4	9.7	30.7	31.2	100.0

This table aggregates Rule 606 reports from PFOF and non-PFOF retail brokers and separately shows the percentage of market orders, marketable limit orders, non-marketable limit orders, and other orders PFOF brokers and non-PFOF brokers route to different types of venues in Q1 2022. PFOF brokers are retail brokers that receive payments for routing marketable orders to wholesalers. Other venues include any other venue to which a retail broker routes an order other than a wholesaler or an exchange. Order type classifications are based on the order types broker-dealers are required to include in their Rule 606 reports.

Table 4 aggregates routing information from PFOF and non-PFOF broker-dealer Rule 606 reports from Q1 2022. Fourteen retail brokers are identified as PFOF brokers that receive payments for routing orders in NMS stocks to wholesalers. Non-PFOF brokers are identified as retail brokers that do not receive monetary compensation when they route orders in NMS stocks to wholesalers. The 43 broker-dealers were identified from the 54 retail brokers used in the CAT retail analysis (*see infra* note 466). This analysis uses the retail broker's Rule 606 report if it publishes one or the Rule 606 report of its clearing broker if it did not publish a Rule 606 report itself (the sample of 43 broker-dealer Rule 606 reports include some broker-dealers that were not included in the CAT analysis because some clearing broker Rule 606 reports are included). Some broker-dealers reported handling orders only on a not held basis and did not have any Rule 606 reports. Because Rule 606 only include percentages of where their order flow is routed and not statistics on the number of orders, the reports are aggregated together using a weighting factor based on an estimate of the number of non-directed orders each broker-dealer routes each month. The number of orders is estimated by dividing the number of non-directed market orders originating from a retail broker in a given month (based on estimates from CAT data) by the percentage of market orders as a percent of non-directed orders in the retail broker's Rule 606 report (the weight for a clearing broker consists of the aggregated orders from the introducing brokers in the CAT analysis that utilize that clearing broker).

CAT data analysis indicates that about 80% of the share volume and about 74% of the dollar volume of individual investor marketable orders that were routed to wholesalers and executed comes from PFOF brokers.[397] Data from Table 4 indicate that, while retail brokers who accept PFOF from wholesalers tend to send more of their orders to those wholesalers, wholesalers even dominate the market access services for non-PFOF brokers, though non-PFOF brokers route a significantly lower fraction (*i.e.,* 75.2% to 76%) of their market orders to wholesalers, compared to 99.7% to 99.8% of market orders for PFOF brokers. Moreover, non-PFOF brokers route 24.1% to 24.8% of their market orders to other non-exchange market centers, *e.g.,* ATSs,

[397] *See infra* Table 14.

while PFOF brokers route less than 1% of their market orders to these market centers. However, regardless of whether the retail broker accepts PFOF, the order type, or the S&P500 index inclusion of the stock,[398] Table 3 shows that retail brokers route over 87% of their customer orders to wholesalers.

This result suggests that, while PFOF is an important factor in retail brokers routing decisions, wholesalers likely also compare favorably to other market access centers (including retail brokers pursuing their own market access) along other dimensions. The routing behavior in Table 4 may, in part, reflect a tendency of non-PFOF brokers to route individual investor orders to market centers such as their own ATSs for mid-point execution and the lack of an affiliated ATS for PFOF brokers. However, even broker-dealers with their own ATSs do not route the majority of their individual investor order flow to those ATSs and typically do not internalize order flow. Further, retail brokers with membership on multiple exchanges primarily route their marketable orders to wholesalers. These results could point to a lower marginal cost of routing to wholesalers relative to other routing and execution alternatives. Table 5 below shows that wholesalers appear to compare favorably to exchanges in the execution quality of orders routed to them, suggesting that execution quality could be another key factor in the decision of retail brokers to route to wholesalers.[399] In particular, marketable orders routed to wholesalers appear to have higher fill rates, lower effective spreads, and lower E/Q ratios.[400] These orders are also more likely to receive price improvement and, conditional on receiving price improvement, receive greater price improvement when routed to wholesalers as compared to exchanges.

In addition, wholesalers may provide additional valuable services to retail brokers that route order flow to them. Based on staff experience, the Commission understands that wholesalers are more responsive to retail brokers that provide them with order flow, including, for example, following customer instructions not to internalize particular orders. More broadly, wholesalers appear to provide retail brokers with a high degree of consistency with regard to execution quality. More specifically, while wholesalers receive order flow from retail brokers that contains variation in quoted spreads and adverse selection risk, wholesalers can target an average level of price improvement across this heterogeneous order flow, resulting in a relatively consistent degree of execution quality.

b. Wholesaler Internalization

Wholesalers provide market access for retail brokers and generally choose to internalize the order flow they receive from these brokers,[401] thereby vertically integrating (*i.e.,* bundling) their market access and execution services. This vertical integration helps wholesalers achieve a competitive advantage in both market access and execution services. Wholesalers are distinct from other broker-dealers that provide market access and execution services, in that they focus on marketable order flow from individual investors and internalize the large majority of orders routed to them.

Wholesalers determine which orders to execute internally and which to reroute to other trading venues, often using a riskless principal transaction. For example, after receiving an order from a retail broker, a wholesaler may send a principal marketable order similar to the retail broker order to an exchange and, upon execution of the principal order at the exchange, provide the same execution terms to the original retail broker order. Alternatively, a wholesaler can achieve the same economic result by rerouting the original order in an agency capacity as well. In this way, the wholesaler is providing the market access service, but another market center is providing the execution service.

Commission analysis shows that wholesalers internalize over 90% of the executed dollar value in NMS stocks from the marketable order flow routed to them by retail brokers, which amounts to more than 80% of share volume.[402] Results also show that the marketable NMS stock orders wholesalers choose to internalize have less adverse selection risk: orders that wholesalers execute in a principal capacity have a price impact of 0.9 bps, compared to a price impact of 4.6 bps for those executed via other methods.[403] These results stem from the incentives wholesalers face. As dealers, wholesalers will wish to hold inventory that is not subject to short-term adverse price moves. Because orders with greater adverse selection risk will, on average, be followed by adverse price moves, wholesalers will on average internalize fewer of these orders.[404]

Wholesalers employ algorithms to predict price impact using information to which only they have access, such as the identity of the retail broker, and information any market center would have, such as order characteristics and stock or market characteristics.[405] Indeed, Table 12 shows significant variation in average price impacts across retail brokers. Because wholesalers know which retail brokers sent them the order, they can use that information in combination with other information to make internalization and pricing decisions.[406] The results in Table 13 support this conclusion, indicating that wholesalers internalize a higher percentage of individual investor orders from retail brokers whose customers' orders on average exhibit lower price impact.

c. Exchange Retail Liquidity Programs

Retail liquidity programs provide an on-exchange means of segmentation. Indeed, the RLPs offered by many registered exchanges are specifically set up to segment the marketable order flow of individual investors,[407] allowing liquidity suppliers to interact with this order flow without the risk that their orders will trade against the marketable orders of other market participants that may impose greater adverse selection risk. The pricing increments, both for quoting and trading, in RLPs, are usually 0.1 cents,[408] although some

[398] Rule 606 reports require that broker-dealers separate their disclosure information for S&P 500 stocks, non-S&P 500 stocks, and options.

[399] *See infra* section VII.B.4 for a full discussion of Table 5 and section VII.B.5 for a discussion of how the Commission preliminarily believes that the execution quality of orders routed to wholesalers could be even better if most of such orders were not isolated from order-by-order competition.

[400] The E/Q ratio is the ratio of a stock's effective spread over quoted spread. A lower value indicates smaller effective spreads (*i.e.,* trading costs) as a percentage of the quoted spread.

[401] *See* analysis in *infra* Table 10.

[402] *See* analysis in *infra* Table 10.

[403] *Id. See also supra* note 365 for a definition and discussion of price impact as a measure of adverse selection risk.

[404] *See infra* Table 10 in section VII.B.5.a for analysis indicating that individual investor orders wholesalers internalize have lower adverse selection risk and earn higher economic profits, as measured by price impacts and realized spreads, than orders wholesalers effectively reroute.

[405] While these provide a few examples of information that could be used by wholesalers, the Commission lacks information on what information wholesalers actually use. Further, while the analysis presented here shows associations between characteristics, price impacts, and internalization, the analysis cannot determine that the expected price impact based on a particular characteristic caused the wholesaler to internalize the order.

[406] Having aggregate information on retail order flow could help the wholesaler assess the direction of the market, which could also be beneficial for business lines beyond the firm's wholesaler business.

[407] *See, e.g.,* NYSE Rule 7.44 (concerning RLPs).

[408] *See, e.g.,* description of NYSE Retail Liquidity program, *available at https://www.nyse.com/*

exchanges have RLP programs that allow liquidity suppliers to quote only at the midpoint.[409] RLP programs typically do not charge an access fee to individual investor orders executed in RLP programs.[410] Quotes in RLP programs are not displayed.[411] Instead, the SIP disseminates a flag indicating the side of the market for which an exchange has an RLP quote available at a price better than the NBBO available. However, the SIP does not make known the price or the size of the RLP quote, which creates opacity in the liquidity available in RLP programs. The goal of these programs is to compete with wholesalers and to attract marketable order flow of individual investors to trade on national securities exchanges.[412]

However, it is the Commission's understanding that the share of individual investor trading volume executed through RLPs is small. For example, in 2021, less than 0.2% of consolidated volume executed in exchange RLP programs.[413] This low market share could be the result of several factors. For example, many retail brokers lack direct access to exchanges offering RLPs and the means of indirect access may be too costly for RLPs compared to routing to wholesalers. Further, wholesalers who compete with RLPs lack the incentives to route the individual investor order flow with lower adverse selection risk to the RLPs. If only the individual investor order flow with higher adverse selection risk goes to RLPs, the liquidity providers in RLPs would widen spreads to reflect the increased adverse selection.[414] This in turn, makes RLPs less competitive relative to wholesalers. Thus, even retail brokers with exchange membership may find wholesalers more attractive than RLPs for cost or execution quality reasons.

3. Institutional Investor Interactions With Retail Orders

Several wholesalers operate SDPs through which they execute institutional orders in NMS stocks against their own inventory.[415] Because wholesalers also execute individual investor orders against their own inventory, the use of SDPs amounts to an indirect interaction between institutional and individual investor orders. The trading volume on SDPs is economically significant. For example, a study found that in Q1 2022, the SDPs affiliated with the two highest-volume wholesalers accounted for around 3% of consolidated average daily trading volume in NMS stocks.[416] Institutional clients often communicate their trading interest to SDPs using Immediate or Cancel Orders (''IOCs'') or respond to Indication of Interest (''IOIs'') issued by the SDP.

On an SDP, the single dealer, *i.e.,* the wholesaler, is privy to the identities of the counterparties, *i.e.,* institutional investors. One academic paper has found that this information revelation may have adverse execution consequences for the institutional investor.[417] On the other hand, there also may be benefits relative to other trading venues. The trading interest of investors who submit IOCs to an SDP for liquidity are only exposed to the single dealer operating a platform. In contrast, submission of the same order to an exchange or an ATS may alert many other market participants to the underlying trade interest, triggering reactions. As such, institutional investors may view SDPs as an opportunity to tap into a pool of liquidity that reduces their orders' price impact and avoids triggering significant reactions by other market participants.

4. Execution Quality of Individual Investor Marketable Orders in NMS Stocks

publicdocs/nyse/markets/liquidity-programs/RLP_Fact_Sheet.pdf.

[409] *See, e.g.,* IEX retail liquidity program, *available at https://exchange.iex.io/products/retail-program/.*

[410] *See, e.g.,* NYSE Price List, *available at https://www.nyse.com/publicdocs/nyse/markets/nyse/NYSE_Price_List.pdf*; NYSE Arca Trading Fee, *available at https://www.nyse.com/publicdocs/nyse/markets/nyse-arca/NYSE_Arca_Marketplace_Fees.pdf;* and IEX Exchange Fee Schedule, *available at https://exchange.iex.io/resources/trading/fee-schedule/.*

[411] RLPs operate under an exemption from Rule 612, and are therefore allowed to use sub-penny pricing. As part of this exemption, however, they are only eligible for individual investors to execute against and cannot display quotes. *See supra* note 152 for further discussion.

[412] *See supra* note 151 regarding the purpose and operation of RLPs.

[413] *See* Rosenblatt Securities, *How Can the Buy Side Interact With Retail Flow?* (Feb. 14, 2022) *available at https://www.rblt.com/market-reports/how-can-the-buy-side-interact-with-retail-flow.*

[414] Unlike wholesalers, liquidity suppliers in RLP programs are not aware of the identity of the retail broker that the individual investor originated from. Therefore, they are not able to offer tighter spreads to individual investor orders from retail brokers whose orders on average have lower adverse selection risk. Instead, liquidity suppliers in RLP need to price their quotes based on the average expected adverse selection risk of all orders routed to the RLP. *See, e.g.,* Lawrence R. Glosten & Paul R. Milgrom, *Bid, Ask, and Transaction Prices in a Specialist Market With Heterogeneously Informed Traders,* 14 J. Fin. Econ. 71 (1985).

[415] Wholesalers and OTC market makers can execute orders themselves or instead further route the orders to other venues. An SDP always acts as the counterparty to any trade that occurs on the SDP. *See Where Do Stocks Trade?,* FINRA (Dec. 3, 2021), *available at https://www.finra.org/investors/insights/where-do-stocks-trade* for further discussion.

[416] *See* Rosenblatt Securities, *Rosenblatt's 2022 US Equity Trading Venue Guide* (May 24, 2022), *available at https://www.rblt.com/market-reports/rosenblatts-2021-us-equity-trading-venue-guide-2.* The study also found that SDPs accounted for approximately 10% of off-exchange trading volume in Q1 2022.

[417] *See, e.g.,* Robert H. Battalio, Brian C. Hatch & Mehmet Saglam, *The Cost of Exposing Large Institutional Orders to Electronic Liquidity Providers* (last revised Nov. 7, 2022) (unpublished manuscript), *available at https://ssrn.com/abstract=3281324* (retrieved from Elsevier database).

The wholesaler business model relies in part on segmentation and internalization of marketable order flow of individual investors, which is characterized by low adverse selection risk. An analysis of the execution quality of market and marketable limit orders handled by wholesalers retrieved from Rule 605 reports [418] and presented in Table 5 [419] shows that orders in NMS stocks handled by wholesalers are associated with lower price impact [420] compared to those executed on exchanges, indicating that orders handled by wholesalers on average have lower adverse selection costs.[421] This lower adverse selection cost allows wholesalers to provide these orders with better execution quality, manifested in lower effective spreads [422] and E/Q ratios compared to exchanges. The realized spreads [423] observed in Table 5 [424] adjust effective spreads for adverse selection costs (*i.e.,* price impact).[425] Thus orders handled by wholesalers have higher realized spreads, despite the fact that they may execute at better prices than those received by and executed on exchanges, as observed by their lower effective spreads in Table 5.

Realized spreads are a proxy for the potential economic profit that liquidity suppliers may earn on a trade.[426] Therefore, the higher realized spreads earned by wholesalers suggest that the isolation of individual investor orders routed to wholesalers results in wholesalers potentially earning higher economic profits relative to a venue where market makers compete with each other and other market participants to supply liquidity at the individual order level (*e.g.,* an exchange).

Additionally, the results in Table 5 show that approximately 79% of the executed dollar volume in marketable orders handled by wholesalers are market orders. The Commission believes that these outcomes reflect the heavy utilization of market orders for NMS stocks by individual investors whose orders are primarily handled by wholesalers, contrary to the heavy utilization of limit orders by other market participants.

Table 5 also highlights significantly higher fill rates, *i.e.,* the percentage of the shares in an order that execute in a trade, for marketable orders sent to wholesalers as compared to those sent to exchanges.[427] Wholesalers execute the vast majority of orders that they receive against their own capital, *i.e.,* they internalize the vast majority of

[418] Rule 605 requires market centers to make available, on a monthly basis, standardized information concerning execution quality for covered orders in NMS stocks that they received for execution. *See* 17 CFR 242.605. Covered orders are defined in 17 CFR 242.600(b)(22) to include orders (including immediate-or-cancel orders) received by market centers during regular trading hours at a time when a national best bid and national best offer is being disseminated, and, if executed, is executed during regular trading hours, and excludes orders for which the customer requests special handling for execution (such as not held orders). Rule 605 reports are required to contain a number of execution quality metrics for covered orders, including statistics for all NMLOs with limit prices within ten cents of the NBBO at the time of order receipt as well as separate statistics for market orders and marketable limit orders. Under the Rule, the information is categorized by individual security, one of five order type categories (*see* 17 CFR 242.600(b)(14)), and one of four order size categories, which does not include orders for less than 100 shares or orders greater than or equal to 10,000 shares (*see* 17 CFR 242.600(b)(11)). As such, Rule 605 does not require reporting for orders smaller than 100 shares, including odd-lot orders. Rule 605 requires market centers to report execution quality information for all covered orders that the market center receives for execution, including orders that are executed at another venue (*i.e.,* because they are effectively rerouted to another trading center by the market center).

[419] The following filters were applied to the Rule 605 data to remove potential data errors: Observations where the total shares in covered orders were less than the sum of the canceled shares, share executed at the market center, and share executed away from the market center were deleted; Observations with missing order size code, order type code, total covered shares, or total covered orders were deleted; Realized and effective spread values are set to missing values if the total shares executed at and away from the market center are zero; and Per share dollar realized spreads, per share dollar effective spreads, and per share dollar price improvements were winsorized at 20% of the volume weighted average price of the stock for the month as calculated from NYSE Daily TAQ data.

[420] *See supra* note 365 and accompanying text for a definition and discussion of price impact. Table 5 estimates the average price impact associated with marketable orders routed to wholesalers to be 1.2 bps. This means that for a $10 stock the NBBO midpoint would move up (down) by an average of 0.12 cents in the five minutes following the execution of marketable buy (sell) order.

[421] Once implemented, the changes to the current arrangements for consolidated market data in the MDI Adopting Release, 86 FR at 18621, may impact the numbers in Table 5, including by reducing those for realized spread, effective spread, and amount of price improvement. The NBBO will narrow in stocks priced greater than $250 because it will be calculated based off a smaller round lot size. This narrower NBBO will decrease price improvement statistics in Rule 605 reports, which is measured against the NBBO. The effects on effective and realized spreads is more uncertain, because they are measured against the NBBO midpoint, which may not change if both the NBB and NBO decrease by the same amount. However, if marketable orders are more likely to be submitted when there are imbalances on the opposite side of the limit order book (*i.e.,* more marketable buy orders are submitted when there is more size on the offer side of the limit order book than the bid side), then the NBBO midpoint may change such that it is closer to the quote the marketable order executes against, which may decrease the effective and realized spreads in stocks above $250 when the MDI Rules are implemented. It is uncertain how likely this NBBO midpoint is to change. It is also uncertain how or to what degree these changes would differ between exchange and wholesaler Rule 605 reports. If both changed similarly, then there would not be changes in relative differences between their reported spread measures. *See supra* note 356.

[422] *See supra* note 366 for a definition and discussion of effective spreads.

[423] *See supra* note 367 and accompanying text for a definition and discussion of realized spreads as a measure of the economic profits earned by liquidity providers. *See infra* note 426 discussing the limitations of realized spreads for estimating the profits earned by market makers.

[424] The exception to this result is market orders executed on exchanges, which have average higher realized spreads than wholesaler market orders. However, market orders represent only 0.2% of the overall marketable orders executed on exchanges and therefore do not accurately represent exchange realized spreads. More specifically, *marketable limit orders* executed on exchanges in Q1 2022 had a share volume of 179.10 billion shares while *market orders* executed on exchanges had a share volume of 0.39 billion shares. *See infra* Table 5.

[425] The execution quality information required pursuant to Rule 605 combines information about orders executed at a market center with information on orders received for execution at a market center but executed by another market center; *see supra* note 407. As such, the execution quality statistics presented in Table 5 include orders that are effectively rerouted by wholesalers. Furthermore, note that Rule 605 does not specifically require market centers to prepare separate execution quality reports for their SDPs, and as such these calculations reflect all covered market and marketable limit orders in NMS stocks received and executed by wholesalers, including those on SDPs.

[426] *See supra* note 367 for the definition of the realized spread. Realized spreads do not measure the actual trading profits that market makers earn from supplying liquidity. In order to estimate the trading profits that market makers earn, we would need to know at what times and prices the market maker executed the off-setting position for a trade in which it supplied liquidity (*e.g.,* the price at which the market maker later sold shares that it bought when it was supplying liquidity). If market makers offset their positions at a price and time that is different from the NBBO midpoint at the time lag used to compute the realized spread measure (Rule 605 realized spread statistics are measured against the NBBO midpoint 5 minutes after the execution takes place), then the realized spread measure is an imprecise proxy for the profits market makers earn supplying liquidity. *See* Conrad and Wahal (2020) (for discussions showing how realized spreads decline when measured over time horizons and for further discussions regarding how realized spreads are affected when measured over different time horizons). Differences in inventory holding periods of different market makers could also create differences in the trading profits that market makers earn that would not be captured in the realized spread measure if it is estimated over the same time horizon for all market makers. *See* Lingyan Yang & Ariel Lohr, *The Profitability of Liquidity Provision* (last revised Feb. 18, 2022) (unpublished manuscript), *available at https://ssrn.com/abstract=4033802.* Additionally, realized spread metrics do not take into account any transaction rebates or fees, including PFOF, that a market maker might earn or pay, which would also affect the profits they earn when supplying liquidity. Furthermore, realized spreads also do not account for other costs that market makers may incur, such as fixed costs for setting up their trading infrastructure and costs for connecting to trading venues and receiving market data.

[427] Marketable orders may not fully execute if there isn't sufficient liquidity on the exchange to fill the orders within their limit price and/or if they contain other instructions that limit their execution, such as if they are designated as IOC orders or there are instructions not to route the orders to another exchange.

orders they receive.[428] Wholesalers expose themselves to inventory risk when internalizing order flow, but mitigate this risk by internalizing orders that possess low adverse selection risks.

TABLE 5—COMPARISON OF RULE 605 EXECUTION QUALITY STATISTICS BETWEEN EXCHANGES AND WHOLESALERS FOR NMS COMMON STOCKS AND ETFS IN Q1 2022

	Combined marketable orders		Market		Marketable limit	
	WH	EX	WH	EX	WH	EX
Average Price	$47.89	$58.14	$56.19	$85.45	$30.66	$58.08
Share Volume (billion shares)	106.97	179.49	72.20	0.39	34.77	179.10
Dollar Volume (billion $)	$5,122.91	$10,436.02	$4,056.85	$33.53	$1,066.06	$10,402.49
Fill Rate (%)	69.32%	25.77%	99.79%	58.08%	34.81%	25.77%
Effective Spread (bps)	1.81	2.06	1.47	3.29	3.11	2.06
Realized Spread (bps)	0.61	−0.38	0.39	2.40	1.43	−0.39
Price Impact (bps)	1.20	2.44	1.08	0.90	1.68	2.45
E/Q ratio	0.48	1.01	0.40	1.65	0.83	1.01
Pct of Shares Price Improved	83.17%	8.78%	88.99%	15.95%	61.01%	8.75%
Conditional Amount of Price Improvement (bps)	2.17	1.50	2.33	1.92	1.24	1.50

This table computes aggregated execution quality statistics for marketable covered orders received by exchanges and wholesalers from Rule 605 reports for Q1 2022 for NMS common stocks and ETFs. *See supra* note 418 for a definition of covered orders. Individual wholesaler and exchange Rule 605 reports are aggregated together at the stock-month level, into two categories, WH and EX, such that aggregate execution quality data is averaged for, (a) wholesalers (WH) and, (b) exchanges (EX), for each stock during each month.

The following metrics were calculated: Average Price is the stock's average execution price from the Rule 605 data (Dollar Volume/Share Volume), Share Volume is the total executed shares (in billions) from the Rule 605 data. Dollar Volume is the total executed dollar volume (in billions), calculated as the executed share volume from the Rule 605 data multiplied by the stock's monthly VWAP price, as derived from NYSE Daily Trade and Quote data (TAQ). Fill Rate is the weighted average of the stock-month total executed share volume/total covered shares from the Rule 605 data. Effective Spread is the weighted average of the stock-month percentage effective half spread in basis points (bps). Realized Spread is the weighted average of the stock-month percentage realized half spread in basis points (bps). Price Impact is the weighted average of the stock-month percentage price impact in basis points (bps). E/Q ratio is the weighted average of the stock-month ratio of the effective spread/quoted spread. Pct of Shares Price Improved is the weighted average of the stock-month ratio of shares executed with price improvement/total executed share volume. Conditional Amount of Price Improvement is the weighted average of the stock-month of the amount of percentage price improvement in basis points (bps), conditional on the executed share receiving price improvement.

Aggregated effective and realized percentage spreads are measured in half spreads in order to show the average cost of an individual investor order and are calculated by dividing the aggregated Rule 605 reported per share dollar amount by twice the stock's monthly volume weighed average price (VWAP), as derived from NYSE Daily Trade and Quote data (TAQ), for trades executed during regular market hours during the month. Percentage price impact is calculated as the aggregated Rule 605 reported per share dollar effective spreads minus per share dollar realized spreads divided by twice the stock's monthly volume weighed average price (VWAP), as derived from NYSE Daily Trade and Quote data (TAQ). Percentage amount of price improvement is calculated as the aggregated Rule 605 reported per share dollar amount of price improvement divided by the stock's monthly volume weighed average price (VWAP), as derived from NYSE Daily Trade and Quote data (TAQ). Percentage spreads and amount of price improvement percentages are reported in basis points (bps). The Combined Market and Marketable Limit order type category is constructed for each security-month-order size category by combining the market and marketable limit order categories and computing the total and share weighted average metrics for the order size category for each security-month.

The sample includes NMS common stocks and ETFs that are present in the CRSP 1925 US Stock Database, Ctr. Rsch. Sec. Prices, U. Chi. Booth Sch. Bus. (2022). The CRSP 1925 US Indices Database, Ctr. Rsch. Sec. Prices, U. Chi. Booth Sch. Bus. (2022), was used to identify if a stock was a member of the S&P 500. The stock did not have to be in the CRSP 1925 US Indices Database to be included in the analysis. NMS Common stocks and ETFs are identified, respectively, as securities in TAQ with a Security Type Code of 'A' and 'ETF'. For each stock-month-order-type (such that aggregate execution quality data is averaged for, (a) wholesalers and, (b) exchanges, for each stock during each month) the per dollar share weighted measures from Rule 605 reports are aggregated together by share-weighting across different trading venues and order-size categories within the stock-month-order-type and venue type (*i.e.,* trading venue Rule 605 reports for exchanges and wholesalers are aggregated into different categories). Percent values are then calculated for each stock month by dividing by the stock's monthly volume weighed average price (VWAP). These percentage stock-month values are averaged together into order-type categories (market orders, marketable limit orders, and the combined market and marketable limit order type category, for both wholesalers and exchanges) based on weighting by the total dollar trading volume for the wholesaler or exchange category in that stock-month-order type, where dollar trading volume is estimated by multiplying the Rule 605 report total executed share volume, *i.e.,* the share volume executed at market center + share volume executed away from the market center, for the stock-month-order type by the stock's monthly VWAP. *See supra* note 419 for a discussion of filters that were applied to the Rule 605 data in this analysis.

Because segmented orders valued at $200,000 and greater would be excepted from Proposed Rule 615,[429] we limit our analysis to Rule 605 order size categories where the average dollar value of orders received by wholesalers was under $200,000.[430] Table 6 summarizes Rule 605 data comparing the execution quality of marketable orders (*i.e.,* the combined market and marketable limit order category in Table 5) under $200,000 routed to wholesalers and exchanges for different security types.[431] In Table 6, the average realized spreads for marketable orders routed to exchanges are negative for all security types,[432] while orders routed to wholesalers have positive realized spreads in all securities, with larger realized spreads in Non-S&P 500 stocks. The positive realized spreads for marketable orders routed to wholesalers seem to indicate that the amount of price improvement these orders receive in the form of lower effective spreads does not fully offset the lower adverse selection costs they impose on liquidity suppliers (as measured by lower price impacts) compared to negative realized

[428] *See* analysis in *infra* Table 10 and corresponding discussion.

[429] *See supra* section IV.B.5 discussing exceptions to the Proposed Rule.

[430] We estimated the average dollar value of the orders received by wholesalers based on their Rule 605 reports by multiplying the average order size for a stock-month-order-size-category (estimated as the number of total covered shares divided by the number of total covered orders) by the stock's average monthly VWAP price estimated from NYSE TAQ data.

[431] Both the wholesaler and exchange average execution metrics in Table 6 are calculated based on weighting by the total wholesaler dollar trading volume in that stock-month. This weighting method calculates averages across stocks similarly for exchanges and wholesalers when aggregating their Rule 605 reports, which helps ensure the averages across stocks are comparable between exchanges and wholesalers.

[432] A negative average realized spread on exchanges does not necessarily mean that market makers on exchanges are not earning trading profits for supplying liquidity on exchanges. The realized spread observed on exchanges is a mix of liquidity supplied by market makers and limit orders submitted by other traders who may be interested in trading but not earning a spread (*e.g.,* limit or midpoint orders of individual or institutional investors that potentially don't want to pay the spread to trade). Additionally, as discussed in *supra* note 426, the realized spread is a proxy and does not measure the actual trading profits that market makers earn from supplying liquidity. It does not include exchange rebates liquidity suppliers may earn and also makes assumptions about the time and price at which the liquidity suppliers exit the position. After accounting for exchange rebates, liquidity suppliers on exchanges could potentially earn average positive trading profits if they exit their positions at a different time or price than the estimated NBBO midpoint at the time horizon used to estimate the realized spread (5 minutes for realized spreads reported in Rule 605). *See* Conrad and Wahal (2020) for discussions on how realized spreads vary when calculated over different time horizons.

spreads for orders routed to exchanges.[433]

Table 6 also shows realized spreads adjusted to reflect share-level PFOF payments paid by wholesalers[434] and rebates paid by exchanges.[435] After these respective costs are netted out, although wholesaler realized spreads are reduced and exchange realized spreads increase (*i.e.,* are less negative), wholesaler realized spreads continue to exceed exchange realized spreads. Adjusting for rebates on the one hand and PFOF on the other allows us to estimate a marginal profit to a liquidity supplier in each venue (note that a rebate substitutes one-for-one with a spread, as does PFOF, and in an idealized perfect-competition setting both would be zero). Acknowledging that there may be differences not captured by these measures, this calculation suggests a higher marginal profit for orders off-exchange versus on-exchange, and suggests greater on-exchange competition.[436] While an accounting measure of profit would need to take, say, fixed costs into account, fixed costs alone would not explain the difference as liquidity suppliers on both types of venues may have similar fixed costs.

TABLE 6—RULE 605 WHOLESALER (WH) AND EXCHANGE (EX) EXECUTION QUALITY COMPARISON FOR MARKETABLE ORDERS UNDER $200,000 FOR Q1 2022 BY SECURITY TYPE

	All NMS stocks	S&P 500	Non-S&P 500	ETF
Average Price	$33.99	$97.03	$13.52	$51.19
WH Share Volume (billion shares)	96.51	15.00	62.32	19.18
WH Dollar Volume (billion $)	$3,280.03	$1,455.40	$842.66	$981.98
EX Share Volume (billion shares)	172.08	39.89	86.67	45.52
EX Dollar Volume (billion $)	$9,025.52	$3,448.64	$1,899.61	$3,677.27
WH Fill Rate (%)	69.06%	73.17%	66.65%	65.03%
EX Fill Rate (%)	27.31%	32.53%	29.56%	17.63%
WH Effective Spread (bps)	2.05	0.72	5.70	0.89
EX Effective Spread (bps)	3.11	1.45	7.86	1.49
WH Realized Spread (bps)	0.72	0.30	1.55	0.64
EX Realized Spread (bps)	−0.67	−0.30	−1.97	−0.12
WH Realized Spread Adj PFOF (bps)	0.43	0.17	0.86	0.45
EX Realized Spread Adj Rebate (bps)	−0.001	−0.05	−0.24	0.28
WH Price Impact (bps)	1.33	0.42	4.15	0.25
EX Price Impact (bps)	3.78	1.74	9.83	1.61
WH E/Q Ratio	0.42	0.35	0.49	0.45
EX E/Q Ratio	1.00	0.98	1.00	1.01
WH % Pct of Shares Price Improved	84.7%	86.7%	82.5%	83.4%
EX % Pct of Shares Price Improved	8.8%	10.9%	9.5%	5.2%
WH Conditional Amount of Price Improvement (bps)	2.62	1.49	6.27	1.17

[433] Other studies have also used realized spreads to examine competition between liquidity suppliers. *See, e.g.,* Roger Huang & Hans Stoll, *Dealer versus auction markets: A paired comparison of execution costs on NASDAQ and the NYSE,* 41 J. Fin. Econ. 313 (1996) (finding that in 1991 realized spreads for a sample of NASDAQ stocks were higher than realized spreads for a matched sample of NYSE stocks and concluding that important explanations for the higher spreads observed on NASDAQ were the internalization and preferencing of order flow and the presence of alternative interdealer trading systems, factors that limited dealers' incentives to narrow spreads); Jonathan Brogaard & Corey Garriott, *High-Frequency Trading Competition,* 54 J. Fin. & Quantitative Analysis 1469 (2019) (looking at the effects of the entry of new high-frequency traders that compete to supply liquidity on the Canadian Alpha exchange and finding that realized spreads decreased for the marketable orders of non-high-frequency traders after new high-frequency traders entered the market; the study observed that the reduction in realized spreads was not attributable to changes in the price impact of the orders of non-high-frequency traders and that the reduction in realized spreads was attributable to increased competition among liquidity suppliers); and Hank Bessembinder & Herbert Kaufman, *A cross-exchange comparison of execution costs and information flow for NYSE-listed stocks,* 46 J. Fin. Econ. 293 (1997) (finding in 1994 that effective bid-ask spreads for trades in NYSE issues completed on the NYSE are slightly smaller than for trades completed with the NASD dealer market and the regional stock exchanges but the realized bid-ask spreads for trades on the NYSE are lower by a factor of two to three; the authors conclude that this differential is attributable to the successful 'cream skimming' of uninformed trades by market makers off of the NYSE exchange; the authors also raise concerns as to whether the trades being diverted from the NYSE might have received better execution if they were not diverted and whether existing rules governing order flow effectively fostered competition).

[434] Wholesaler realized spreads are adjusted to account for the PFOF they pay to retail brokers. Because we are not able to identify the broker-dealer from which the orders originated in Rule 605 reports, we estimate PFOF rates for the Rule 605 data sample by multiplying the estimated PFOF rates retail brokers receive in Table 2 by 74% in order to adjust for an estimated 26% of the marketable order flow wholesalers receive coming from retail brokers that do not accept PFOF, as estimated by the percentage of share volume received from non-PFOF brokers in *infra* Table 14. The estimated PFOF rates are 12 mils for market orders in S&P 500 stocks, 10 mils for market orders in ETFs and non-S&P 500 stocks, 17 mils for marketable limit order in S&P 500 stocks, and 9 mils for marketable limit orders in ETFs and non-S&P 500 stocks. For the Rule 605 data sample, the wholesalers' PFOF adjusted realized spread is computed by subtracting the relevant PFOF rate from a stock's average dollar realized spread for orders routed to wholesalers and then dividing by twice the stock's average monthly VWAP price estimated from NYSE TAQ data.

[435] Estimates of exchange rebates that liquidity suppliers earn on maker-taker venues and the fees they pay on inverted and flat fee venues are assumed as follows: exchange rebates to liquidity suppliers on maker-taker venues are 27 mils; exchange fees for supplying liquidity on inverted venues are 15 mils; exchange fees for supplying liquidity on flat fee venues are 7 mils; and there is no fee on exchanges that do not charge fees and rebates. Exchange rebates are assumed to be 27 mils based on the average rate exchanges pay retail brokers for their non-marketable limit orders in Table 2. Fee rates for inverted and flat fee venues (which charge fees to both liquidity suppliers and demanders and do not pay rebates) were estimated based on exchange fee and rebate tables and were adjusted by 3 mils to account for volume-based tiering (for inverted venues) or differences in fees supplying liquidity using displayed vs. non-displayed orders (for flat fee venues). For both the Rule 605 and CAT data samples (*see infra* Table 7), a stock's rebate adjusted exchange realized spread is calculated by adding/subtracting the exchange rebate/fee to/from the average dollar realized spread and then dividing by twice the stock's average monthly VWAP price estimated from NYSE TAQ data.

[436] One caveat to the difference in transaction costs on and off-exchange is that, on-exchange execution, to the extent it is driven by institutional order flow, may be accompanied by commissions. While this should not affect the interpretation of realized spreads as marginal profit to liquidity provision, it does reflect the interpretation as either the transaction cost of the customer or marginal profit of the liquidity supplier handling customer order flow.

TABLE 6—RULE 605 WHOLESALER (WH) AND EXCHANGE (EX) EXECUTION QUALITY COMPARISON FOR MARKETABLE ORDERS UNDER $200,000 FOR Q1 2022 BY SECURITY TYPE—Continued

	All NMS stocks	S&P 500	Non-S&P 500	ETF
EX Conditional Amount of Price Improvement (bps)	2.36	1.04	5.88	1.28

This table compares aggregated execution quality statistics broken out for different security types for marketable covered orders with average order size under $200,000 received by exchanges and wholesalers as reported from Rule 605 reports for Q1 2022 for NMS common stocks and ETFs. *See supra* note 418 for a definition of covered orders. Individual wholesaler and exchange Rule 605 reports are aggregated together at the stock-month level into two categories, EX and WH. EX shows aggregated statistics from Rule 605 reports from exchanges and WH shows aggregated statistics from Rule 605 reports from wholesalers. Marketable orders are constructed separately for wholesalers and exchanges by combining the Market and Marketable Limit order type categories in Rule 605 reports for each security-month-order size category and computing the total and share weighted average metrics from the combined order types for the order size category for each security-month.

See supra Table 5 for the descriptions of the reported metrics: Average Price, Share Volume, Dollar Volume, Fill Rate, Effective spread, Realized spread, Price Impact, E/Q Ratio, Pct Shares Price Improved, and Conditional Amount of Price Improvement. WH Realized Spread Adj PFOF is the weighted average of the stock-month percentage realized half spread in basis points (bps) from wholesaler 605 reports after adjusting for the estimated PFOF paid by the wholesaler using the methodology described in *supra* note 434. EX Realized Spread Adj Rebate is the weighted average of the stock-month percentage realized half spread in basis points (bps) from exchange 605 reports after adjusting for the estimated rebates (access fees) exchanges pay (charge) to liquidity suppliers using the methodology described in *supra* note 435.

Percentage spreads are measured in half spreads in order to show the average cost of an individual investor order and are calculated by dividing the Rule 605 report per share dollar amount by twice the stock's monthly VWAP, as derived from NYSE Daily Trade and Quote data (TAQ), for trades executed during regular market hours during the month. Percentage spreads are reported in basis points (bps).

The sample includes NMS common stocks and ETFs that are present in the CRSP 1925 US Stock Database, Ctr. Rsch. Sec. Prices, U. Chi. Booth Sch. Bus. (2022). The CRSP 1925 US Indices Database, Ctr. Rsch. Sec. Prices, U. Chi. Booth Sch. Bus. (2022), was used to identify if a stock was a member of the S&P 500. The stock did not have to be in the CRSP 1925 US Indices Database to be included in the analysis. NMS Common stocks and ETFs are identified, respectively, as securities in TAQ with a Security Type Code of 'A' and 'ETF. The exchange and wholesaler metrics in the table are each reported for the combined marketable order type, which was constructed for this analysis separately for exchange and wholesalers by combining the Market and Marketable Limit order type categories in Rule 605 reports at the stock-month-order-size level and computing the total and share weighted average metrics from the combined order types. For each stock-month, share weighted metrics (for both exchange and wholesalers) are then calculated by share-weighting across different order-size categories based on the number of shares executed (at the market center + away) in wholesalers' Rule 605 reports in that order-size category. Order size categories with wholesaler average order dollar values greater than or equal to $200,000 were excluded. The average order dollar values were determined for each order-size category stock-month by dividing the wholesaler total number of covered shares in the order size category by the wholesaler total number of covered orders and then multiplying by the stock-month's average VWAP, as derived from NYSE Daily Trade and Quote data (TAQ). Stock-month values are averaged together (for both wholesalers and exchanges) based on weighting by the total wholesaler dollar trading volume in that stock-month for the combined marketable order type (wholesaler dollar trading volume is estimated by multiplying the Rule 605 report wholesaler total executed share volume, *i.e.,* the share volume executed at market center + share volume executed away from the market center, for the stock-month-order type by the stock's monthly VWAP). This weighting method calculates averages across stocks similarly for exchanges and wholesalers when aggregating their Rule 605 reports, which helps ensure the averages across stocks are comparable between exchanges and wholesalers. *See supra* note 419 for a discussion of filters that were applied to the Rule 605 data in this analysis.

Because Rule 605 requires market centers to report execution quality statistics only for covered orders that fall within specific order size and type categories,[437] a number of order types and sizes that may be particularly relevant for individual investors are excluded from the above analyses, including orders for less than 100 shares.[438] Additionally Rule 605 data does not allow us to distinguish between orders that wholesalers execute on a principal basis from those they execute on riskless principal basis, since they are both reported as being executed at the market center. Furthermore, it is not possible in Rule 605 data to distinguish between orders that a wholesaler received from individual investors from those it received from other types of market participants. For example, wholesaler Rule 605 reports may include both individual investor orders that they receive, as well as institutional orders they receive on their SDPs. Lastly, effective and realized spread measures as required to be reported in Rule 605 reports are calculated using a five-minute time horizon, which some academic literature argues has become inappropriate for a high-frequency environment.[439] Therefore, to supplement the analyses using Rule 605 data and test for the robustness of the results[440] that it generated, CAT data[441] was analyzed to look at the execution

[437] *See supra* note 407 for a definition of covered orders and a discussion of the order type and size categories included in Rule 605 reporting requirements.

[438] There is evidence that individual investors tend to use smaller trading sizes. *See, e.g.,* Robert P. Bartlett, Justin McCrary & Maureen O'Hara, *The Market Inside the Market: Odd-Lot Quotes* (last revised Feb. 11, 2022) (unpublished manuscript), *available at https://ssrn.com/abstract=4027099* (retrieved from Elsevier database); Matthew Healey, *An In-Depth View Into Odd Lots,* Cboe (Oct. 2021), *available at https://www.cboe.com/insights/posts/an-in-depth-view-into-odd-lots/.*

[439] *See, e.g.,* Maureen O'Hara, *High Frequency Market Microstructure,* 116 J. Fin. Econ. 257 (2015) (''O'Hara 2015''); Maureen O'Hara, Gideon Saar & Zhuo Zhong, *Relative Tick Size and the Trading Environment,* 9 Rev. of Asset Pricing Stud. 47 (2019) (''O'Hara et al.''); Jennifer S. Conrad & Sunil Wahal, *The Term Structure of Liquidity Provision,* 136 J. Fin. Econ. 239 (2020) (''Conrad and Wahal''). Conrad and Wahal suggest that a one-minute horizon may be appropriate for small stocks, and a 15-second horizon may be appropriate for large stocks. The following analyses using CAT data will use a one-minute horizon for calculating the realized spread; *see supra* note 50.

[440] Rule 605 data is publicly available and the consistency of the results generated by analysis of these data supports the veracity of the results generated by CAT data, despite the fact that CAT data is not publicly available.

[441] This analysis used CAT data to examine the execution quality of marketable orders in NMS Common stocks and ETFs that belonged to accounts with a CAT account type of ''Individual Customer'' and that originated from a broker-dealer MPID that originated orders from 10,000 or more unique ''Individual Customer'' accounts during Jan. 2022. The number of unique ''Individual Customer'' accounts associated with each MPID was calculated as the number for unique customer account identifiers with an account customer type of ''Individual Customer'' that originated at least one order during the month of Jan. 2022. The Commission found that 58 broker-dealer MPIDs associated with 54 different broker-dealers originated orders from 10,000 or more unique Individual Customer accounts in Jan. 2022. As discussed in *supra* note 194, the CAT account type ''Individual Customer'' may not be limited to individual investors because it includes natural persons as well as corporate entities that do not meet the definitions for other account types. The Commission restricted that analysis to MPIDs that originated orders from 10,000 or more ''Individual Customer'' accounts in order to ensure that these MPIDs are likely to be associated with retail brokers to help ensure that the sample is more likely to contain marketable orders originating from individual investors. NMS Common stocks and ETFs are identified, respectively, as securities in TAQ with a Security Type Code of ''A'' and ''ETF.''

quality of marketable orders of individual investors in NMS Common Stocks and ETFs that were less than $200,000 in value and that executed and were handled by wholesalers during Q1 2022 (''CAT retail analysis'').[442] This was compared to a sample of CAT data examining the execution quality of executed market and marketable limit orders in NMS Common Stocks and ETFs received by exchanges that were less than $200,000 in value over the same time period (''CAT exchange analysis'').[443]

Table 7, which reports results from CAT data, contains some statistics that are not available in Rule 605 reports, including statistics on midpoint executions and sub-penny trades.[444] In NMS common stock and ETF orders, wholesalers execute approximately 44% of shares at prices at or better than the NBBO midpoint. However, wholesalers also offer less than 0.1 cents price improvement to approximately 18.6% of shares that they execute. Wholesalers execute more than 65% of shares at sub-penny prices, with over 40% of shares being executed at prices with four decimal points (*i.e.,* the fourth decimal place is not equal to zero).

Results from this analysis are highly consistent with results from the analysis of Rule 605 data from Table 6. Specifically, wholesalers display lower price impacts and E/Q ratios, indicating that orders internalized by wholesalers receive better execution quality than orders executed on exchanges. Despite this enhanced execution quality, realized spreads of wholesalers exceed those produced by exchanges.[445] This finding remains even after netting out PFOF payments made by wholesalers[446] and rebates made by exchanges.[447]

TABLE 7—WHOLESALER CAT ANALYSIS OF EXCHANGE INDIVIDUAL INVESTOR ORDER EXECUTION QUALITY FOR MARKETABLE ORDERS IN NMS COMMON STOCKS AND ETFS BY TYPE OF STOCK

Variable	All	SP500	Non-SP500	ETF
Panel A: Wholesaler and Exchange Execution Quality				
Average Price	$29.87	$110.31	$10.52	$53.14
WH Principal Execution Rate	90.44%	93.07%	87.66%	88.12%
WH Share Volume (billion shares)	87.11	11.63	63.17	12.31
EX Share Volume (billion shares)	281.90	66.98	140.82	74.10
WH Dollar Volume (billion $)	$2,601.44	$1,282.62	$664.41	$654.41
EX Dollar Volume (billion $)	$16,194.84	$6,479.89	$3,246.09	$6,468.85
WH Effective Spread (bps)	2.11	0.67	6.23	0.76
EX Effective Spread (bps)	3.18	1.52	8.11	1.42
WH Realized Spread (bps)	0.85	0.42	2.00	0.51
EX Realized Spread (bps)	−1.22	−0.28	−3.90	−0.34
WH Realized Spread Adj PFOF (bps)	0.49	0.29	0.99	0.36
EX Realized Spread Adj Rebate (bps)	−0.40	−0.06	−1.54	0.08

[442] Fractional share orders with share quantity less than one share were excluded from the analysis. The analysis included market and marketable limit orders that originated from one of the 58 retail broker MPIDs and were received by a market center that was associated with one of the six wholesalers CRD numbers (FINRA's Central Registration Depository number) during some point in the order's lifecycle. Orders that were received by the wholesaler or executed outside of normal market hours were excluded. Orders were also excluded if they had certain special handling codes so that execution quality statistics would not be skewed by orders being limited in handling by special instructions (*e.g.,* pegged orders, stop orders, post only orders, etc.) Orders identified in CAT as Market and Limit orders with no special handling codes or one of the following special handling codes were included in the analysis: NH (not held), CASH (cash), DISQ (display quantity), RLO (retail liquidity order), and DNR (do not reduce). These special handling codes were identified based on their common use by retail brokers and descriptions of their special handling codes. The marketability of a limit order was determined based on the consolidated market data feed NBBO at the time a wholesaler first receives the order. Limit orders that were not marketable were excluded. The dollar value of an order was determined by multiplying the order's number of shares by either its limit price, in the case of a limit order, or by the far side quote (*i.e.,* NBO for a market buy order and NBB for a market sell) of the consolidated market data feed NBBO at the time the order was first received by a wholesaler, in the case of a market order. Orders with dollar values greater than or equal to $200,000 were excluded from the analysis. The analysis includes NMS Common Stocks and ETFs (identified by security type codes of 'A' and 'ETF' in NYSE TAQ data) that are also present in CRSP data. Price improvement, effective spreads, realized spreads, quoted spreads, and price impacts were winsorized if they were greater than 20% of a stock's VWAP during a stock-week. *See* Table 7 for a detailed description of the analysis.

[443] The Commission analysis used CAT data to examine the execution quality of market and marketable limit orders in NMS Common Stocks and ETFs that were under $200,000 in value that were received and executed by exchanges during normal market hours in Q1 2022. The analysis employed filters to clean the data and account for potential data errors. The analysis is limited to orders identified in CAT as market and limit orders accepted by exchanges. Orders were excluded from the analysis if they had certain special handling codes, such as post or add-liquidity only orders, midpoint orders, orders that can only execute in opening and closing auctions, orders with a minimum execution quantity, pegged orders, or stop order or stop-loss orders. Orders were also required to execute in normal trades during normal trading hours to be included in the analysis. Normal trades are identified in CAT data by sale conditions ''blank, @, E, F, I, S, Y'' which correspond to regular trades, intermarket sweep orders, odd lot trades, split trades, and yellow flag regular trades. For orders submitted to exchanges, the NBBO the exchange records seeing at the time of order receipt is used to measure the NBBO and NBBO midpoint for calculating statistics that are based on the time of order receipt (*e.g.,* effective spreads, price improvement, quoted spreads, etc.). The marketability of exchange orders was determined based on the NBBO observed by the exchange at the time of order receipt. The dollar value for a market order was calculated as the price of the far side NBBO quote (NBO for a market buy order and NBB for a market sell) times the shares in the order. The dollar value for a limit order was calculated as the price of the limit order times the number of shares in the order. Orders with dollar values greater than or equal to $200,000 were excluded from the analysis. The consolidated market data feed NBBO was used to calculate statistics that use the NBBO or NBBO one minute after execution (*e.g.,* realized spreads, price impacts, etc). The analysis includes NMS Common Stocks and ETFs (identified by security type codes of 'A' and 'ETF' in NYSE TAQ data) that are also present in CRSP data. Price improvement, effective spreads, realized spreads, quoted spreads, and price impacts were winsorized if they were greater than 20% of a stock's VWAP during a stock-week. *See* Table 7 for a detailed description of the analysis.

[444] Certain items in Table 7 may also be affected by the MDI rules once they are implemented. *See supra* notes 356 and 421.

[445] The relative differences between exchanges and wholesalers in price impacts and realized spreads are even more pronounced with the CAT data, which (unlike 605 data) include odd lots, exclude orders greater than $200,000, and measure realized spreads from 1 minute rather than 5 minutes after execution.

[446] For CAT data, we estimate the PFOF each retail broker receives based on data from their Q1 Rule 606 reports. For each month we separately estimate the average per share PFOF rate they receive from wholesalers based on the order type (market and marketable limit orders) and security type (S&P500 and non-S&P500 stocks), which we then combine with the same order and stock type in the CAT data. If a retail broker does not produce a Rule 606 report, then we use the PFOF rates from its clearing broker's Rule 606 report, if it is available (some retail brokers' websites disclosed that they share in payments their clearing broker receives for their order flow). A PFOF rate of 20 cents per 100 shares was used for the introducing broker-dealers and clearing broker that reported handled orders on a not held basis and did not disclose PFOF information in their Rule 606 report but disclosed on their website that they received PFOF for their order flow. 20 cents per 100 shares was the PFOF rate that the clearing broker that handles orders on a not held basis disclosed on their website that they received.

[447] *See supra* note 435 for discussion of how exchange rebates are calculated.

TABLE 7—WHOLESALER CAT ANALYSIS OF EXCHANGE INDIVIDUAL INVESTOR ORDER EXECUTION QUALITY FOR MARKETABLE ORDERS IN NMS COMMON STOCKS AND ETFS BY TYPE OF STOCK—Continued

Variable	All	SP500	Non-SP500	ETF
WH Price Impact (bps)	1.26	0.25	4.22	0.25
EX Price Impact (bps)	4.40	1.80	12.00	1.75
WH E/Q Ratio	0.39	0.32	0.50	0.41
EX E/Q Ratio	1.04	1.01	0.98	1.17
Panel B: Wholesaler Price Improvement				
WH Pct Executed with Price Improvement	89.95%	93.33%	85.43%	87.93%
WH Conditional Amount Price Improvement (bps)	2.54	1.47	6.16	0.99
WH Pct Shares Executed at Midpoint or Better	44.57%	47.37%	39.76%	43.97%
WH Pct Shares Executed at Midpoint	31.69%	32.47%	28.46%	33.44%
WH Pct Shares Executed at NBBO	8.38%	5.86%	10.97%	10.69%
WH Pct Shares Executed Outside NBBO	1.67%	0.81%	3.61%	1.38%
WH Pct Shares Executed with <0.1 cent Price Improvement	18.64%	16.62%	20.58%	20.64%
WH Pct of Shares Executed as Subpenny Prices	66.98%	65.10%	64.16%	73.55%
WH Pct of Shares Executed at Subpenny Prices without Midpoint Trades	47.60%	46.82%	47.03%	49.68%
WH Pct of Shares Executed at Subpenny Prices with 4 Decimals	41.36%	40.80%	41.76%	42.06%

This table uses CAT data to compare aggregated execution quality statistics for Q1 2022 broken out for different security types for executed marketable orders with order size under $200,000 in NMS Common Stocks and ETFs received by wholesalers from individual investors to similar orders received by exchanges. Aggregated statistics in the table labeled WH are based on analysis of CAT data of executed marketable orders in NMS Common Stocks and ETFs from individual investors for under $200,000 in value belonging to one of 58 retail broker MPIDs that were handled by one of 6 wholesalers during normal market hours in Q1 2022 (*see supra* note 442 for additional discussions on the CAT data used in the CAT retail analysis). Aggregated statistics in the table labeled EX are based on a corresponding analysis of CAT data of executed marketable orders in NMS Common Stocks and ETFs receive by exchanges that were under $200,000 in value and received and executed during normal market hours in Q1 2022 (*see supra* note 443 for additional discussions on the CAT data used in CAT exchange analysis).

The following metrics are calculated for all stocks and for each of the stock-types. EX indicates aggregated statistics for executed marketable orders routed to exchanges and WH indicates aggregated statistics for executed marketable orders from individual investors that were routed to wholesalers. Average Price is the average execution price. WH Principal Execution Rate is the percentage of dollar volume of individual investor trades that a wholesaler executed in a principal capacity. Share Volume is the total executed share volume. Dollar Volume is the total executed dollar volume. Effective Spread is the weighted average of the percentage effective half spread in basis points (bps) (measured as average (execution price—NBBO midpoint at time of order receipt) * average transaction price). Realized Spread is the weighted average of the percentage one minute realized spread in bps (measured as average (execution price—NBBO midpoint one minute after execution) * average transaction price). WH Realized Spread Adj PFOF is the estimated realized spread in bps earned by the wholesaler after adjusting the realized spread for the estimated PFOF they pay to retail brokers (*see supra* note 446 for further details on adjusting wholesaler realized spreads for PFOF in CAT data). EX Realized Spread Adj Rebate is the estimated realized spread in bps earned by exchange liquidity suppliers after adjusting the realized spread for the estimated exchange rebates they receive or access fees they pay for supplying liquidity (*see supra* note 435 for further details on adjusting realized spreads for exchange fees and rebates). Price Impact is the weighted average of the percentage one-minute price impact spread in bps (measured as average (NBBO midpoint one minute after execution—NBBO midpoint at time of order receipt)/average transaction price). E/Q Ratio is the weighted average of the ratio of the effective dollar spread divided by its quoted spread at the time of order receipt. WH Pct Executed with Price Improvement is the weighted average of the percentage of share volume that is routed to wholesalers and executed at a price better than the NBBO. WH Conditional Amount Price Improvement is the weighted average amount of percentage price improvement given by wholesalers conditional on the order receiving price improvement in bps (measured for a marketable buy order as average (NBO at time of order receipt—execution price) and measured for a marketable sell order as average (execution price—NBB at time of order receipt) and then dividing the difference by the average transaction price). WH Pct Share Executed at Midpoint or Better is the weighted average of the percentage of shares that are routed to a wholesaler and executed at prices equal to or better than the NBBO midpoint at the time of order receipt. WH Pct Share Executed at Midpoint is the weighted average of the percentage of shares that are routed to a wholesaler and executed at a price equal to the NBBO midpoint at the time of order receipt. WH Pct Shares Executed at NBBO is the weighted average of the percentage of share volume routed to a wholesaler and executed at the NBBO at the time of order receipt (executed at the NBB for marketable sell orders and the NBO for marketable buy orders). WH Pct Shares Executed Outside NBBO is the weighted average of the percentage of share volume routed to wholesalers and executed at prices outside the NBBO at the time of order receipt (executed at a price less than the NBB for marketable sell orders and a price greater than the NBO for marketable buy orders). WH Pct Shares Executed with <0.1 cent Price Improvement is the weighted average of the percentage of shares that are executed with an amount of price improvement less than 0.1 cents measured against the NBBO at the time of order receipt. WH Pct Shares Executed Subpenny Prices is the weighted average of the percentage of shares that execute at a subpenny price (a dollar execution price with a non-zero value in the third or fourth decimal place). WH Pct Shares Executed at Subpenny without Midpoint Trades is the weighted average of the percentage of shares that execute at a subpenny price (a dollar execution price with a non-zero value in the third or fourth decimal place), excluding executions with subpenny prices that occur at the NBBO midpoint. WH Pct Shares Executed at Subpenny Prices with 4 Decimals is the weighted average of the percentage of shares that execute at a subpenny price where there is a dollar execution price with a non-zero value in the fourth decimal place. Average transaction prices used in calculating the metrics are calculated as the total dollar trading volume divided by the total share trading volume in the category and time period.For the wholesaler (WH) CAT metrics used in the sample, the analysis includes marketable orders for under $200,000 in value that originate from a customer with a CAT account type of ''individual'' at one of the 58 retail broker MPIDs and are routed to a wholesaler (*see supra* note 441 for more info on CAT account types and retail broker identification methodology and *supra* note 442 for more details on how the CAT retail analysis sample was constructed). Fractional share orders with share quantity less than one share were excluded from the analysis. Orders were also excluded if they had certain special handling codes. The marketability of a limit order is determined based on the consolidated market data feed NBBO at the time a wholesaler first receives the order.

For the exchange (EX) CAT metrics, executed market and marketable limit orders received by exchanges during normal market hours over the same period were used to calculate the exchange execution quality statics (*see supra* note 443 for more details on how the CAT exchange sample was constructed). Exchange orders were filtered if they had certain special handling codes. The marketability of exchange orders was determined based on the NBBO observed by the exchange at the time of order receipt.

The dollar value of an order was determined by multiplying the order's number of shares by either its limit price, in the case of a limit order, or by the far-side quote of the NBBO at the time of order receipt, in the case of a market order. The analysis includes NMS Common Stocks and ETFs (identified by security type codes of 'A' and 'ETF' in NYSE TAQ data) that are also present in CRSP data from CRSP 1925 US Stock Database, Ctr. Rsch. Sec. Prices, U. Chi. Booth Sch. Bus. (2022). The CRSP 1925 US Indices Database, Ctr. Rsch. Sec. Prices, U. Chi. Booth Sch. Bus. (2022), was used to identify if a stock was a member of the S&P 500. The stock did not have to be in the CRSP 1925 US Indices Database to be included in the analysis. Time of order receipt is defined as the time the wholesaler or exchange first receives the order. Wholesaler metrics based on the time of order receipt are measured against the NBBO from the consolidated market data feed. Exchange metrics based on time of order receipt are measured against the NBBO the exchange reports observing. Realized spreads for both exchange and wholesaler metrics are calculated with respect to the NBBO midpoint from the consolidated market data feed observed one minute after the time of order execution.

Separately, for both the exchange and wholesaler samples, total share volume, total dollar volume, average transaction price, percentage volume metrics, and share weighted average dollar per share spread, price impact, and price improvement metrics were calculated at a stock-week-order size category level by aggregating together execution quality statistics calculated for individual orders. The order-size categories were defined as orders less than 100 shares, 100–499 shares, 500–1,999 shares, 2,000–4,999, 5,000–9,999 shares, and 10,000+ shares. For each stock-week-order size category, percentage spread, price impact, and price improvement metrics were calculated by dividing the average dollar per share metric by the average transaction price calculated for each stock-week-order size category. E/Q ratios were calculated for each stock-week-order size category by dividing the average dollar per share effective spread by the average dollar per share quoted spread.

Exchange sample metrics for E/Q ratios and percentage spread, price impact, and price improvement metrics for each stock-week-order size category were then merged with the corresponding stock-week-order size category in the wholesaler sample. Weighted averages for both wholesaler and exchange metrics and the wholesaler percentage volume metrics are then calculated for the security type in the sample by averaging across stock-week-order size category levels based on their total dollar transaction volume during the sample period in the wholesaler CAT sample (*i.e.,* for both exchanges and wholesalers, using the stock's total dollar trading volume in wholesaler executed transactions as the weight when averaging the share weighted average stock-week- size category values). Weighting the exchange and wholesaler execution metrics by the same weights helps to ensure the samples are comparable across stocks. Total dollar volume and share volume for the exchange and wholesaler samples are calculated by summing across all executions in a security type in each sample. The wholesaler Principal Execution Rate is calculated for a security type in the wholesaler sample by summing the total dollar volume in trades wholesalers executed in a principal capacity across the security type in the wholesaler sample and dividing by the total dollar volume in trades in the security type in the wholesaler sample.

In sum, analyses from Table 6 and Table 7 show that wholesaler realized spreads exceed exchange realized spreads for comparable marketable order transactions (*e.g.,* similar stocks and order sizes) on exchanges. If orders internalized by wholesalers were subject to competition from multiple liquidity suppliers at the individual order level,[448] we would expect realized spreads to be similar to the realized spreads earned by liquidity providers of similar orders routed to exchanges.[449] That is, the wholesaler could respond to the lower price impact (adverse selection risk) of its internalized orders by providing large enough price improvement so that its realized spread (potential profits) matched exchange realized spreads generated by the larger price impact (adverse selection risk) and smaller price improvement of orders executed by liquidity suppliers on exchanges. Since wholesaler price improvement is not commensurate their lower costs (*i.e.,* smaller price impacts due to lower adverse selection risk), their realized spreads exceed exchange realized spreads.

Further evidence and granularity regarding the difference between wholesaler and exchange realized spreads are found in Table 8 and Table 9. Table 8 compares the execution quality between orders routed to wholesalers and exchanges and provides estimates of effective and realized spreads as well as price impacts and E/Q ratios for NMS common stocks and ETFs sorted into buckets based on their average dollar quoted spread. Realized spreads are also adjusted for per-share PFOF payments made by wholesalers and rebates paid by exchanges in order to account for the impact of these costs on potential economic profits. Differences in realized spreads between exchanges and wholesalers appear to be largest in stocks with quoted spreads less than 1.1 cents or stocks with quoted spreads greater than 5 cents (the buckets in which wholesalers earn the largest realized spreads). This appears to be partially driven by orders routed to wholesalers receiving the least price improvement (as measured by the E/Q ratio) in stocks with quoted spreads less than 1.1 cents and orders routed to exchanges receiving the most price improvement in stocks with quoted spreads greater than 5 cents.[450]

TABLE 8—ESTIMATES OF WHOLESALER AND EXCHANGE EXECUTION QUALITY FOR MARKETABLE ORDERS UNDER $200,000 BY QUOTED SPREAD RANGE

Variable	Quoted spread bucket				
	<1.1 cents	1.1–2 cents	2–3 cents	3–5 cent	5+ cents
WH Effective Spread (bps)	2.74	1.09	1.30	2.00	2.74
EX Effective Spread (bps)	3.83	1.48	1.84	2.70	4.54
WH E/Q Ratio	0.48	0.41	0.34	0.34	0.35
EX E/Q Ratio	1.05	1.20	1.10	1.04	0.92
WH Price Impact (bps)	1.76	0.73	0.93	1.30	1.43
EX Price Impact (bps)	6.11	2.26	2.47	3.56	5.73
WH Realized Spread (bps)	0.99	0.36	0.37	0.69	1.31
EX Realized Spread (bps)	−2.28	−0.78	−0.63	−0.85	−1.20
WH Realized Spread Adj PFOF (bps)	−0.15	0.12	0.17	0.50	1.22
EX Realized Spread Adj Rebate (bps)	0.18	−0.21	−0.16	−0.38	−0.98

This table uses the CAT retail analysis data and CAT exchange analysis data to estimate exchange and wholesaler effective spreads, price impacts, realized spreads, E/Q ratios and wholesaler and exchange realized spreads after accounting for exchange rebates and PFOF across all NMS stocks and ETFs for marketable orders under $200,000 based on the stock's average quoted spread. *See supra* Table 7 for additional details on how the sample and metrics are calculated. Stocks are grouped into buckets based off of their time weighted average quoted spread for a week as measured in NYSE TAQ. Share-weighted percentage metrics are averaged together at the individual stock-week-order size category level for the exchange and wholesaler sample using the methodology in Table 7. Weighted averages for both wholesaler and exchange metrics are then calculated for each quoted spread bucket by averaging across stock-week-order size category levels based on their total dollar transaction volume during the sample period in the wholesaler CAT sample (*i.e.,* for both exchanges and wholesalers, using the stock's total dollar trading volume in wholesaler executed transactions as the weight when averaging the share weighted average stock-week-order size category values). Weighting the exchange and wholesaler execution metrics by the same weights helps to ensure the samples are comparable across stocks.

Table 9 compares execution quality between wholesalers and exchanges and provides estimates of the effective and realized spreads as well as price impacts and E/Q ratios for stocks sorted into buckets based on their security type and then sub-sorted into buckets based on their price and, for Non-S&P 500 stocks and ETFs, into liquidity buckets based on their total share trading volume in a week. Once again, realized spreads are adjusted for (per-share) PFOF payments made by wholesalers and rebates paid by exchanges in order to account for their impact on potential economic profits. The results show that differences in realized spreads are larger in stocks with lower liquidity. This suggests that the isolation of individual investor orders due to wholesaler internalizations may result in larger losses in potential price improvement for individual investors on their orders in less liquid stocks.

[448] The analysis in Table 7 shows that 9.6% of executed dollar volume from orders routed to wholesalers may be effectively rerouted and potentially subject to competition at the individual order level.

[449] Despite receiving more price improvement, the analyses in *supra* Table 5, Table 6, and Table 7 show that individual investor orders sent to wholesalers still had significantly positive realized spreads, indicating their price improvement does not fully offset the lower adverse selection costs they pose. Thus, while the higher price impact of orders executed on exchanges compresses exchange realized spreads, one might expect (under competitive conditions) that the lower price impact of orders internalized by wholesalers would pressure wholesalers to provide sufficiently high price improvement such that wholesaler realized spreads would face a similar compression.

[450] Results also indicate that, after adjusting for exchange rebates, average exchange realized spreads are positive for stocks with average quoted spreads less than 1.1 cents, unlike stocks where average quoted spreads exceed 1.1 cents, which still have negative average realized spreads after adjusting for exchange rebates. It is possible that one-cent minimum tick size on exchanges limits competition in stocks with quoted spreads less than 1.1 cents, leading to higher realized spreads for these stocks. Furthermore, PFOF-adjusted realized spreads are negative for stocks with quoted spreads less than 1.1 cents, unlike the realized spreads for stocks with wider quoted spreads, indicating that potential marginal economic profit is larger for these stocks.

TABLE 9—ESTIMATES OF EXECUTION QUALITY FOR MARKETABLE ORDERS UNDER $200,000 BY STOCK TYPE, PRICE GROUP, AND LIQUIDITY BUCKET

Stock type	Price group	Liquidity bucket	WH effective spread (bps)	EX effective spread (bps)	WH E/Q Ratio	EX E/Q Ratio	WH realized spread (bps)	EX realized spread (bps)	WH realized spread Adj PFOF (bps)	EX realized spread adj rebate (bps)
S&P 500	(1) <$30		1.18	2.47	0.45	1.01	0.67	−1.39	−0.14	−0.22
S&P 500	(2) $30–$100		0.49	1.32	0.30	1.06	0.12	−0.62	−0.08	−0.18
S&P 500	(3) $100+		0.67	1.50	0.31	1.00	0.46	−0.15	0.39	−0.03
Non-S&P 500	(1) <$30	Low	56.26	53.61	0.72	0.94	28.98	−0.43	27.66	3.52
Non-S&P 500	(1) <$30	Medium	31.70	26.91	0.80	0.96	11.70	−8.69	9.91	−3.77
Non-S&P 500	(1) <$30	High	8.84	10.25	0.65	1.02	2.21	−6.61	0.12	−1.85
Non-S&P 500	(2) $30–$100	Low	22.91	23.60	0.54	0.92	11.83	0.12	11.71	0.57
Non-S&P 500	(2) $30–$100	Medium	7.81	10.03	0.44	0.95	4.31	−1.03	4.19	−0.59
Non-S&P 500	(2) $30–$100	High	2.64	4.89	0.38	0.97	0.76	−2.48	0.58	−1.99
Non-S&P 500	(3) $100+	Low	14.86	17.82	0.42	0.88	11.83	2.41	11.81	2.51
Non-S&P 500	(3) $100+	Medium	6.79	10.07	0.36	0.90	5.12	0.35	5.08	0.48
Non-S&P 500	(3) $100+	High	2.43	5.33	0.30	0.90	1.47	−0.56	1.41	−0.41
ETF	(1) <$30	Low	14.98	19.86	0.67	0.97	12.76	8.61	12.49	9.68
ETF	(1) <$30	Medium	11.69	15.23	0.62	0.96	9.52	4.89	9.29	5.96
ETF	(1) <$30	High	2.79	4.31	0.55	1.04	1.36	−1.39	0.62	0.20
ETF	(2) $30–$100	Low	8.06	10.62	0.59	0.94	6.98	4.62	6.88	5.10
ETF	(2) $30–$100	Medium	4.22	6.70	0.42	0.93	3.83	1.81	3.75	2.25
ETF	(2) $30–$100	High	0.66	1.43	0.40	1.12	0.51	−0.41	0.36	0.05
ETF	(3) $100+	Low	2.54	4.69	0.39	0.92	2.39	1.05	2.36	1.20
ETF	(3) $100+	Medium	1.21	2.34	0.33	0.98	1.17	0.02	1.15	0.16
ETF	(3) $100+	High	0.20	0.44	0.39	1.27	0.15	−0.10	0.12	−0.02

This table uses the CAT retail analysis data and CAT exchange analysis data to estimate exchange and wholesaler effective spreads, realized spreads, E/Q ratios and wholesaler and exchange realized spreads after accounting for exchange rebates and PFOF across all NMS stocks and ETFs for marketable orders under $200,000 based on the stock's type, VWAP, and traded share volume. *See supra* Table 7 for additional details on how the sample and metrics are calculated. Stocks are broken out into buckets based on their security type, price, and liquidity. Stock type is based on whether a security is an ETF, or a common stock in the S&P 500 or Non-S&P 500. Price buckets are based on a stock's average VWAP price over a week as estimated from TAQ (*see supra* Table 7 for additional details). Stocks within each security type-price bucket, except S&P 500 stocks, are sorted into three equal liquidity buckets based on the stock's total share trading volume during the week estimated using TAQ data. Share-weighted percentage metrics are averaged together at the individual stock-week-order-size category level for the exchange and wholesaler sample using the methodology in Table 7. Weighted averages for both wholesaler and exchange metrics are then calculated for each security-type-price-liquidity bucket by averaging across stock-week-order size category levels based on their total dollar transaction volume during the sample period in the wholesaler CAT sample (*i.e.,* for both exchanges and wholesalers, using the stock's total dollar trading volume in wholesaler executed transactions as the weight when averaging the share weighted average stock-week-order size category values). Weighting the exchange and wholesaler execution metrics by the same weights helps to ensure the samples are comparable across stocks.

5. Variation in Wholesaler Execution Quality

The previous section provided evidence that wholesalers earn greater realized spreads relative to exchanges and these differences are larger in less liquid stocks. In the following section, we present additional evidence on the variation in execution quality that wholesalers provide to individual investor orders.

a. Principal vs. Non-Principal Capacity

Table 10 uses CAT retail analysis to summarize how individual investor marketable NMS stock order execution quality varies based on whether the wholesaler executes the order in a principal capacity (*i.e.,* internalizes the order) or effectively reroutes the order (*i.e.,* executes in a riskless principal or handles it in an agency capacity). This analysis supports the interpretation that wholesalers identify and tend to internally execute individual investor orders associated with the lower adverse selection costs.[451] Internalized orders have a lower price impact (0.91 bps as compared to 4.63 bps for those effectively rerouted), and lower effective spreads (1.77 compared to 5.36 for other transactions). Wholesalers also earn higher realized spreads on the orders they execute as principal (0.86 bps for principal transactions compared to 0.72 bps earned by those providing liquidity for the riskless principal or agency transactions), despite executing them at lower effective spreads.

TABLE 10—WHOLESALER CAT ANALYSIS OF INDIVIDUAL INVESTOR ORDER EXECUTION QUALITY BY WHOLESALER EXECUTION CAPACITY

Variable	Internalized	Effectively rerouted
Average Price	$33.48	$14.78
WH Orders (million)	236.95	34.36
WH Trades (millions)	251.32	74.36
WH Share Volume (billion shares)	70.28	16.83
WH Pct of Executed Share Volume	80.68%	19.32%
WH Dollar Volume (billion $)	$2,352.80	$248.64
WH Pct of Executed Dollar Volume	90.44%	9.56%
WH Effective Spread (bps)	1.77	5.36
WH Realized Spread (bps)	0.86	0.72
WH Price Impact (bps)	0.91	4.63
WH E/Q Ratio	0.35	0.70

[451] Certain items in Table 10 may also be affected by MDI Rules once they are implemented. *See supra* notes 356 and 421.

TABLE 10—WHOLESALER CAT ANALYSIS OF INDIVIDUAL INVESTOR ORDER EXECUTION QUALITY BY WHOLESALER EXECUTION CAPACITY—Continued

Variable	Internalized	Effectively rerouted
WH Pct Executed with Price Improvement	93.37%	57.65%
WH Conditional Amount Price Improvement (bps)	2.45	3.74
WH Pct Shares Executed at Midpoint or Better	46.05%	30.65%
WH Pct Shares Executed at Midpoint	32.23%	26.53%
WH Pct Shares Executed at NBBO	5.51%	35.49%
WH Pct Shares Executed Outside NBBO	1.12%	6.86%
WH Pct Shares Executed with <0.1 cent Price Improvement	20.38%	2.22%

The table summarizes execution quality statistics from the CAT retail analysis based on whether the wholesaler executed the individual investor NMS stock order in a principal capacity or in another capacity (*i.e.,* in an agency or riskless principal capacity). The majority of the other transactions are executed by the wholesaler in a riskless principal capacity. *See supra* Table 7 for additional details on the sample and metrics used in the analysis. Share-weighted percentage metrics are averaged together at the individual execution capacity-stock-week-order-size category level for the wholesaler sample using the methodology in Table 7. Weighted averages for the metrics are then calculated for each execution capacity by averaging across execution capacity-stock-week-order size category levels based on their total dollar transaction volume during the sample period in the wholesaler CAT sample.

Table 11 provides data on the duration of time to execution for orders routed to wholesalers. While there is substantial variation in time to execution for both internalized orders and orders routed to other market centers, internalized order are executed more quickly, especially for orders with the slowest execution times (*i.e.,* greater than or equal to the 75th percentile). The median execution time for rerouted orders was 24 milliseconds (0.024 seconds), about seven times longer than the median execution time for internalized orders, which equaled 3.6 milliseconds (*i.e.,* 0.0036 seconds). The execution time for the slowest 5% of internalized orders was under 1.3 seconds, substantially faster than the slowest 5% of rerouted orders, which took around two minutes to execute.

TABLE 11—DISTRIBUTION OF SHARE-WEIGHTED TIME-TO-EXECUTION

[in milliseconds]

Execution capacity	5th Pctl	10th Pctl	25th Pctl	50th Pctl	75th Pctl	90th Pctl	95th Pctl
Internalized	0.47	0.90	1.56	3.56	8.65	80.69	1,269.03
Effectively rerouted	2.00	4.55	10.38	24.36	2,983.30	35,166.76	119,284.18

This table presents the time-to-execution of orders handled by wholesalers that are either internalized or effectively rerouted. Time-to-execution statistics are share weighed across observations. *See supra* Table 7 for additional details on the sample.

b. Adverse Selection Risk

While individual investor NMS stock orders are generally viewed as possessing less adverse selection risk than orders of other investors, there is nevertheless variation in adverse selection risk across this order flow.[452] Table 12 shows the distribution of the average percentage price impact across 58 retail broker MPIDs in the CAT retail analysis in NMS Common Stocks and ETFs.[453] The results indicate there is substantial variation in price impact across the order flow from different retail brokers, with the price impact of the 90th percentile retail broker's orders being approximately 20 times greater than that of the 10th percentile retail broker's orders and more than 4 times greater than the median retail brokers orders.

TABLE 12—DISTRIBUTION OF INDIVIDUAL RETAIL BROKER-DEALER AVERAGE PERCENTAGE PRICE IMPACT (bps) IN QUALITY IN NMS COMMON STOCKS AND ETFS DURING Q1 2022

N	Mean	Std Dev	Min	10th Pctl	25th Pctl	50th Pctl	75th Pctl	90th Pctl	Max
58	1.07	2.35	−12.34	0.16	0.43	0.83	1.39	3.38	7.00

This table summarizes the distribution of the retail broker MPID's average price impact for the 58 retail broker MPIDs in the CAT retail analysis in NMS Common Stocks and ETFs. Each Retail Broker MPID's price impact is determined by share weighting their average percentage price impact half spread within an individual NMS common stock or ETF and then averaging across stocks using the weighting of the dollar volume the retail broker MPID executed in each security (Dollar Volume weighted). *See supra* Table 7 for additional details on the sample and metrics used in the analysis. NMS Common stocks and ETFs are identified, respectively, as securities in TAQ with a Security Type Code of 'A' and 'ETF'.

Analysis suggests that wholesalers tend to provide lower execution quality to retail brokers that have higher adverse selection costs (*i.e.,* price impact). Table 13 sorts the 58 retail broker MPIDs in the CAT retail analysis

[452] Certain retail brokers tend to have more sophisticated customers than other retail brokers. Order flow from these retail brokers carries greater adverse selection risk, while order flow from retail brokers with generally less sophisticated customers carries less adverse selection risk. For the purposes of this release, the Commission discusses retail brokers as carrying different levels of adverse selection risk, although this is actually a description of the order flow of the customer base of these retail brokers, not the actual retail brokers.

[453] Certain items in Table 12 may also be affected by the amendments in the MDI Adopting Release once they are implemented. *See supra* notes 356 and 421.

in NMS Common Stocks and ETFs into quintiles based on their price impact.[454] The results indicate that the orders of retail brokers in the higher adverse selection quintiles handled by wholesalers receive worse execution quality, as measured by higher effective spreads and E/Q ratios, than the orders of retail brokers in the lower adverse selection quintiles.[455] More specifically, the E/Q ratio of the broker-dealers with the highest price impact (quintile 5) is more than twice as large as the E/Q ratio of the broker-dealers with the lowest price impact (quintile 1).

TABLE 13—EXECUTION QUALITY IN NMS COMMON STOCKS AND ETFS FOR RETAIL BROKERS SORTED INTO QUINTILES BASED ON THEIR AVERAGE PERCENTAGE PRICE IMPACT (bps)

BD Average price impact quintile	Avg WH price impact (bps)	Avg WH principal execution rate	Avg WH effective spread (bps)	Avg WH realized spread (bps)	Avg WH E/Q ratio
1	−1.04	88.62(%)	2.86	3.90	0.43
2	0.48	86.63(%)	1.87	1.39	0.46
3	0.79	88.65(%)	2.15	1.36	0.48
4	1.32	83.86(%)	3.48	2.17	0.61
5	3.85	64.01(%)	7.24	3.39	0.88

This table summarizes how execution quality varies in NMS Common Stocks and ETFs based on a retail broker MPID's price impact by grouping the 58 retail broker MPIDs in the CAT retail analysis in NMS Common Stocks and ETFs into quintiles based on their average price impact. Each Retail Broker MPID's price impact is determined by share weighting its average percentage price impact within an individual NMS common stock or ETF and then averaging across stocks using the weighting of the dollar volume the retail broker executed in each security (Dollar Volume weighted). Average price impacts, effective spreads, realized spreads, and E/Q ratios are also calculated for each retail broker MPID by share weighting within an individual NMS common stock or ETF and then averaging across stocks using the weighting of the dollar volume the retail broker MPID executed in each security (Dollar Volume weighted). The E/Q ratio is the share weighted average of the ratio of each transaction's effective spread divided by its quoted spread at the time of order receipt. Retail broker MPIDs are sorted into quintiles based on their average percentage price impact (bps) and then averages for each quintile are determined by equally weighting the average statistic for each retail broker MPID. *See supra* Table 7 for additional details on the sample and metrics used in the analysis. NMS Common stocks and ETFs are identified, respectively, as securities in TAQ with a Security Type Code of 'A' and 'ETF'. This analysis uses data from prior to the implementation of the MDI Rules and specific numbers may differ following the implementation of the MDI Rules. *See infra* section VII.B.7.

c. Disparate Treatment of Broker-Dealers by PFOF

Although wholesalers provide individual investor orders with price improvement relative to exchanges, the magnitude of this price improvement is not uniform across retail brokers. The previous section provided evidence of variation in execution quality based on adverse selection risk. There is also evidence that execution quality varies based on whether the retail broker receives PFOF for NMS stock orders. Commission analysis in this section shows that the PFOF a wholesaler pays to a retail broker affects the price improvement wholesalers provide, and wholesalers provide worse execution quality to broker-dealers whose customers' orders pose a greater adverse selection risk. [456]

Commission analysis presented in Table 14 compares average execution quality for PFOF and non-PFOF brokers for marketable orders of individual investors under $200,000 in NMS Common stocks and ETF orders that are routed to wholesalers.[457] Results are divided between orders that were executed on a principal basis (*i.e.,* internalized) and those executed via other methods (the majority of which are in a riskless principal capacity).

[454] Certain items in Table 13 may also be affected MDI Rules once they are implemented. *See supra* notes 356 and 421.

[455] Several recent working papers also found that price improvement varies across retail brokers; *see* Christopher Schwarz et al., *The 'Actual Retail Price' of Equity Trades* (last revised Sept. 15, 2022) (unpublished manuscript), *available at https://ssrn.com/abstract=4189239* (retrieved from Elsevier database) (''Schwarz et al. (2022)''); and Bradford Lynch, *Price Improvement and Payment for Order Flow: Evidence from A Randomized Controlled Trial* (last revised Oct. 3, 2022) (unpublished manuscript), *available at https://ssrn.com/abstract=4189658* (retrieved from Elsevier database) (''Lynch (2022)''). These studies only included trades that were initiated by the authors, and do not include other trades that were handled by the brokers in their samples. In contrast, the Commission's analysis is based on the data reflecting all orders routed by 58 brokers.

[456] Schwarz et. al. (2022) do not find a relationship between the amount of PFOF a retail broker receives and the amount of price improvement their customers' orders receive. However, they noted that the variation in the magnitude of price improvement they saw across retail brokers was significantly greater than the amount of PFOF the retail broker received, which could indicate their sample was not large enough to observe a statistically significant effect. Similarly, the difference we observe between the effective spreads of PFOF and non-PFOF brokers *infra* Table 14 is significantly smaller than the differences observed across broker-dealers in *supra* Table 13. Lynch (2022) reports a broker deriving high PFOF revenues provides small price improvements to customer orders, while a broker deriving low PFOF revenue offers large price improvement. Importantly, both studies only included trades that were initiated by the authors and do not include other trades that were handled by the brokers in their samples, preventing them from examining the attributes of a typical retail order handled by each broker. As such, these studies would not observe the variation in price improvements that reflect differences in the adverse selection risk associated with the order flow of different brokers, and hence, would likely conflate the impacts of PFOF with that of adverse selection risk. That is, these studies cannot control for the possibility that a wholesaler would offer smaller price improvement to order flows with higher adverse selection risk. In contrast, the Commission relies on CAT data to examine the adverse selection risk at the broker level, which is a determinant of the amounts of price improvements that a given wholesaler would offer to different brokers. The regression framework in Table 15 controls for the adverse selection risk of the retail broker and finds that is has a negative relationship with the magnitude of price improvement their customers' orders receive. We also find a negative relationship between the amount of PFOF a broker-dealer receives and the magnitude of the price improvement their customers' orders receive after controlling for the retail broker adverse selection risk.

[457] Some brokers that do not accept PFOF for orders in equities accept PFOF for orders in options. Certain items in Table 14 may also be affected by MDI Rules once they are implemented. *See supra* notes 356 and 421.

TABLE 14—COMPARISON OF PFOF AND NON-PFOF BROKER EXECUTION QUALITY IN NMS COMMON STOCKS AND ETFS

	Principal transactions		Other transactions	
	Non-PFOF	PFOF	Non-PFOF	PFOF
Average Price	$41.79	$31.35	$23.90	$12.47
WH Share Volume (billion shares)	14.32	55.96	3.40	13.43
WH Dollar Volume (billion $)	$598.44	$1,754.36	$81.23	$167.41
Pct of Executed Dollar Volume	23.00%	67.44%	3.12%	6.44%
WH Effective Spread (bps)	1.50	1.86	4.57	5.75
WH Realized Spread (bps)	0.88	0.85	0.83	0.66
WH Realized Spread Adj PFOF (bps)	0.88	0.43	0.83	−0.55
WH Price Impact (bps)	0.62	1.01	3.74	5.07
WH E/Q Ratio	0.30	0.37	0.78	0.67
WH Pct Executed with Price Improvement	90.59%	94.32%	46.89%	62.87%
WH Conditional Amount Price Improvement (bps)	2.75	2.34	2.31	4.30

The table summarizes execution quality statistics from the CAT retail analysis in Common Stocks and ETFs based on whether the retail broker MPID receives PFOF from wholesalers (PFOF) or does not (Non-PFOF) and whether the wholesaler executed the individual investor order in a principal capacity or in another capacity (*i.e.,* in an agency or riskless principal capacity). A broker-dealer MPID was determined to be a PFOF broker if the broker-dealer reported receiving PFOF on its Q1 2022 606 report, or if the report of its clearing broker reported receiving PFOF in the event that the broker did not publish a Rule 606 report. Broker-dealers or clearing brokers that handled orders on a not held basis and did not disclose PFOF information in their Rule 606 report were classified as PFOF brokers if disclosures on their websites indicated they received PFOF. Twenty-two MPIDs belonging to 19 retail brokers were classified as receiving PFOF. The majority of the other transactions are executed by the wholesaler in a riskless principal capacity. *See supra* Table 7 for additional details on the sample and metrics used in the analysis. Share-weighted percentage metrics are averaged together at the individual PFOF-execution capacity-stock-week-order-size category level for the wholesaler sample using the methodology in Table 7. Weighted averages for the metrics are then calculated for each PFOF-execution capacity category by averaging across execution capacity-stock-week-order size category levels based on their total dollar transaction volume during the sample period in the wholesaler CAT sample.

The results in Table 14 show that wholesaler internalized orders (Principal Transactions) originating from PFOF brokers are associated with (1) higher effective spreads, (2) higher E/Q ratios, and (3) slightly smaller price improvement on orders that achieved at least some price improvement (WH Conditional Amount Price Improvement), relative to wholesaler internalized orders originating from non-PFOF brokers. However, the results also show that orders internalized from non-PFOF brokers also have lower adverse selection risk and similar realized spreads (before PFOF is paid), indicating the lower adverse selection risk could help explain differences in the observed execution quality.

Because the results in Table 14 are averages across broker-dealers, they cannot disentangle the effects of PFOF on execution quality from differences in the adverse selection risk of different broker-dealers.[458] In order to control for these differences, the Commission analyzed the effects of PFOF and differences in broker-dealer adverse selection risk on execution quality in a regression framework that controls for other factors that could affect the price improvement provided by wholesalers.

Table 15 displays regression results from Commission CAT retail analysis of NMS Common stock and ETF orders.[459] The regression tests whether there is a statistically significant relationship between execution quality and the amount of PFOF a broker-dealer receives and includes several individual stock- and market-level controls[460] as well as the retail broker's average price impact and size (as measured by percent of executed individual investor dollar volume). Four different measures of execution quality are used for the dependent variable, including E/Q ratio, effective spread, realized spread, and price improvement.[461] The results in Table 15 show that the Table 14 results indicating brokers that receive PFOF receive inferior execution quality are robust to the inclusion of controls for differences in the type of order flow coming from different broker-dealers.

[458] They also cannot disentangle the effects of differences in the stocks traded by PFOF and non-PFOF brokers.

[459] Certain items in this Table 15 may also be affected by the amendments in the MDI Rules once they are implemented. *See supra* notes 356 and 421.

[460] Broker-dealer cents per 100 shares PFOF rates (dollar PFOF rates) are determined from their Q1 2022 Rule 606 reports (*see supra* Table 2) or the Rule 606 reports of its clearing broker reported receiving PFOF in the event that the broker did not publish a Rule 606 report. A PFOF rate of 20 cents per 100 shares was used for the introducing broker-dealers and clearing broker that reported handled orders on a not held basis and did not disclose PFOF information in their Rule 606 report but disclosed on their website that they received PFOF for their order flow. 20 cents per 100 shares was the PFOF rate that the clearing broker that handles orders on a not held basis disclosed on their website that they received. Twenty-two MPIDs belonging to 19 retail brokers were classified as receiving PFOF. Dollar PFOF rates for each retail broker were merged with the corresponding stock (S&P 500 and non-S&P 500) and order type in the CAT sample. For the regressions in Table 15, percentage PFOF rates are estimated in basis points by dividing the PFOF cents per 100 share values from Rule 606 reports (after converting them to dollar per share values) by the stock-week VWAP for the security in the CAT sample. Stock-level controls include average share volume, VWAP, return, average effective spread, average realized spread, and average quote volatility during a week. Market-level controls include market volatility, market return, and the market's average daily trading volume during week.

[461] The regression also includes variables to control for differences in execution quality across different wholesalers and across different order size categories. The analysis examines trades in Q1 2022 that wholesalers execute in a principal capacity from market and marketable limit orders from individual investors that are under $200,000 in value and are in NMS Common stocks and ETFs. *See supra* Table 7 for further discussion on the sample. The unit of observation for the regression is the average execution quality provided to trades that are aggregated together based on having the same stock, week, order type, order size category, wholesaler, and retail broker MPID. The coefficients are estimated by weighting each observation by the total dollar volume of trades executed in that observation.

TABLE 15—REGRESSION ANALYSIS SHOWING RELATIONSHIP BETWEEN EXECUTION QUALITY AND PFOF IN NMS COMMON STOCKS AND ETFS

Variables	(1) E/Q ratio	(2) Effective spread (bps)	(3) Realized spread (bps)	(4) Amount price improvement (bps)
PFOF Rate	0.0132***	0.217***	0.211***	−0.170***.
	[2.82]	[6.31]	[7.13]	[−5.52]
Stock Share Volume	0.0379	−0.0462	−0.886*	−0.533**.
	[0.51]	[−0.14]	[−1.65]	[−2.53].
Stock VWAP	−0.000028	0.000233	−0.000450	0.000014.
	[−1.06]	[0.61]	[−0.78]	[0.04].
Stock Return	−0.000273	−0.0200*	−0.0120	0.00840.
	[−0.21]	[−1.93]	[−0.36]	[0.84].
VIX	0.00968***	0.0122*	0.0607***	−0.000256.
	[7.29]	[1.79]	[2.85]	[−0.05].
Market Return	−0.00710**	0.00787	0.00686	−0.0150.
	[−2.02]	[0.36]	[0.15]	[−0.96].
Market Dollar Volume	0.0306***	0.0641***	0.164***	−0.0390***.
	[9.70]	[3.44]	[3.07]	[−2.69].
Stock Avg Effective spread	0.00700***	0.122***	−0.0455*	0.00746.
	[3.34]	[6.07]	[−1.94]	[0.52].
Stock Avg Realized spread	−0.00169*	−0.00902	0.0730***	−0.00552.
	[−1.87]	[−1.45]	[2.98]	[−1.48].
Stock Quote Volatility	0.457**	2.232	−1.799	4.458**.
	[2.09]	[1.05]	[−0.65]	[2.03].
Broker-Dealer Average Price Impact	0.145***	0.414***	0.316***	−0.417***.
	[14.74]	[9.83]	[8.50]	[−10.21].
Broker-Dealer Pct Volume	−2.45e–05	−0.00207*	−0.00546***	0.000124.
	[−0.07]	[−1.76]	[−3.77]	[0.12].
Average Trade Qspread	−0.00720***	0.517***	0.378***	0.392***.
	[−10.12]	[19.78]	[10.84]	[21.14].
Wholesaler Fixed Effects	Yes	Yes	Yes	Yes.
Order Size Category Fixed Effects	Yes	Yes	Yes	Yes.
Stock Fixed Effects	Yes	Yes	Yes	Yes.
Observations	13,365,122	13,365,122	13,365,122	12,453,440.
Adjusted R-squared	0.279	0.574	0.060	0.594.

This table presents the results of a regression analysis examining the effect of retail brokers receiving PFOF from wholesalers on levels of price improvement and the execution quality of their customers' orders when the wholesaler internalizes the order on a principal basis.

The analysis examines trades in Q1 2022 that wholesalers execute in a principal capacity from market and marketable limit orders from individual investors that are under $200,000 in value and are in NMS Common stocks and ETFs. *See supra* Table 7 for further discussion on the CAT retail sample. The unit of observation for the regression is the average execution quality provided to trades that are aggregated together based on having the same stock, week, order type, order size category, wholesaler, and retail broker MPID. Weighted regression are performed based on the total dollar value executed by the wholesaler in that observation (*i.e.,* total shares executed for all orders that fit within that stock-week-retail broker-wholesaler-order type-order size category). This means that the regression coefficients capture the effect on execution quality on a per-dollar basis.

Dependent variables include: the average E/Q ratio of the shares traded; the average percentage effective spread of the shares traded measured in basis points; the average percentage realized spread of the shares traded measured in basis points; and the average percentage value of the amount of price improvement measured in basis points, conditional on the order being price improved. These variables are from the CAT retail analysis and described in *supra* Table 7.

Explanatory variables include: PFOF Rate is the retail brokers' PFOF rates in bps (the per share rates were determined from retail broker Rule 606 reports and divided by the VWAP of the executed shares in the sample to determine the PFOF rate on a percentage basis, *see supra* note 460); Broker-Dealer Pct Volume is the retail broker size (in terms of percentage total executed dollar trading volume in the sample); Stock Share Volume is the stock's total traded share volume during the week (from TAQ in billions of shares); Stock VWAP is the VWAP of stock trades during the week (from TAQ); Stock Return is the stock's return during the week (from CRSP 1925 US Stock Database, Ctr. Rsch. Sec. Prices, U. Chi. Booth Sch. Bus. (2022)); VIX is the average value of the VIX index during the week (from CBOE VIX data); Market Return is the average CRSP value weighted market return during the week, Market Dollar Volume is the total market dollar trading volume during the week (from CRSP 1925 US Stock Database, Ctr. Rsch. Sec. Prices, U. Chi. Booth Sch. Bus. (2022)); Stock Avg Effective spread is the stock's share weighted average percent effective half spread during the week measured in basis points (from TAQ); Stock Avg Realized spread is the stock's share weighted average percent realized half spread during the week measured in basis points (from TAQ); Stock Quote Volatility is the stock's average 1 second quote midpoint volatility measured in basis points (from TAQ); Broker-Dealer Average Price Impact is the retail broker's average price impact over the sample measured in basis points (*see supra* Table 12 for more details on how the metric is calculated); Average Trade Qspread is the average percentage quoted half spread at the time of order submission for orders in that stock-week-retail broker-wholesaler-order type-order size category measured in basis points; wholesaler fixed effects (*i.e.,* indicator variables for each wholesaler that control for time-invariant execution quality differences related to each wholesaler); order-size category fixed effects (*i.e.,* indicator variables for each order-size category that control for time-invariant execution quality differences related to order-size category); and individual stock fixed effects (*i.e.,* indicator variables for each stock that control for time-invariant execution quality differences related to individual stocks). The order size categories include less than 100 shares, 100–499 shares, 500–1,999 shares, 2,000–4,999, 5,000–9,999 shares, and 10,000+ shares. Brackets include t-statistics for the coefficients based on robust standard errors that are clustered at the stock level. ***, **, and * indicate the t-statistics for the coefficients are statistically significant at the 0.01, 0.05, and 0.1 levels, respectively.

This analysis uses data from prior to the implementation of the MDI Rules and specific numbers may be different following the implementation of the MDI Rules. *See supra* note 356 and section VII.B.7.

Regression results in Table 15 support the conclusion that wholesalers provide worse execution quality to brokers that receive more PFOF.[462] The coefficients on the PFOF Rate variable indicates that, all else equal, for the orders wholesalers internalize, execution quality declines as the amount of PFOF paid to the retail broker increases. Orders from retail brokers that receive a greater amount of PFOF have higher E/Q ratios and effective spreads and receive less price improvement. The regression results (as measured by the coefficient on the PFOF Rate variable) indicate that, all else equal, wholesalers earn higher realized spreads on orders for which they pay more PFOF. Note that PFOF is not taken out of the realized spread measure, so the realized spread proxies for wholesaler's economic profits before any fees are taken out.

Regression results in Table 15 also show that the retail broker's adverse selection risk (as measured by the coefficient on the Broker-Dealer Average Price Impact variable) has a statistically significant effect on the execution quality wholesalers give on trades they internalize. The positive coefficient indicates that wholesalers provide worse execution quality to broker-dealers whose customers' orders pose a greater adverse selection risk.

In sum, Commission analysis indicates that wholesalers deliver execution quality that varies across broker-dealers based on their adverse selection risk. Wholesalers also deliver execution quality that varies based on characteristics of the order (lot size, principal capacity vs. riskless principal or agency capacity, market vs. marketable limit, S&P 500 vs. non-S&P 500). The business model of wholesalers relies on their ability to parse the adverse selection risk of individual investors' orders based on these numerous characteristics and to deliver some price improvement while still generating the potential for high profits for themselves in the form of a high realized spread. The lack of *additional* price improvement that could otherwise be provided to individual investors stems from the isolation of marketable orders by wholesalers, which results in a lack of order-by-order competition.

6. Retail Broker Services

Wholesalers do not charge retail brokers for the routing and execution that they provide, and pay a segment of these brokers PFOF for the right to handle their order flow. Proposed Rule 615 could therefore impact retail brokers as well as wholesalers, due to their interdependence. In order to analyze the economic effects of the Proposal on retail brokers, we first provide relevant detail of the retail broker industry.

There are approximately 2,440 retail brokers in the U.S., earning quarterly revenues of approximately $86.7 billion and handling 228.9 million customer accounts.[463] Retail brokers provide a range of services that assist their customers in the purchase of securities, which include stocks, bonds, mutual funds, ETFs, options, futures, foreign exchange, and crypto asset securities. Proposed Rule 615, however, would cover only NMS stocks, and many customer accounts include assets that include or exclusively contain securities that are not NMS stocks. The Commission does not know what share of these accounts contain exclusively NMS stocks, but estimates that approximately 1,000 retail brokers originated NMS stock orders from individual investors in 2021.[464]

Retail broker services are sometimes divided into two generally defined categories: ''discount brokers'' and ''full-service'' brokers. Discount brokers typically provide commission-free trading for online purchases of stocks and ETFs, but often charge fees for purchases of other securities. Some discount brokers manage proprietary mutual funds and ETFs, which earn them revenue (based on the funds' ''expense ratio'') paid by the investors that purchase these funds. Full-service brokers (as they are commonly called and as used in this release) typically charge commissions and advisory fees, frequently as a share of the client's total assets under management, in exchange for more detailed financial guidance.

Retail brokers distinguish themselves by the range of securities that they sell, as well accessibility and functionality of their trading platform, which can be geared towards less experienced or more sophisticated investors. Discount brokers can also differentiate themselves by providing more extensive customer service as well as tools for research and education on financial markets.

a. PFOF Revenue

Most marketable orders of individual investors are routed by retail brokers to wholesalers. Wholesalers do not directly charge retail brokers for their order routing and execution and pay PFOF to some of these retail brokers in exchange for this order flow. Wholesalers paid $235 million in PFOF in NMS stocks in Q1 2022.[465]

Table 16 below indicates that a single firm received more than 43% of all PFOF stemming from NMS stock orders during Q1 2022. Furthermore, the number one and number four firms on this list merged in 2020, implying that a single firm received slightly more than 55% of all PFOF stemming from NMS stock orders. Along with this firm, the other three firms at the top of this list collectively received almost 94% of all PFOF from NMS stocks.

TABLE 16—TOP BROKER-DEALER RECIPIENTS OF PFOF FROM NMS STOCKS AND TOTAL REVENUE

	PFOF received (Q1 2022-)	Total firm revenue (Q1 2022-)	PFOF share of revenue (percent)	Share of total PFOF disbursed (percent)
BD1	$101,509,456	$1,766,885,957	5.7	43.12
BD2	35,019,397	403,037,037	8.7	14.88
BD3	32,611,006	435,731,084	7.5	13.85
BD4	28,919,376	1,876,198,891	1.5	12.28
BD5	22,816,637	94,176,227	24.2	9.69
BD6	7,810,943	50,207,346	15.6	3.32

[462] While results from the regression analysis indicate that orders routed by PFOF-brokers receive reduced execution quality from wholesalers, there could be ways that PFOF is indirectly passed on to customers by their retail brokers. However, the Commission lacks evidence on the extent to which this is occurring.

[463] Data are from Q2 2022, FOCUS Part II Schedule SSOI.

[464] This number is estimated using CAT data for broker-dealers that originated an order from an ''Individual Customer'' CAT account type in 2021. This larger sample is refined down to a sample of 54 broker-dealers fort the CAT data analysis presented above, beginning in *supra* Table 7. *See supra* note 441 for a description of how the sample of 54 brokers was chosen.

[465] In NMS stocks in Q1 2022, wholesalers paid $94 million in PFOF for market orders, $53 million for marketable limit orders, $69 million for non-marketable limit orders, and $19 million for other order types.

TABLE 16—TOP BROKER-DEALER RECIPIENTS OF PFOF FROM NMS STOCKS AND TOTAL REVENUE—Continued

	PFOF received (Q1 2022-)	Total firm revenue (Q1 2022-)	PFOF share of revenue (percent)	Share of total PFOF disbursed (percent)
BD7	4,123,125	64,850,454	6.4	1.75
BD8	835,652	10,855,447	7.7	0.35
BD9	696,482	9,406,401	7.4	0.30
BD10	590,124	12,341,917	4.8	0.25
BD11	268,754	499,731	53.8	0.11
BD12	145,943	38,249,831	0.4	0.06
BD13	68,552	19,462,153	0.4	0.03
BD14	4,122	4,977,874	0.1	0.002

This table includes data from Rule 606 reports and lists all PFOF payments stemming from NMS stock orders paid by wholesalers to broker-dealers. The Commission analyzed Rule 606 reports for the most active 50 broker-dealers, and the summary payments to the fourteen firms in the table above represent all PFOF payments made by wholesalers for NMS stock orders during Q1 2022. The table also contains the total revenue earned by these firms during the same period. The PFOF share of revenue is calculated by dividing PFOF by revenue for each broker-dealer.

Table 16 also reveals that dependence on PFOF as a source of revenue is not equally shared among these firms. The average PFOF share of revenue of these firms is 9.6%. However, setting aside the disproportionately high PFOF revenue share of 53.8% from the smallest firm (by revenue) on this list, the average share of revenue stemming from PFOF falls to 6.5%. This is almost identical to the median PFOF revenue share of 6.4%.

Besides receiving different overall disbursements of PFOF revenue, broker-dealers receive different PFOF rates. Table 17 below displays the distribution of PFOF rates (in cents per 100 shares) paid by wholesalers to retail brokers.

TABLE 17—DISTRIBUTION ACROSS PFOF BROKERS OF AVERAGE RULE 606 PAYMENT RATES FROM WHOLESALERS FOR Q1 2022

[Cents per 100 shares]

	Distribution statistic	Market orders	Marketable limit orders	Non-marketable limit orders	Other orders
S&P 500	Average	40.3	37.8	49.7	43.1
	Min	7.0	6.5	6.1	4.8
	25th Pct	14.4	14.4	15.0	11.5
	Median	15.0	16.0	28.6	16.6
	75th Pct	22.0	22.4	32.4	22.2
	Max	280.7	247.6	338.0	310.8
Non S&P 500	Average	14.7	11.9	18.5	11.6
	Min	6.2	3.3	4.6	2.1
	25th Pct	11.1	9.4	13.2	8.2
	Median	13.7	10.9	18.2	9.9
	75th Pct	18.8	14.4	25.1	17.0
	Max	22.7	20.9	28.9	18.6
Combined	Average	16.2	12.7	20.1	13.2
	Min	6.3	3.4	4.6	2.5
	25th Pct	11.3	9.9	13.6	8.3
	Median	13.8	12.1	21.9	10.4
	75th Pct	21.5	15.7	28.3	19.1
	Max	36.4	21.0	31.0	27.2

This table displays the distribution across retail brokers (that received PFOF from wholesalers) of average PFOF payment rates from wholesalers for Q1 2022 (cents per 100 shares). The data were obtained by analyzing rule 606 Reports from the 14 BDs that accepted PFOF from wholesalers. The table shows the distribution of PFOF rates broken down by S&P 500 and non-S&P 500 stocks, across market orders, marketable limit orders, non-marketable limit orders, and other orders that retail brokers route to different types of venues in Q1 2022. *See supra* Table 2 for additional details on the sample.

PFOF rates vary along several dimensions. For marketable orders, including market and marketable limit orders, the combined median rate in Table 17 is 12–14 mils, significantly less than the median rate for the non-marketable orders median rate of 22 mils. In addition, variation is wider in non-marketable limit orders, with a wider range between the 25th and 75th percentile compared to market and marketable limit orders. It is also evident that the maximum values in S&P 500 stocks, all of which are above 200 mils, are far greater than non-S&P 500 stocks, all of which are below 35 mils, and those higher maximum values may be driven by the fact that two particular firms that get PFOF rates proportional to the bid-ask spread.

b. Other Revenues

Retail brokers have numerous sources of revenue, including commissions, account management and advisory fees, interest income, as well as PFOF. Retail brokers that currently receive PFOF tend to earn a somewhat larger share of their revenue from interest on margin loans provided to clients. Lending rates tend to be highest for margin amounts under $25,000, and fall successively as

the size of the loan increases, with the lowest rates on loans exceeding $1 million. PFOF brokers earned 12% of their income from margin interest in 2021, compared to only 1.6% of revenue earned by non-PFOF brokers during the same period.[466] Another source of revenue is securities borrowing, making up 5.1% of revenues for PFOF brokers and 0.9% of non-PFOF brokers revenue during 2021. In contrast, other revenue lines are relatively underutilized by PFOF brokers, such as account supervision fees, which made up 1.3% of revenue for PFOF-brokers but 26.5% of non-PFOF brokers.

7. Rules Addressing Consolidated Market Data

In 2020, the Commission adopted a new rule and amended existing rules to establish a new infrastructure for consolidated market data,[467] and the regulatory baseline in this proposal includes these changes to the current arrangements for consolidated market data. However, as discussed in more detail above, the MDI Rules have not been implemented, and so they have not yet affected market practice.[468] As a result, the data used to measure the baseline below reflects the regulatory structure in place for consolidated market data prior to the implementation of the MDI Rules.[469] Accordingly, this section will discuss the Commission's assessment of the potential effects that the implementation of the MDI Rules could have on the baseline estimations.

Among other things, the unimplemented MDI Rules update and expand the content of consolidated market data to include: (1) certain odd-lot information[470]; (2) information about certain orders that are outside of an exchange's best bid and best offer (*i.e.,* certain depth of book data)[471]; and (3) information about orders that are participating in opening, closing, and other auctions.[472] The rules also introduced a four-tiered definition of round lot that is tied to a stock's average closing price during the previous month.[473] For stocks with prices greater than $250, a round lot is defined as consisting of between 1 and 40 shares, depending on the tier.[474] The rules also introduce a decentralized consolidation model under which competing consolidators, rather than the existing exclusive SIPs, will collect, consolidate, and disseminate certain NMS information.[475]

Given that the MDI Rules have not yet been implemented, they likely have not affected market practice and therefore data that would be required for a comprehensive quantitative analysis of a baseline that includes the effects of the MDI Rules is not available. It is possible that the baseline (and therefore the economic effects relative to the baseline) could be different once the MDI Rules are implemented. The following discussion reflects the Commission's assessment of the anticipated economic effects of the MDI Rules as described in the MDI Adopting Release.[476]

The Commission anticipated that, for stocks priced above $250, the new round lot definition will mechanically narrow NBBO spreads for most stocks with prices greater than $250.[477] This could cause statistics that are measured against the NBBO to change because they will be measured against the new, narrower NBBO. For example, execution quality statistics on price improvement for higher priced stocks may show a reduction in the number of shares of marketable orders that received price improvement because price improvement will be measured against a narrower NBBO. In addition, the Commission anticipated that the NBBO midpoint in stocks priced higher than $250 could be different under the MDI Rules than it otherwise would be, resulting in changes in the estimates for statistics calculated using the NBBO midpoint, such as effective spreads. In particular, at times when bid odd-lot quotations exist within the current NBBO but no odd-lot offer quotations exist (and vice versa), the midpoint of the NBBO resulting from the rule will be higher than the current NBBO midpoint.[478] More broadly, the Commission anticipated that the adopted rules will have these effects whenever the new round lot bids do not exactly balance the new round lot offers. However the Commission stated that it does not know to what extent or direction such odd-lot imbalances in higher priced stocks currently exist, so it is uncertain of the extent or direction of the change.[479]

The Commission also anticipated that the MDI Rules could result in a smaller number of shares at the NBBO for most stocks in higher-priced round lot tiers.[480] To the extent that this occurs, there could be an increase in the frequency with which marketable orders must ''walk the book'' (*i.e.,* consume available depth beyond the best quotes) to execute. This would affect statistics that are calculated using consolidated depth information, such as measures meant to capture information about whether orders received an execution of more than the displayed size at the quote, *i.e.,* ''size improvement.''

The MDI Rules may also result in a higher number of odd-lot trades, as the inclusion of odd-lot quotes that may be priced better than the current NBBO in consolidated market data may attract more trading interest from market participants that previously did not

[466] Statistics on broker-dealer revenues are from their FINRA Supplemental Statement of Income Form for 2021. The sample in this discussion is limited to 54 retail brokers that were identified in the CAT analysis in Table 7. 19 of these 54 broker-dealers were identified as a PFOF broker if they reported receiving PFOF on their Q1 2022 606 report, or if the report of their clearing broker reported receiving PFOF in the event that the broker did not publish a Rule 606 report. Broker-dealers or clearing brokers that handled orders on a not held basis and did not disclose PFOF information in their Rule 606 report were classified as PFOF brokers if disclosures on their websites indicated they received PFOF. The remaining 35 firms comprise the sample of non-PFOF brokers. We use the broad definition of sales as we preliminarily believe that many firms will just mark ''sales'' if they have both retail and institutional activity. However, we note that this may capture some broker-dealers that do not have retail activity, although we are unable to estimate that frequency.

[467] The MDI Rules expanded the data that will be made available for dissemination within the national market system (''NMS data''). *See* 17 CFR 242.600(b)(59); MDI Adopting Release, 86 FR at 18613.

[468] For more information about the implementation timeline for the MDI Rules, *see supra* section III.B.1.b.i.

[469] For more information about the regulatory structure for consolidated market data prior to the implementation of the MDI Rules, *see supra* section III.B.1.a.

[470] *See* 17 CFR 242.600(b)(59); MDI Adopting Release, 86 FR at 18613. The Commission outlined a phased transition plan for the implementation of the MDI Rules, including the implementation of odd-lot order information. *See* MDI Adopting Release, 86 FR at 18698–701.

[471] *See* MDI Adopting Release, 86 FR at 18625.

[472] *See* MDI Adopting Release, 86 FR at 18630.

[473] *See* MDI Adopting Release, 86 FR at 18617.

[474] *See id.* The Commission adopted a four-tiered definition of round lot: 100 shares for stocks priced $250.00 or less per share, 40 shares for stocks priced $250.01 to $1,000.00 per share, 10 shares for stocks priced $1,000.01 to $10,000.00 per share, and 1 share for stocks priced $10,000.01 or more per share.

[475] *See* MDI Adopting Release, 86 FR at 18637.

[476] *See* MDI Adopting Release, 86 FR at 18741–18799.

[477] An analysis in the MDI Adopting Release showed that the new round lot definition caused a quote to be displayed that improved on the current round lot quote 26.6% of the time for stocks with prices between $250.01 and $1,000, and 47.7% of the time for stocks with prices between $1,000.01 and $10,000. *See* MDI Adopting Release, 86 FR at 18743.

[478] For example, if the NBB is $260 and the national best offer is $260.10, the NBBO midpoint is $260.05. Under the adopted rules a 40 share buy quotation at $260.02 will increase the NBBO midpoint to $260.06. Using this new midpoint, effective spread calculations will be lower for buy orders but higher for sell orders.

[479] *See* MDI Adopting Release, 86 FR at 18750.

[480] However, this effect will depend on how market participants adjust their order submissions. *See* MDI Adopting Release, 86 FR at 18746, for further discussion.

have access to this information.[481] However, the magnitude of this effect depends on the extent market participants who rely solely on SIP data and lack information on odd-lot quotes choose to receive the odd-lot information and would have traded frequently against odd-lot quotes had they known about them. The Commission states in the MDI Adopting Release that it believes it is not possible to observe this willingness to trade with existing market data.[482]

The MDI Rules may have implications for broker-dealers' order routing practices. For those market participants that rely solely on SIP data for their routing decisions and that choose to receive the expanded set of consolidated market data, the Commission anticipated that the additional information contained in consolidated market data will allow them to make more informed order routing decisions. This in turn would help facilitate best execution, which would reduce transaction costs and increase execution quality.[483]

The MDI Rules may also result in differences in the baseline competitive standing among different trading venues, for several reasons. First, for stocks with prices greater than $250, the Commission anticipated that the new definition of round lots may affect order flows as market participants who rely on consolidated data will be aware of quotes at better prices that are currently in odd-lot sizes, and these may not be on the same trading venues as the one that has the best 100 share quote.[484] Similarly, it anticipated that adding information on odd-lot quotes priced at or better than the NBBO to expanded core data may cause changes to order flow as market participants take advantage of newly visible quotes.[485] However, the Commission stated that it was uncertain about the magnitude of both of these effects.[486] To the extent that it occurs, a change in the flow of orders across trading venues may result in differences in the competitive baseline in the market for trading services.

Second, exchanges and ATSs have a number of order types that are based on the national best bid and offer, and so the Commission anticipated that the changes in the NBBO caused by the new round lot definitions may affect how these order types perform and could also affect other orders with which they interact.[487] The Commission stated that these interactions may affect relative order execution quality among different trading platforms, which may in turn affect the competitive standing among different trading venues, with trading venues that experience an improvement/decline in execution quality attracting/losing order flow.[488] However, the Commission stated that it was uncertain of the magnitude of these effects.[489]

Third, the Commission anticipated that, as the NBBO narrows for securities in the smaller round lot tiers, it may become more difficult for the retail execution business of wholesalers to provide price improvement and other execution quality metrics at levels similar to those provided under a 100 share round lot definition.[490] To the extent that wholesalers are held to the same price improvement standards by retail brokers in a narrower spread environment, the wholesalers' profits from execution of individual investor orders might decline,[491] and to make up for lower revenue per order filled in a narrower spread environment, wholesalers may respond by changing how they conduct their business in a way that may affect retail brokers. However, the Commission stated that is was uncertain as to how wholesalers may respond to the change in the round lot definition, and, in turn, how retail brokers may respond to those changes, and so was uncertain as to the extent of these effects.[492] To the extent that this occurs, this may impact wholesalers' competitive standing in terms of the execution quality offered particularly to individual investor orders. Where implementation of the above-described MDI Rules may affect certain numbers in the baseline, the description of the baseline below notes those effects.

C. Economic Effects

The Commission preliminarily believes that the introduction of qualified auctions for NMS stocks would increase competition to supply liquidity to marketable orders of individual investors. This might enhance order execution quality for individual and institutional investors as well as improve price discovery. The magnitude of the improvements in order execution quality that individual and institutional investors may experience as a result of this Proposal might be less than indicated for a variety of reasons (though it may also be greater), including the implementation of MDI Rules, the effect of which is not yet in the data. Under the MDI Rules, the availability of faster consolidated market data with more data on odd-lot information, auctions information, and depth of book information from competing consolidators could result in improved execution quality for customer orders were their broker-dealers who currently utilize SIP data switch to using the expanded consolidated market data.[493] Nevertheless, the Commission preliminarily believes that the Proposal would lead to improvements in individual and institutional investor order execution quality, as well as improvements in price discovery, relative to a baseline in which MDI Rules are implemented.

The Commission acknowledges considerable uncertainty in the costs and benefits of this rule because the Commission cannot predict how different market participants would adjust their practices in response to this rule. The Proposal would likely cause wholesalers and some retail brokers to incur significant adjustment costs to their operations. It is unknown whether the current industry practice of routing nearly all retail order flow to wholesalers would persist were the Commission to adopt this rule, because wholesalers might charge for this service and retail brokers might find it more profitable to develop their own routing services. On the other hand, wholesalers may still find the practice of routing to be profitable were there to remain an information advantage, and due to the proposed exception to be able to execute a segmented order at a price equal to or better than NBBO midpoint without exposing it in a qualified auction.

Among the possible effects are a decline in profitability for wholesalers. Some retail brokers could also experience costs from wholesalers reducing the amount of PFOF they pay

[481] *See* MDI Adopting Release, 86 FR at 18754.

[482] *See id.*

[483] *See* MDI Adopting Release, 86 FR at 18725.

[484] *See* MDI Adopting Release, 86 FR at 18744.

[485] *See* MDI Adopting Release, 86 FR at 18754.

[486] *See* MDI Adopting Release, 86 FR at 18745, 18754.

[487] *See* MDI Adopting Release, 86 FR at 18748.

[488] *See id.*

[489] *See id.*

[490] *See* MDI Adopting Release, 86 FR at 18747.

[491] Individual investor orders typically feature lower adverse selection than other types of orders, such as institutional orders. *See supra* section II.D.2 and *supra* section VII.B.2 for discussion of why it is generally more profitable for liquidity providers to execute against orders with lower adverse selection risk.

[492] *See* MDI Adopting Release, 86 FR at 18748.

[493] *See supra* note 421 for further details on how the MDI Rules adopted in the MDI Adopting Release could affect the NBBO. It is unclear how benefits in execution quality will change because of uncertainty regarding how the price improvement wholesalers provide to individual investors will change as well as uncertainty regarding how the NBBO midpoint will change for stocks with prices above $250 once the MDI Rules are implemented.

to retail brokers or from reducing or charging for the order handling services they offer to retail brokers. Some of these costs could ultimately be passed on to individual investors, such as through the resumption of commissions for NMS stock trades being charged by some retail brokers.[494] Market participants would also incur compliance costs, such as exchanges and NMS Stock ATSs incurring costs for creating qualified auctions, as well as broker-dealer and trading center compliance costs related to establishing policies and procedures for identifying and handling segmented orders and originating brokers that submit segmented orders. NMS plans and their participants (including the exchanges and FINRA) would incur compliance costs in order to update the consolidated market data feeds and to broadcast qualified auction messages. FINRA would incur compliance costs to update the ADF and to broadcast qualified auction messages.

As discussed above, this section measures the economic effects of the proposed amendments relative to a regulatory baseline that includes the implementation of the MDI Rules.[495] Furthermore, this section reflects the Commission's assessment of the anticipated economic effects of the proposed amendments, including potentially countervailing or confounding economic effects from the MDI Rules.[496] However, given that the MDI Rules have not yet been implemented, they likely have not affected market practice and therefore data that would be required for a comprehensive quantitative analysis of the economic effects that includes the effects of the MDI Rules are not available. It is possible that the economic effects relative to the baseline could be different once the MDI Rules are implemented. Where implementation of the above-described MDI Rules may affect certain numbers, the description of the economic effects below notes those effects.

1. Benefits

a. Increased Competition To Supply Liquidity to Marketable Orders of Individual Investors

The Commission believes that the Proposal would increase competition among market participants to provide liquidity to marketable orders of individual investors.[497] The majority of individual investors' marketable orders are currently internalized by wholesalers without competition at the order-by-order level.[498] The Commission believes that, by introducing an auction mechanism that allows market participants to bid for individual investor orders that would otherwise be internalized by wholesalers, Proposed Rule 615 and the proposed amendments to Rule 600 would facilitate competition to provide liquidity to individual investors by drawing additional liquidity from market participants other than the wholesalers that handle the majority of individual investor orders.[499] Marketable orders internalized by wholesalers feature lower price impacts, *i.e.,* have lower adverse selection risk.[500] Thus, the lower adverse selection risk of the order flow that would be routed to qualified auctions would incentivize market participants to trade against this flow via auction participation, as market participants would find providing liquidity against this order flow more attractive relative to the LOB or to individual investor orders with greater adverse selection that may currently be routed to exchanges.

The Commission is mindful of the limitations faced by investors who lack access to algorithmic trading technologies, *e.g.,* individual investors and professional traders relying on displayed screens, to determine when to provide liquidity in qualified auctions. The proposed 100-millisecond minimum auction length would be too short for such investors to be able to participate in these auctions unless they have to access algorithmic trading technology.[501] Additionally, the Proposal would prohibit exchange RLPs (unless they operated via one of the exceptions to qualified auctions), which would further constrain the ability of these market participants to compete to supply liquidity to segmented orders by limiting their ability to quote at sub-penny increments.[502] However, the Commission believes that market participants with access to algorithmic trading technology, including SORs used for trading institutional orders, would be able to participate in qualified auctions and thereby enhance the competition to provide liquidity to individual investors.

Competition to supply liquidity through qualified auctions would further be enhanced by the proposed implementation of a 5 mil (*i.e.,* $0.0005) per share auction fee and rebate cap for executed auction responses and a 5 mil per share rebate cap for segmented orders priced at $1.00 per share or greater.[503]

First, the Commission believes that the proposed auction fee and rebate caps would help ensure that exchanges and ATSs have sufficient incentives to operate qualified auctions. Using information from the financial statements of the three major exchange

[494] *See infra* section VII.C.2.b.ii for a discussion of the possibility of the return of commission fees.

[495] *See supra* section VII.B.7.

[496] *See supra* section VII.B.7 for a discussion of the Commission's anticipated economic effects of the MDI Rules as stated in the MDI Adopting Release.

[497] The Proposal would also increase competition among market participants to supply liquidity to beyond-the-midpoint non-marketable limit orders of individual investors because these orders could not be executed at restricted competition trading centers at prices beyond the midpoint unless they met one of the other exceptions to Proposed Rule 615. However, as shown below in Table 20, the majority of beyond-the-midpoint non-marketable limit orders are not internalized. Additionally, Table 20 also shows that the executed volume of beyond-the-midpoint non-marketable limit orders submitted by individual investors and routed to wholesalers is significantly smaller than the volume of marketable limit orders. Therefore, an increase in competition to supply liquidity to these orders may be more limited than for the marketable orders of individual investors. The Commission does not believe that the Proposal would have a significant effect on the competition to execute the fractional share portions of individual investor orders that may qualify for the exception in Proposed Rule 615(b)(5).

[498] *See supra* note 454.

[499] Although the Proposal is predicted to improve execution quality for individual investors, it is likely that profits for some market participants would be reduced, including some wholesalers and some retail brokers. *See infra* sections VII.C.2.c and VII.C.2.d for a discussion of these potential costs. Potential costs to other market participants are discussed elsewhere in *infra* section VII.C.2.

[500] *See supra* section VII.B.2.b.

[501] The possibility of adverse price movement (''adverse fade'' probability) during an auction is discussed in *infra* section VII.C.2.b.

[502] Consequently, these market participants could only compete to provide liquidity to segmented orders via exchange LOBs or ATSs. However, quoting on exchanges and ATSs can only take place at 1-cent price increments and the quoted midpoint. Therefore, if these participants wanted to provide a more competitive price relative to qualified auctions, they would be required to quote at the next better full-penny price or at the midpoint (for a tick-constrained stock). In contrast, participants of qualified auctions would be able to compete by providing liquidity at prices that are only 0.1 cents better than the existing auction price. As such, under qualified auctions, competition to provide liquidity to segmented order flow at better prices would be incrementally more costly for investors who lack access to smart order routers, placing these participants at a disadvantage relative to participants with access to smart order routers.

[503] Qualified auction fee and rebate caps would be limited to 0.05% of the auction response price per share for executed auction responses and segmented orders priced at less than $1.00 per share in Proposed Rule 615(c)(4). Additionally, the Proposal would require that qualified auction fees and rebates be the same for all of its auction participants, *i.e.,* volume-based tiering, which tends to advantage large liquidity suppliers who transact in sufficient volumes to trigger lower fees and/or higher rebates, would not apply to qualified auction fees and rebates. Under the proposed rule, no fee could be charged for submission or execution of a segmented order, or for submission of an auction response. *See supra* section IV.C.4.

groups which collectively account for the overwhelming majority of trading volume on exchanges, the Commission estimates that the average total net capture [504] for exchanges is currently around 4 mils for all trading types.[505] However, the Commission understands based on Staff conversations with industry members that the net capture for the executions of orders during continuous trading hours (but not open or close auctions) priced at $1.00 per share or greater is likely close to 2 mils. The Commission expects that in response to the 5 mil auction fee and rebate cap for executed auction responses priced at $1.00 per share or greater, open competition trading could charge fees of around 5 mils to executed auction responses and provide rebates of approximately 3 mils to broker-dealer submitting the segmented order to the qualified auction, and thus maintain a net capture of approximately 2 mils for these transactions. For the executions of orders priced below $1.00 per share on exchange LOBs, the Commission estimates that exchanges have an average net capture of around 0.28% of the transaction value; [506] thus, for these orders under $1.00, the net capture may be lower than what they earn on exchange LOB transactions. However, qualified auction hosts may be able to compensate for this decline, *e.g.,* by reducing rebates for segmented orders priced at $1.00 per share or greater to 1 mil or otherwise cross-subsidizing segmented orders priced below $1.00 per share with access fees charged on their LOB, with the overall goal to at least maintain their overall total net capture of around 2 mils for trading on their exchange.[507]

Second, the proposed 5 mil auction fee and rebate cap for executed auction responses priced at $1.00 per share or greater would likely result in qualified auction fees and rebates that would be unlikely to have a significant impact on the price improvement auction bidders would be able to offer because the 5 mil fee and rebate cap is smaller than the minimum pricing increment in qualified auctions. Since larger fees limit the ability of liquidity suppliers to offer better prices, setting a lower auction fee cap could result in improved execution quality for the segmented order. Furthermore, the auction rebate cap of 5 mils for segmented orders is likely to limit the competitive bidding advantage of the broker-dealer submitting the segmented order to the qualified auction. The maximum rebate of 5 mils is smaller than the minimum pricing increment in the auction, which limits the ability of the broker-dealer submitting the segmented order to use the rebate to subsidize the price improvement they offer in their qualified auction bids.

Third, the Commission believes that the caps on qualified auction fees and rebates would incentivize open competition trading centers to compete more on the basis of execution quality, rather than fees and rebates, in order to attract segmented orders. The 5 mil rebate cap for segmented orders priced at $1.00 per share or greater would result in rebates that are significantly lower than the rebates that are currently offered by most exchanges in these stocks. Academic literature has shown that the presence of high liquidity fees and rebates on some market centers may impact broker-dealer routing decisions based on where they can receive the highest rebate (or pay the lowest fee), rather than where they can receive better execution quality on behalf of their customers.[508] In contrast, with the 5 mil rebate cap, the effect of rebates on qualified auction participants for stocks with prices greater than $1.00 may be sufficiently small as to have a minimal impact on overall market structure or behavior.[509] This would limit the degree to which open competition trading centers could use rebates to attract segmented orders to their qualified auctions and help incentivize them to compete more on the basis of the execution quality of their auctions.

In addition, the Commission believes that proposed minimum price increments under Proposed Rule 615(c)(3) [510] would further enhance competition to supply liquidity to marketable individual investor orders through qualified auctions, as smaller price increments are likely to encourage greater amounts of price improvement. However, lowering the price increment beyond that proposed may increase the possibility of market participants seeking to gain execution priority by pricing their auction responses in economically small increments. Thus, the size of the proposed price increment that has been chosen for qualified auctions is intended to increase price improvement while still reducing the likelihood of participants using economically insignificant price increments.

b. Improvements to Segmented Order Execution Quality

The Proposal likely would reduce transaction costs for individual investors due to improved competition to supply liquidity to individual investor orders.[511] By making marketable order flow from individual investors that is currently internalized by wholesalers and executed at prices less favorable than midpoint accessible to other market participants in qualified auctions, the Proposal would allow additional market participants an opportunity to compete to directly trade with these individual investor orders.[512] The Commission estimates that the potential benefit to individual investors from this increased competition, the

[504] Net capture refers to the difference between average fees levied and rebates paid.

[505] Intercontinental Exchange, the parent firm of NYSE, reports on page 51 of its 2021 10k filing that its net capture for U.S. equity transactions was approximately 4.2 mils in 2021. Nasdaq did not report its net capture in their 10K filing, however Nasdaq provides information on their investor relations web page which, when we average the relevant 2021 volumes, indicates that the average net capture across all Nasdaq platforms for U.S. equity transactions was 5.9 mils (*see* Nasdaq 2022/2021 Monthly Volumes, *available at https://ir.nasdaq.com/static-files/465d2157-c476-4546-a9f7-8d7ad0c9be77*). Cboe reports in their 2021 Form 10–K filing that their net capture for U.S. equity transactions was approximately 2 mils.

[506] The estimate for the 0.28% net capture, which is the difference between fees received and rebates paid out by the exchange, is obtained by an analysis of current fee and rebate schedules based on Rule 19b-4 filings with the Commission for each of the equity exchanges operating in the United States as of June 1, 2022, as well as a review of the transaction prices that each exchange posts. This amount is because, for transactions under $1.00 per share, most exchanges set their baseline fee at 0.30% but do not offer baseline rebates, and some charge fees to both sides of the transaction leading to more than 0.30% per trade earned by the exchange.

[507] The assumption that the exchanges earn an average 2 mil spread on trading behavior is discussed above in this section. The Commission believes that it is reasonable to assume that the exchanges would fund qualified auction rebates through access fees, either from qualified auctions or the continuous order book. The Commission believes that it is reasonable to assume that the exchanges overall would try to continue to earn approximately 2 mils per transaction under the Proposal, but the Commission acknowledges that there is some uncertainty regarding this assumption and seeks public comment.

[508] *See, e.g.,* Robert H. Battalio, Shane A. Corwin & Robert Jennings, *Can Brokers Have It All? On the Relation Between Make-Take Fees and Limit Order Execution Quality,* 71 J. Fin. 2193 (2016).

[509] All but two exchanges do not offer a rebate for transactions priced below $1.00 per share. Thus, for these transactions, the proposed auction fee and rebate cap for executed auction responses would likely not result in lower rebates.

[510] Under proposed Rule 615(c)(3), segmented orders and auction responses must be priced in an increment of no less than $0.001 (or 0.1 cent) if their prices are $1.00 or more per share, in an increment of no less than $0.0001 (or 0.01 cent) if their prices are less than $1.00 per share, or at the midpoint of the NBBO. *See supra* section IV.C.3.

[511] *See supra* section VII.C.1.a for discussion of improvements in competition to supply liquidity to segmented orders in qualified auctions.

[512] *See infra* section VII.C.1.c for discussions of how the Proposal could also enhance the order execution quality of other market participants that would be able to compete to supply liquidity to individual investor orders, including institutional investors.

competitive shortfall rate, would range between an average of 0.86 bps to 1.31 bps for marketable orders that met the definition of a segmented order.[513] Based on Commission estimates that between 7.3% to 10.1% of total executed dollar volume would be segmented orders that would be eligible to be included in qualified auctions, the Commission preliminarily estimates that this could potentially result in a total average annual savings in individual investor transaction costs, *i.e.,* a total competitive shortfall, ranging between $1.12 billion to $2.35 billion dollars.[514] The Commission acknowledges that there is considerable uncertainty in these estimates.[515] Additionally, these estimates account only for potential changes in individual order transaction costs and assumes that the PFOF wholesalers currently pay to retail brokers would be converted into additional price improvement for the individual investor order. Furthermore, the estimates do not account for the potential return of commission fees charged by retail brokers.[516] As discussed in further detail below,[517] the Commissioner does not believe that retail brokers will respond to the loss of PFOF revenue by resuming commission fees, but even in the event that total PFOF revenue disappears ($940 million, based on Q1 2022 data) [518] and PFOF brokers charge commission fees to fully replace this revenue, this cost increase to traders would still be less than the estimated $1.12 billion to $2.35 billion annual gain in price improvement estimated by the Commission.

As shown by analyses in Table 6, Table 7 and Table 8, the realized spreads earned from supplying liquidity to individual investor marketable orders routed to wholesalers are greater than realized spreads for comparable marketable order transactions (*e.g.,* similar stocks and order sizes) on exchanges, indicating that the additional price improvement that these individual investor orders receive does not fully offset the lower adverse selection risk associated with these orders.[519] The Commission estimates the competitive shortfall rate, *i.e.,* the potential additional price improvement (and reduction in transaction costs) that the marketable orders of individual investors would receive from having their order being exposed to greater competition among liquidity suppliers in qualified auctions, as the difference in the realized spreads between marketable orders executed on exchanges and individual investor marketable orders that were executed after being routed to wholesalers,[520] after adjusting for exchange rebates that are currently paid to liquidity suppliers on exchanges, as well as for fees (5 mils) that would potentially be charged to liquidity suppliers in qualified auctions.[521]

To illustrate the logic behind this calculation, it is useful to go through the following thought experiment. Pick a stock, a day, and a range of order size that is executed by wholesalers. Based on Rule 605 data or CAT data, one can calculate the transaction costs that retail investors incur for this stock, on this day, and for this range of order size. The question is: what would be the transaction costs for those orders if they were sent to competitive auctions? Although such auctions as those being proposed here do not exist, the marginal profit required to incentivize provision of liquidity on exchanges' order books can serve as a proxy. This marginal profit to liquidity provision can be estimated as the on-exchange realized spread (for a given stock, on a given day, and within a given range of order size) plus the estimated rebate that exchanges pay the liquidity providers. The estimated transaction cost for the auction equals the estimated marginal profit of liquidity providers on exchange order books plus the maximum 5 mil fee (a lower fee would result in a higher competitive shortfall). The competitive shortfall is the difference between the current transaction cost of retail investors off-exchange wholesalers and the estimated transaction cost in the auction. Equivalently, one can view this as the difference in marginal profits to liquidity provision on and off-exchange (where spreads are adjusted by the auction fee rather than by PFOF).

Competitive shortfall rates are calculated using three different estimates of exchange rebates. The first Rebate Base method is calculated based on Commission estimates of average exchange rebates paid to liquidity suppliers on maker-taker exchanges (*i.e.,* exchanges that pay a rebate to orders supplying liquidity and charge a

[513] As discussed in *supra* section VII.B.7, the Commission believes that the implementation of qualified auctions would lead to improvements in execution quality relative to a baseline in which the MDI Rules are implemented, *i.e.,* over and above any improvements in execution quality that may result from the implementation of the MDI Rules. Once implemented, the changes to the current arrangements for consolidated market data in the MDI Adopting Release may impact the magnitude of the benefit from the proposal for individual investors, but the effects are uncertain. Trading costs are measured against the NBBO midpoint and, as discussed in *supra* note 421, there is uncertainty regarding how the NBBO midpoint will change for stocks priced above $250 when the MDI Rules are implemented. It is also uncertain how or to what degree changes in trading costs would differ between trades executed at exchanges and wholesalers. Since the benefit is measured based on the differences in exchange and wholesaler realized spreads, if both realized spread measures changed similarly, then there would not be changes in relative differences between their reported spread measures and the estimated benefit would not change.

[514] *See infra* Table 19. The Commission preliminarily believes that, in order for a wholesaler to effectively compete against other bidders in qualified auctions, the wholesaler would have to reduce the PFOF it is paying to the retail broker in order to bid more aggressively to potentially win the qualified auction. This would result in the reduction in PFOF instead going to the customer as additional price improvement, which would be reflected in the competitive shortfall calculation. The competitive shortfall estimates do not include costs that may arise in the form of potential increases in (or the return of) commissions retail brokers charge to individual investors or other reductions in the services that retail brokers currently offer, both of which may occur if the Proposal reduces the PFOF paid to retail brokers or results in wholesalers charging retail brokers for their order handling services. *See infra* section VII.C.2.b for a discussion of costs to individual investors and *infra* section VII.C.2.d for a discussion of costs to retail brokers.

[515] The Commission is uncertain about these estimates because the Commission does not know with certainty how different market participants would adjust their practices in response to this rule. There is also uncertainty in these estimates because of limitations in using the realized spreads to measure the trading profits earned by liquidity suppliers. *See supra* note 426 for additional discussions on the limitations of realized spreads.

[516] Most retail brokers have continued to charge commission fees for (human) broker-assisted orders, including those that dropped online trade commission fees.

[517] *See infra* section VII.C.2.b.ii.

[518] However, all PFOF revenue might not disappear because wholesalers may continue to pay PFOF for non-marketable limit orders, which may not be affected by the Proposal and may be based on exchange rebates that wholesalers pass through to retail brokers (*see supra* note 395). The annualized PFOF revenue from non-marketable limit orders is estimated to be approximately $275 million, based on Q1 2022 data. *See supra* note 465 for additional information on PFOF revenue in Q1 2022.

[519] *See supra* sections VII.B.4 and VII.B.5 for discussions of the differences in realized spreads between individual investor marketable orders routed to wholesalers compared to marketable orders routed to exchanges.

[520] This included marketable orders that the wholesalers internalized and also marketable orders that were routed to wholesalers and then executed on a riskless principal or rerouted to another venue and executed on an agency basis. The Commission does not adjust wholesaler realized spreads for the PFOF they pay to retail brokers because PFOF, while a cost to wholesalers, is not a cost to investors. *See supra* note 514 for further discussions on the assumed effects of PFOF for purposes of this analysis.

[521] The realized spreads after adjusting for potential exchange rebates to liquidity suppliers are estimated and discussed in *supra* section VII.B.4. In estimating the competitive shortfall rate we also deduct a 5 mil fee from the exchange adjusted realized spreads to account for the potential fees charged to liquidity suppliers in qualified auctions. The Commission acknowledges that realized spreads are a proxy for the trading profits earned by liquidity suppliers. *See supra* note 426 for further discussion on the limitations of realized spreads.

fee for orders demanding liquidity) and fees charged to liquidity suppliers on inverted exchanges (*i.e.,* exchanges that charge a fee for orders supplying liquidity and pay a rebate for orders demanding liquidity) and flat fee exchanges (*i.e.,* exchange that don't pay rebates, but may charge fees for orders both demanding and supplying liquidity).[522] The other two methods, which are calculated to see how the competitive shortfall rates vary based on differences in estimates of exchange fees and rebates, are calculated by varying the exchange fees and rebates estimated in the Rebate Base method by 25%. The Rebate High method estimates higher rebates and lower fees for supplying liquidity and assumes exchange rebates on maker-taker venues are 25% greater than in the Rebate Base method and exchange fees on inverted and flat fee exchanges are 25% lower than in the Rebate Base method.[523] The Rebate Low method estimates lower rebates and higher fees for supplying liquidity and assumes exchange rebates on maker-taker venues are 25% lower than in the Rebate Base method and exchange fees on inverted and flat fee exchanges are 25% higher than in the Rebate Base method.[524]

The estimates of the overall average competitive shortfall rates and the competitive shortfall rates for different types of NMS stocks are presented below in Table 18.[525] This analysis incorporates the contrasting levels of adverse selection risk (price impact) and price improvement provided to orders internalized by wholesalers and executed on exchanges. Ultimately, the increased price improvement of wholesalers does not match the lower price impact of individual investor orders, causing wholesaler realized spreads to exceed exchange realized spreads, and competitive shortfall rates to be positive. In order to ensure robustness of the results and to account for potential limitations of the coverage of Rule 605 reports,[526] the analysis estimates competitive shortfall rates using data from Rule 605 reports, as well as data from CAT. All CAT and Rule 605 estimates of the competitive shortfall rates are positive in all three methods, which indicates that the realized spreads earned by wholesalers on the marketable orders of individual investors tend to be higher than realized spreads earned by liquidity suppliers on exchanges after adjusting for exchange rebates. However, the average competitive shortfall rates calculated using data from Rule 605 reports tend to be lower than those estimated from CAT data. Rule 605 estimated competitive shortfall rates using the Rebate Base, Low, and High methods are 0.58 bps, 0.77 bps, and 0.38 bps, respectively, while CAT estimated competitive shortfall rates using the Rebate Base, Low, and High methods are 1.08 bps, 0.86 bps, and 1.31 bps, respectively. The differences appear to be mainly driven by differences between the exchange realized spreads calculated using Rule 605 and CAT data. Exchange realized spreads calculated using CAT data tend to be lower than those calculated using Rule 605 data, with CAT data estimating an average exchange realized spread of −1.22 bps for all stocks and Rule 605 data estimating an average exchange realized spread of -0.67 bps. This difference could be driven by the CAT data having broader coverage of marketable orders than Rule 605 data.[527] The analysis in Table 7 supports this by showing that sample from CAT data contains over $16 trillion in trading volume from marketable orders routed to exchanges in Q1 2022, while Table 6 shows that the sample from Rule 605 data is smaller, containing over $9 trillion in trading volume from marketable orders routed to exchanges.[528] Given the broader coverage of the CAT exchange data, the Commission believes that the estimates derived from sample from the CAT data provide a more complete estimate of the realized spreads for marketable orders executed on exchanges than the sample from the Rule 605 data. Therefore, the Commission believes that the range of the estimated competitive shortfall rate from the CAT data, 0.86 bps to 1.31 bps may be a more representative measurement of the realized spread difference between individual investor marketable orders executed by wholesaler and marketable orders executed on exchanges.[529]

The estimates in Table 18 indicate that the competitive shortfall rate appears to be higher in non-S&P 500 stocks than in S&P 500 stocks and ETFs, with non-S&P 500 competitive shortfall rates of 3.07 bps under the Rebate Base method computed using CAT data, compared to the competitive shortfall rates of 0.44 bps and 0.34 bps for S&P 500 stocks and ETFs respectively. These results are consistent with the results shown in Table 8, which indicate that the differences in realized spreads between individual investor marketable orders executed at wholesalers and marketable orders executed at exchanges are larger in less liquid stocks.[530] Additionally, the estimates in Table 18 indicate that exchanges' rebates tend to have a larger effect on the competitive shortfall rate for non-S&P 500 stocks, with these types of stocks showing the greatest variation in the competitive shortfall rates estimated by the Rebate Low and Rebate High methods.

[522] The estimated exchange rebates for orders supplying liquidity used to calculate the competitive shortfall exchange base method are the same as those used to calculate the Realized Spread Rebate differential in *supra* Table 6. *See supra* note 435 for a discussion of how these estimates of exchange rebates were determined. A 5 mil fee is then further deducted to account for the potential fee charged to liquidity suppliers in qualified auctions.

[523] The Rebate High method is calculated assuming that exchange rebates to liquidity suppliers on maker-taker exchanges are 34 mils; that exchange fees for supplying liquidity on inverted exchanges are 11 mils; and that exchange fees for supplying liquidity on flat fee exchanges are 5 mils. A 5 mil fee is then further deducted to account for the potential fee charged to liquidity suppliers in qualified auctions.

[524] The Rebate Low method assumes that rebates on maker-taker exchanges are 25% lower and fees on inverted and flat fee exchanges are 25% higher. For our adjustments we assume: exchange rebates to liquidity suppliers on maker-taker exchanges are 20 mils; exchange fees for supplying liquidity on inverted exchanges are 19 mils; exchange fees for supplying liquidity on flat fee exchanges are 9 mils. A 5 mil fee is then further deducted to account for the potential fee charged to liquidity suppliers in qualified auctions.

[525] Competitive shortfalls are calculated using the same methodology for calculating realized spreads that is described in Table 6 and Table 7, but the amount for exchange rebates adjustments may be different depending on the rebate method used. Additionally, the competitive shortfall deducts a 5 mil fee from the exchange adjusted realized spreads to account for the potential fees charged to liquidity suppliers in qualified auctions, which is not included in the realized spread differential calculations.

[526] *See supra* section VII.B.4 discussing limitations of Rule 605 coverage.

[527] The different time horizons used for the calculation of the realized spreads could also contribute to the observed difference in realized spreads between the samples, with the CAT sample calculating realized spreads at the one minute horizon and Rule 605 data calculating spreads at the 5 minute horizon. However, Conrad and Wahal (2020) examined realized spreads at different horizons and found that realized spreads measured at the 5 minute horizon tended to be lower than realized spreads measured at the 1 minute horizon, which indicates that the different time horizons may not be a significant driver of the difference in realized spreads between the two samples.

[528] Note that the samples in Table 6 and Table 7 are filtered to be limited to orders under $200,000 in value. However, the trading volume for the CAT sample is still larger than the exchange trading volume for the unfiltered sample from Rule 605 data shown in Table 5.

[529] The Commission acknowledges that there is uncertainty in these estimates. *See supra* note 515 for additional discussions.

[530] *See supra* section VII.B.4 for a discussion of the analysis in Table 8.

TABLE 18—COMPETITIVE SHORTFALL RATES ESTIMATES

Data source	Stock type	All	S&P 500	Non-S&P 500	ETF
Rule 605	WH Realized Spread (bps)	0.72	0.30	1.55	0.64
Rule 605	EX Realized Spread (bps)	−0.67	−0.30	−1.97	−0.12
Rule 605	EX Realized Spread Adj Rebate Base (bps)	−0.001	−0.05	−0.24	0.28
Rule 605	EX Realized Spread Adj Rebate High (bps)	0.19	0.02	0.25	0.41
Rule 605	EX Realized Spread Adj Rebate Low (bps)	−0.20	−0.12	−0.73	0.15
CAT	WH Realized Spread (bps)	0.85	0.42	2.00	0.51
CAT	EX Realized Spread (bps)	−1.22	−0.28	−3.90	−0.34
CAT	EX Realized Spread Adj Rebate Base (bps)	−0.40	−0.06	−1.54	0.08
CAT	EX Realized Spread Adj Rebate High (bps)	−0.18	0.00	−0.90	0.20
CAT	EX Realized Spread Adj Rebate Low (bps)	−0.63	−0.12	−2.19	−0.05
Rule 605	Competitive Shortfall Rebate Base (bps)	0.58	0.30	1.42	0.26
Rule 605	Competitive Shortfall Rebate High (bps)	0.38	0.23	0.93	0.13
Rule 605	Competitive Shortfall Rebate Low (bps)	0.77	0.37	1.91	0.38
CAT	Competitive Shortfall Rebate Base (bps)	1.08	0.44	3.07	0.34
CAT	Competitive Shortfall Rebate High (bps)	0.86	0.38	2.42	0.22
CAT	Competitive Shortfall Rebate Low (bps)	1.31	0.50	3.71	0.46

This table shows estimates of competitive shortfall rates, wholesaler realized spreads, and exchange realized spreads after adjusting for exchange rebates. Competitive shortfall is estimated by subtracting realized spreads on marketable orders routed to exchanges after adjusting for exchange rebates and fees for liquidity suppliers in qualified auctions from realized spreads on marketable orders routed to wholesalers. Estimates are calculated using three different competitive shortfall estimation methods to account for exchange rebates: (1) Competitive Shortfall Rebate Base (''Base'') method (*see supra* note 522); (2) Competitive Shortfall Rebate High (''High'') method (*see supra* note 523); and (3) Competitive Shortfall Rebate Low (''Low'') method (*see supra* note 524).

The competitive shortfall estimates are calculated separately for samples from Rule 605 data and CAT data and are derived from the execution quality stats for marketable orders under $200,000 described in detail in Table 6 (Rule 605 data) and Table 7 (CAT data). For the sample from Rule 605 data, the difference in dollar realized spread measures between exchanges and wholesalers are estimated by subtracting the average rebate adjusted exchange realized spread (using estimated exchange rebate rates from one of the competitive shortfall rebate method estimates) and also deducted a 5 mil fee (to account for the potential fee charged to liquidity suppliers in qualified auctions) from the adjusted wholesaler average realized spread at the stock-month-order size category level for the combined market and marketable limit order types with average order size category dollar values less than $200,000 (average order dollar values were determined for each order-size category stock-month by dividing the total number of covered shares in the order size category by the total number of covered orders and then multiplying by the stock-month's average VWAP), calculated from Rule 605 reports. The share weighted averages of the wholesaler and exchange realized spread differences are then determined at the individual stock-month level by share-weighting across different order-size categories based on the number of shares executed (at the market center + away) in wholesalers' Rule 605 reports in that order-size category. Percentage realized spread differences are then calculated by dividing the dollar realized spread differentials by the stock-months VWAP as estimated by TAQ. The weighted average of the individual stock-month percentage realized spread differentials are averaged together based on weighting by the total wholesaler dollar trading volume in that stock-month for the combined marketable order type (wholesaler dollar trading volume is estimated by multiplying the Rule 605 report wholesaler total executed share volume, *i.e.,* the share volume executed at market center + share volume executed away from the market center, for the stock-month-order type by the stock's monthly VWAP). A similar methodology was used to calculate the CAT competitive shortfall measures, but the share weighted volume estimates were calculated up to the individual stock-week-order-size level and then these values were aggregated together based on a weighted average using the total wholesaler dollar trade volume executed in that category. The realized spread measures reported are the average wholesaler and exchange adjusted rebates (adjusting for the exchange rebates reported under this method but not including the 5 mil fee deduction for the qualified auction fees) used to compute the competitive shortfall rates.

Table 18 estimates the average annual total competitive shortfall (*i.e.,* the average total annual estimated dollar value of improvements in individual investor transaction costs) by multiplying the competitive shortfall rate by an estimate of the total annual dollar volume of segmented orders that could potentially participate in qualified auctions. Because the Commission is uncertain about the volume of orders that would participate in qualified auctions, the analysis uses three different scenarios to estimate the dollar volume of individual investor orders that may participate in qualified auctions.[531] Under the Base segmented order volume scenario, the Commission analysis assumes that all individual investor orders under $200,000 would be exposed in qualified auctions, which is estimated to constitute 7.8% of total executed dollar volume.[532] Under the Low segmented order volume scenario, the Commission analysis assumes that only individual investor marketable orders under $200,000 would be exposed in qualified auctions, which is estimated to constitute 7.3% of total executed dollar volume.[533] Because some broker-dealers may submit segmented orders over $200,000 to qualified auctions if it would result in the order receiving better price improvement,[534] under the High segmented order volume scenario, the Commission analysis assumes that 50% of individual investor orders over $200,000 would also be exposed in qualified auctions, which is estimated to constitute 10.1% of total executed dollar volume.[535] These scenarios include orders executed by wholesalers at prices at or better than NBBO midpoint, though should these orders continue to receive this execution via the exception to the rule then they would not be sent to qualified auctions. This is appropriate given that these orders are also included in the analysis examining the execution quality of individual investor marketable orders routed to

[531] The percentage multipliers used in these volume estimates were estimated from an analysis of CAT data in Jan. 2022. The analysis found that wholesalers trading in an off-exchange principal capacity against orders originating from an FDID Individual customer account type accounted for 12.36% of the total consolidated dollar volume reported by the SIP during the month. Of these individual orders, 36.78% of the executed dollar volume originated from orders with dollar values of $200,000 or greater. Of the remaining orders, 5.90% of the executed dollar volume belonged to orders that were not market or marketable limit orders.

[532] The Base Scenario estimate of 7.80% as the percentage of total dollar volume that could potentially be segmented orders that could be exposed in qualified auctions is estimated by multiplying the 12.36% of total executed dollar volume belonging to individual accounts and executed by wholesalers in a principal capacity by the 63.22% (1–36.78%) of this executed dollar volume from orders that were less than $200,000.

[533] The Low Scenario estimate of 7.34% as the percentage of total dollar volume that could potentially be segmented orders that could be exposed in qualified auctions is estimated by multiplying the 12.36% of total executed dollar volume belonging to individual accounts and executed by wholesalers in a principal capacity by the 63.22% (1–36.78%) of this executed dollar volume from orders that were less than $200,000. This was then multiplied by 94.1% (1–5.9%) to account for the assumption that only market and marketable limit orders would be submitted to qualified auctions.

[534] Proposed Rule 615 would create an exception in which segmented orders with a dollar value of $200,000 or greater may be executed at a restricted competition trading center without being exposed in a qualified auction. However, the exception still allows these orders to be submitted to qualified auctions.

[535] The High Scenario estimate of 10.08% as the percentage of total dollar volume that could potentially be segmented orders that could be exposed in qualified auctions is estimated by multiplying the 12.36% of total executed dollar volume belonging to individual accounts and executed by wholesalers in a principal capacity by 81.61% (1–36.78%/2), which is the percentage of the remaining executed dollar volume of orders originating from individual investor that are less than $200,000 plus 50% of the executed dollar volume of individual orders that were $200,000 or greater, which would be submitted to qualified auctions under this scenario.

wholesalers.[536] Therefore, removing these orders from the analysis would serve to increase the realized spread for wholesalers and thus increase the competitive shortfall for the remaining percentage of total executed dollar volume.

Table 19 estimates the average annual total competitive shortfall under the three segmented order volume scenarios for each of the three different competitive shortfall rebate methods. The table presents estimates for both the sample from Rule 605 data and the sample from CAT data. The total competitive shortfalls estimated for the Rule 605 sample are smaller than those estimated for the CAT sample. The Rule 605 data sample Rebate Base method estimates total competitive shortfalls ranging between $800 million and $1.0 billion dollars for the Low and High segmented order volume scenarios, respectively, while the CAT data sample Rebate Base method estimates total competitive shortfalls ranging between $1.5 billion and $1.9 billion dollars. As discussed above in this section, given the broader coverage of the CAT exchange data, the Commission believes the estimated competitive shortfall rates derived from the CAT data are more representative than those derived from Rule 605 data. The total competitive shortfall estimated from the CAT data sample using the Rebate High method ranges between $1.1 billion and $1.5 billion dollars over the different segmented order volume scenarios, while the estimates from the Rebate Low method range between $1.7 billion to $2.3 billion dollars. Given the uncertainty regarding the estimates of average exchange rebates and the volume of segmented orders that would be exposed to qualified auctions, the Commission estimates that the average annual total competitive shortfall, *i.e.,* the total annual average reduction in individual investor transactions cost, from the Proposal may range between $1.1 billion dollars and $2.3 billion dollars.[537]

TABLE 19—TOTAL ANNUAL COMPETITIVE SHORTFALL DOLLAR VALUES UNDER DIFFERENT VOLUME SCENARIOS

Data source	Competitive shortfall scenario	Segmented order volume scenario		
		Base (7.80% of total executed dollar volume)	Low (7.34% of total executed dollar volume)	High (10.08% of Total Executed Dollar Volume)
Rule 605	Competitive Shortfall Rebate Base (0.58 bps)	$800 million	$753 million	$1.03 billion
Rule 605	Competitive Shortfall Rebate High (0.38 bps)	$530 million	$499 million	$684 million
Rule 605	Competitive Shortfall Rebate Low (0.77 bps)	$1.07 billion	$1.01 billion	$1.38 billion
CAT	Competitive Shortfall Rebate Base (1.08 bps)	$1.50 billion	$1.41 billion	$1.94 billion
CAT	Competitive Shortfall Rebate High (0.86 bps)	$1.20 billion	$1.12 billion	$1.54 billion
CAT	Competitive Shortfall Rebate Low (1.31 bps)	$1.82 billion	$1.71 billion	$2.35 billion

This table estimates the total annual competitive shortfall dollar amounts by multiplying the competitive shortfall rates for the different method in Table 18 by an estimate of the total annual dollar trading volume that could be exposed in qualified auctions under three different scenarios: The Base Volume Scenario (discussed in *supra* note 532), the Low Volume Scenario (discussed in *supra* note 533) and the High Volume Scenario (discussed in *supra* note 535). The total annual dollar trading volume that could be exposed in qualified auctions under a scenario is estimated by multiplying the scenario's estimate of the percentage of executed total dollar volume by four times the Total Executed Dollar Volume in Q1 2022, which equaled $44.54 trillion. Total Competitive Shortfall Dollar Value is estimated by multiplying Competitive Shortfall Rate by the estimate of the total annual dollar trading volume that could be exposed in qualified auctions under a scenario.

A proposed exception from being required to send individual investor orders to qualified auctions under the Proposal is if handling broker-dealers choose to execute individual investor orders at prices equal to the NBBO midpoint or better. The analysis in Table 10 presents evidence that wholesalers execute 46% of the shares they internalize at prices equal to or better than the midpoint. Analysis of CAT data indicates that there is often additional midpoint liquidity available on exchanges and NMS Stock ATSs

Table 20 uses CAT data from March 2022 to examine the non-displayed liquidity available at the NBBO midpoint on exchanges and NMS Stock ATSs at a moment in time when a wholesaler internalizes an individual investor marketable order at a price less favorable (to the customer) than the NBBO midpoint.[538] The results indicate that, on average,[539] 51% of the shares of individual investor marketable orders internalized by wholesalers are executed at prices less favorable than the NBBO midpoint (Wholesaler Pct Exec Shares Worse Than Midpoint). Out of these individual investors shares that were executed at prices less favorable than the midpoint, on average, 75% of these shares could have hypothetically

[536] Marketable orders that are routed to wholesalers and executed at the NBBO midpoint or a more favorable price are included in the analysis in Table 6, Table 7, Table 18, and Table 19, as well as additional analysis based on the data used in these table.

[537] This estimate only accounts for potential changes in individual order transaction costs and assumes the PFOF that wholesalers currently pay to retail brokers would be converted into additional price improvement for the individual investor order. The competitive shortfall estimates do not include costs that may arise in the form of potential increases in (or the return of) commissions retail brokers charge to individual investors or other reductions in the services that retail brokers currently offer. *See supra* note 514 for additional details.

[538] More specifically, the analysis uses CAT data to look at the total shares available at the NBBO midpoint that originate from hidden midpoint pegged orders on exchanges and NMS Stock ATSs. The analysis compares the size of an individual investor marketable order that was internalized in a principal capacity by a wholesaler at a price less favorable than the NBBO midpoint (measured at the time the wholesaler received the order) to the total shares of midpoint liquidity (originating from midpoint peg orders) at the NBBO midpoint on exchanges and NMS Stock ATSs at the time the individual investor order is executed in order to hypothetically see how many additional shares could have gotten price improvement if they had executed against the hidden liquidity available at the NBBO midpoint. A midpoint peg order is a type of hidden order whose price automatically adjusts with the NBBO midpoint. The analysis looks at midpoint peg orders on exchanges and ATSs during normal market hours (midpoint peg orders with an Immediate or Cancel or Fill or Kill modifier are excluded). The total potential shares in orders that were available at the NBBO midpoint from midpoint peg orders on exchanges and ATSs was calculated each stock day by adding shares when midpoint peg orders were received by an exchange or ATS and subtracting shares in these orders that were canceled or traded. Shares were also subtracted from the total when a wholesaler internalized an individual investor marketable order at a price worse than the NBBO midpoint and shares were available at the midpoint on exchanges and ATSs that the order could have hypothetically executed against. This ensures that that analysis is not overestimating the available midpoint liquidity (*i.e.,* it ensures that we do not estimate two individual investor 100 share orders could have executed against the same resting 100 share midpoint order). The analysis also kept track of the total amount of dollars of additional price improvement that individual investors would have received if their orders had hypothetically executed against the liquidity available at the NBBO midpoint instead of being internalized by the wholesaler. Note that this analysis might underestimate the total non-displayed liquidity available at the NBBO midpoint because it only looks at orders that pegged to the midpoint and not other orders, such as limit orders with a limit price equal to the NBBO midpoint.

[539] As discussed in Table 20, percentages were computed at a stock-week level and then averaged across stock-weeks by weighting by the total dollar volume the wholesaler internalized during that stock-week.

executed at a better price against the non-displayed liquidity resting at the NBBO midpoint on exchanges and NMS Stock ATSs. Under the current market structure, this liquidity is not displayed, so wholesalers may not have been aware of this liquidity and able to execute the individual investor marketable orders against it. Currently, if wholesalers wanted to detect this hidden liquidity, they would have had to ping each individual exchange or NMS Stock ATS to see if midpoint liquidity was available on that venue.[540]

These results shed additional light on the availability of liquidity at the NBBO midpoint for a large share of individual investor orders that currently receive executions at less favorable prices than the NBBO midpoint and therefore could potentially execute at a price equal to the NBBO midpoint under qualified auctions. Under the Proposal, individual investor marketable orders submitted to qualified auctions might execute at the NBBO against this hidden liquidity, assuming the added transparency does not reduce the supply of midpoint liquidity. The qualified auction message would act as a coordination mechanism and would make the broker-dealers that handle the orders resting at the NBBO midpoint on exchanges and NMS Stock ATSs aware there was a segmented order they could trade against. These broker-dealers could cancel their midpoint orders resting on exchanges and NMS Stock ATSs and instead submit them as an auction response priced at the midpoint in the qualified auction.[541]

Table 20 also estimates the additional dollar price improvement that these individual investor marketable orders would have received if they had executed against the available midpoint liquidity instead of being internalized. The total amount of additional price improvement that all of these individual investor orders would have received was about 51% of the total dollar price improvement provided by wholesalers to all of the individual investor marketable orders that they internalized (*i.e.* the marketable orders internalized at prices better or equal to the midpoint plus marketable orders internalized at prices worse than the midpoint).

In addition, the results in Table 20 also indicate the availability of NBBO midpoint liquidity is only slightly lower for less liquid (non-S&P 500 stocks) as liquid (S&P500) stocks. That is, while about 57% of the shares in individual investor marketable orders in non-S&P500 stocks internalized by wholesalers received executions at less favorable prices than the NBBO midpoint, there was nevertheless hidden liquidity available at the NBBO midpoint for about 68% of these non-S&P500 shares. Thus, the potential for NBBO midpoint execution for shares in non-S&P500 stocks from qualified auctions is similar to the overall market. Moreover, the potential additional price improvement that could have been gained if these individual investor orders had executed against this NBBO midpoint liquidity is almost 55% of the total price improvement provided by wholesalers in these stocks. In general, the potential for qualified auctions under the Proposal to act as a coordination mechanism and potentially create more opportunities for hidden liquidity resting at the NBBO midpoint to interact with segmented orders exists for both liquid and non-liquid stocks.

[540] Pinging for midpoint liquidity at multiple venues could increase the risk of information leakage or that prices may move, possibly resulting in some market participants canceling midpoint orders they posted.

[541] If the midpoint liquidity is resting on the LOB of the open competition center running the qualified auction then it would be included in the qualified auction without the submitter having to cancel the order.

TABLE 20—AVAILABLE MIDPOINT LIQUIDITY WHEN WHOLESALER INTERNALIZES A RETAIL TRADE

Stock type	Price group	Liquidity bucket	Wholesaler pct exec shares worse than midpoint	Pct shares MP price improvement	Additional dollar price improvement Pct
All	All		51.05	74.60	51.05
SP500	All		48.41	72.32	41.43
SP500	(1) <$30		64.36	60.08	50.00
SP500	(2) $30-$100		47.82	60.36	29.29
SP500	(3) $100+		47.69	75.69	43.27
NonSP500	All		57.45	68.10	54.51
NonSP500	(1) <30	Low	73.30	49.52	67.63
NonSP500	(1) <$30	Medium	71.30	60.25	82.85
NonSP500	(1) <$30	High	66.77	52.18	59.74
NonSP500	(2) $30-$100	Low	63.60	80.69	68.88
NonSP500	(2) $30-$100	Medium	57.71	85.24	61.80
NonSP500	(2) $30-$100	High	50.24	71.79	44.58
NonSP500	(3) $100+	Low	61.62	84.32	61.49
NonSP500	(3) $100+	Medium	55.40	93.29	55.96
NonSP500	(3) $100+	High	47.15	90.99	45.57
ETF	All		49.93	86.06	58.28
ETF	(1) <$30	Low	66.58	39.75	31.61
ETF	(1) >$30	Medium	57.95	54.91	38.35
ETF	(1) <$30	High	62.24	78.47	88.70
ETF	(2) $30-$100	Low	61.01	62.00	41.78
ETF	(2) $30-$100	Medium	53.94	77.54	46.85
ETF	(2) $30-$100	High	49.87	84.09	49.56
ETF	(3) $100+	Low	52.45	72.28	40.13
ETF	(3) $100+	Medium	47.51	87.20	45.35
ETF	(3) $100+	High	46.93	90.28	48.33

This table summarizes midpoint liquidity available on exchanges and ATSs during March 2022 when a wholesaler internalizes an individual investor marketable order less than $200,000 in an NMS common stock or ETF on a principal basis at a price less favorable than the NBBO midpoint (at the time of the wholesaler receives the order) from one of the 58 retail broker MPIDs in the CAT retail analysis. Stocks are broken out into buckets based on their security type, price, and liquidity. Stock type is based on whether a security is an ETF, or a common stock in the S&P 500 or Non-S&P 500. Price buckets are based on a stock's weekly average VWAP price as estimated from TAQ. Stocks within each security type-price bucket, except S&P 500 stocks, are sorted into three equal liquidity buckets based on the stock's total share trading volume during the week estimated using TAQ data (*see supra* Table 9 for additional details on the bucket definitions). *See supra* Table 7 for additional details on the sample and CAT analysis of wholesaler executions of the orders of individual investors.

Wholesaler Pct Exec Shares Worse Than Midpoint is the average percentage of individual investor shares that wholesalers executed on a principal basis at a price less favorable than the NBBO midpoint (measured at the time the wholesaler receives the order). Pct Shares MP Price Improvement is the average percentage of shares that the wholesaler executed at a price less favorable than the NBBO midpoint that could have executed at a better price against resting liquidity available at the NBBO midpoint on exchanges and NMS Stock ATSs at the time the wholesaler executed the order. Additional Dollar Price Improvement Pct is ratio of the total additional dollars of price improvement of the sample period that individual investors whose orders were executed at a price less favorable than midpoint would have received if their orders would have executed against available midpoint liquidity, divided by the total dollars in price improvement (measured relative the NBB or NBO at the time of order receipt) that wholesalers provided over the sample period when they internalized individual investor orders (*i.e.* the total price improvement for orders wholesalers internalized at prices less favorable than the midpoint plus the total price improvement for orders wholesalers internalized at prices more favorable than the midpoint).

Midpoint liquidity is measured based on resting midpoint peg orders on exchanges and NMS Stock ATSs during normal market hours identified from CAT data. Midpoint peg orders with an Immediate or Cancel or Fill or Kill modifier are excluded. The total potential shares in orders that were available at midpoint on exchanges and ATSs at a point in time were calculated keeping a running total each stock day by adding shares when midpoint peg orders were received by an exchange or NMS Stock ATS and subtracting shares when shares in these midpoint peg orders were canceled or traded. When a wholesaler executes an order at a price less favorable than the NBBO midpoint (at the time the wholesaler receives the order), then the executed shares are compared to the available resting liquidity at the NBBO midpoint. If the NBBO midpoint at the time the order is executed would provide price improvement over the price the wholesaler would have executed the order at, then the shares executed by the wholesaler are subtracted from the total resting shares available at the NBBO midpoint, up to the lesser of the number of shares executed by the wholesaler or the total resting shares available (*i.e.* the total resting shares will not drop below zero). These are counted as the total shares that would have received additional price improvement at the midpoint. This methodology ensures that that analysis is not overestimating the available midpoint liquidity (*i.e.* it ensures that we do not estimate two individual investor 100 share orders could have executed against the same resting 100 share midpoint order). NBBO midpoints for both time of order receipt and time of execution are estimated from the consolidated market data feed.

The additional dollars of price improvement individual investors whose orders were executed at a price less favorable than the midpoint would have received if their orders would have executed against available midpoint liquidity was calculated as the difference between the price the wholesaler executed the order at and the NBBO midpoint at the time the wholesaler executed the order (*i.e.,* executed price—NBBO midpoint at the time of execution for a marketable buy order and midpoint—executed price for a marketable sell order) times the number of shares that would have received the additional price improvement.

Weighted averages are calculated for the variables Wholesaler Pct Exec Shares Worse Than Midpoint and Pct Shares MP Price Improvement using the following methodology. Percentages based on share volume are calculate for each stock-week (*e.g.,* total shares executed at a price worse than the midpoint during a stock-week divided by the total shares of individual investor marketable orders executed by a wholesaler in a principal capacity during the stock-week). Weighted averages are then calculated for each stock-type-price-liquidity bucket by averaging these stock-week percentages over the month by weighting each stock-week by the total dollar trade volume internalized by the wholesaler during the stock-week (*i.e.,* using the stock's total dollar trading volume internalized by the wholesaler as the weight when averaging the stock-week percentage values).

The Additional Dollar Price Improvement Pct is not weighted and is calculated as the ratio of the month's total additional dollar price improvement orders executed at a price less favorable than the NBBO would have received if their orders would have executed against available midpoint liquidity, divided by the month's total dollars in price improvement (measured relative the NBBO at the time of order receipt) that wholesalers provided when they executed individual investor orders (*i.e.* the total price improvement for orders wholesalers internalized at prices less favorable than the midpoint plus the total price improvement for orders wholesalers internalized at prices more favorable than the midpoint).

c. Improvements to Other Market Participants' Execution Quality

In addition to benefiting individual investors, the Proposal would improve order execution quality for other key market participants that compete to supply liquidity to individual investor orders, including institutional investors. For example, individual investor order flow that is currently accessed indirectly by institutional investors through wholesaler SDPs could be accessed directly at better prices relative to the prices charged by SDPs.[542] As stated above, in Q1 2022, SDPs associated with the two highest-volume wholesalers accounted for around 3% of the consolidated NMS stocks volume, while the volume of shares handled by these two wholesalers accounted for 15.9% of consolidated share volume in NMS stocks as of Q1 2022.[543] If institutional and individual investors could directly interact via qualified

[542] *See supra* section VII.B.3 for further discussions regarding how institutional investors indirectly interact with individual investor orders through wholesaler SDPs.

[543] *See supra* note 416 and corresponding discussion.

auctions, then these orders could potentially receive better execution quality.[544]

d. Improvements in Pre-Trade Transparency and Price Efficiency

In addition to increasing price improvement and interaction among market participants, the Proposal would improve pre-trade transparency and price efficiency. Currently, because most individual investor orders are internalized by wholesalers, pre-trade transparency related to these orders is limited, and has very likely declined over time as a result of the increasing share of trading volume that is executed off-exchange.[545] Moreover, the fact that some of the same market-makers have a large presence both on and off exchange implies a skewed information advantage, accruing to a subset of market makers. This subjects on-exchange liquidity providers, which may include individual investors, to greater adverse selection, which may have manifested in spreads wider than they would be otherwise, as well as lower depth.[546]

As a result of the Proposal, price efficiency would be improved as a result of the dissemination of qualified auction messages, which would increase transparency regarding the trading interest of individual investors. Because qualified auction messages would be included in consolidated market data,[547] they would not only promote competition by soliciting potential auction responses from a wide spectrum of market participants, but would also enhance the pre-trade transparency of marketable orders of individual investors, which may lead to improvements in liquidity and price efficiency.[548] As market participants would be better able to observe the trading interest of individual investors using consolidated market data, this would also allow them to better able to observe institutional trades.[549] The overall increase in market participants' ability to observe information in trades reported in consolidated market data would lessen the highly skewed information advantage of large market makers on and off-exchange, reducing adverse selection and potentially improving market quality.[550] These improvements would also occur should order flow be routed directly to the limit order book rather than going to an auction. They would be reduced to the extent that orders would be internalized at midpoint or better by wholesalers rather than routed to an exchange.

Additionally, the execution of more individual investor orders on exchanges would increase post-trade transparency because it would be easier to identify which transactions belonged to individual investors and on which venue they were executed.[551] The effects of post-trade transparency would be similar in direction to that of pre-trade transparency, though perhaps smaller, as the incremental difference in the transparency is less. Overall, the proposal will likely lead to increased trading on national market exchanges and on alternative trading systems satisfying the specified conditions. Evidence suggests that an increase in trading on lit venues could potentially increase information efficiency.[552]

2. Costs

The Commission recognizes that the Proposal would result in initial and ongoing compliance costs, as well as other costs to market participants. The Commission quantifies these costs where possible and provides qualitative discussion when quantifying costs is not feasible.

a. Compliance Costs

Market participants would incur various initial and ongoing costs in order to comply with Proposed Rule 615. The Commission estimates in Table 21 that total initial PRA compliance costs would be approximately $48.28 million while ongoing annual PRA compliance costs would be approximately $1.99 million.[553] Compliance costs would vary across market participants, including broker-dealers, SROs (including national securities exchanges and FINRA), and NMS Stock ATSs.

TABLE 21—SUMMARY OF PRA COMPLIANCE COSTS

Element	Participants	Implementation costs per entity	Ongoing costs per entity	Total implementation costs	Total ongoing costs
Administer & regulate auctions – Rule 615 (c)(1)	10	$79,000	$119,000	$790,000	$1,190,000
P&P—Identification of segmented orders – Rule 615 (e)(1), (e)(2)	157	34,000	4,500	$5,301,000	$703,000
Marking segmented orders: In-house – Rule 615 (e)(2)	52	95,500		$4,970,000	
Marking segmented orders: 3rd party – Rule 615 (e)(2)	105	53,000		$5,600,000	

[544] The direct interaction between individual and institutional investors in qualified auctions would allow for price improvement for both groups of investors, the sum of which is currently received by the wholesaler serving as the intermediary via its SDP. Thus, the gains to individual and institutional investors would be an economic transfer from the wholesaler. The impact of the Proposal on the costs to wholesalers is discussed in *infra* section VII.C.2.c.

[545] *See supra* notes 374 and 375 and accompanying text. Additionally, market participants have stated that liquidity displayed at or near the NBBO on exchanges has declined over time. *See supra* note 376 and accompanying text.

[546] *See supra* section VII.B.1 for further discussion of the increase in off-exchange trading volume.

[547] The MDI Rules required auction messages to be included in consolidated market data. *See supra* section III.B.1. NMS Stock ATSs operating qualified auctions would need to disseminate qualified auction messages via FINRA's ADF.

[548] Evidence shows that increasing pre-trade transparency can improve liquidity and price efficiency. *See, e.g.,* Ekkehart Boehmer, Gideon Saar & Lei Yu, *Lifting the Veil: An Analysis of Pre-Trade Transparency at the NYSE,* 60 J. Fin. 783 (2005). However, some evidence suggests that extreme changes, beyond what is proposed here, can have detrimental effects on market quality. *See* Ananth Madhavan, David Porter & Daniel Weaver, *Should Securities Markets Be Transparent?, 8* J. Fin. Mkt. 265 (2005).

[549] For example, in the most extreme case, if virtually all individual investor orders are routed to and executed in qualified auctions, market participants would be able to identify nearly all other off-exchange transactions as institutional trades. This may result in additional costs to institutional investors related to information leakage; *see infra* section VII.C.2.f for a detailed discussion.

[550] The advantage would be lessened though not completely eliminated, provided that retail brokers route initially through wholesalers rather than directly to exchanges.

[551] Qualified auction messages (which would be disseminated in consolidated market data) could be matched with trade execution reports in order to identify which trades belonged to retail orders. Currently, SIP trade reports for trades executed on exchanges identify the venue on which the trade occurred. Trade reports for trades executed off-exchange do not.

[552] *See, e.g.,* Carole Comerton-Forde & Tālis J.Putniņš, *Dark trading and price discovery,* 118 J. Fin. Econ. 70 (2015), who find that high levels of dark trading can impede price discovery.

[553] Aggregate PRA compliance costs are calculated by summing up PRA compliance costs of various components of Proposed Rule 615, which are detailed below and also discussed in detail above in *supra* section VI.D.

TABLE 21—SUMMARY OF PRA COMPLIANCE COSTS—Continued

Element	Participants	Implementation costs per entity	Ongoing costs per entity	Total implementation costs	Total ongoing costs
One-time technology project costs to add ''segmented order'' and certification marks to existing marking systems –. Rule 615 (e)(2), (f)(1)	182	170,000		30,940,000	
Certification that BD identity will not be disclosed – Rule 615(c)(1)(iii), (e)(3)	20	33,800	4,500	$675,000	$90,000
ATS's excluding subscribers – Rule 615 (d)(1)	3	3,100	2,700	$9,300	$8,000
Total	176			$48.29 million	$1.99 million

These estimated compliance costs can be disaggregated into several components. First, as part of the requirement to provide qualified auction messages, specified in Proposed Rule 615(c)(1), national securities exchanges, FINRA and NMS Stock ATSs would have to utilize various personnel (legal, compliance, information technology, and business operations) to prepare and implement a system to collect and provide the information necessary to generate auction messages for dissemination in consolidated market data. In addition to the 6 national securities exchanges and 3 NMS stock ATSs that the Commission believes would participate in qualified auctions,[554] FINRA would also disseminate qualified auction data and would therefore incur these compliance costs. Thus, each of these 10 entities (6 exchanges, 3 ATSs, and FINRA), would each face an estimated initial compliance costs of $79,000, with total cost calculated at $790,000.[555] Furthermore, each of these entities would have to collect and provide auction messages on an ongoing basis, which the Commission estimates would be $119,000 per entity annually, totaling $1.19 million (*see* Table 21 above.)[556]

Originating broker-dealers would face various compliance costs, including identifying and marking segmented orders, as specified in paragraphs (e)(1) and (e)(2) of Proposed Rule 615. This would involve utilizing in-house and outside counsel to update and review existing policies and procedures, as well as an in-house General Counsel and a Chief Compliance Officer to review and approve updated policies and procedures. An outside programmer would also be needed to modify existing technology and coordinate with the broker-dealer's compliance manager. The Commission estimates that the initial costs to the 157 originating broker-dealers would be approximately $34,000 per broker and $5.3 million for the industry.[557] In addition, these originating brokers would need to provide ongoing annual reviews and update existing policies, which Commission estimates would cost about $4,500 per broker-dealer and an aggregate cost of $703,000.[558]

The 157 originating brokers would also incur the cost of adding a ''segmented order'' and certification mark to their existing marking systems, as specified in Rule 615(e)(2). The Commission predicts that approximately one third of the 157 originating brokers (*i.e.,* 52 firms) would choose to perform the necessary systems modifications to identify and mark segmented orders with in-house staff, which would cost an estimated $95,500 per firm and $4.97 million for all 52 firms. Commission estimates that two-thirds of the originating brokers (*i.e.,* 105 firms) would hire third-party service providers to assist with these system modifications, which is predicted to cost $53,000 per broker and $5.6 million for all 105 firms.[559]

The Commission also estimates that there would be an initial one-time technology project costs for originating brokers to add the ''segmented order'' and certification marks to the existing marking systems of all 157 originating brokers as well as 25 routing brokers (for a total of 182 brokers-dealers), in order to comply with paragraph (e)(2) of Proposed Rule 615, and the initial one-time cost for routing broker-dealers to mark segmented orders to comply with paragraph (f)(1) of Proposed Rule 615 and also mark orders to communicate certifications when applicable. These costs are estimated to be $170,000 per broker-dealer, for an aggregate total cost of $30.94 million.[560]

The ongoing task of marking segmented orders would not require new resources, but instead would utilize broker-dealers' existing marking systems. Therefore, the ongoing task of marking segmented orders would not cause broker-dealers to incur new monetary costs related to updating their systems to market orders (and is therefore not reported in Table 21 above).[561]

The Commission estimates that 20 originating broker-dealers would certify and not make the mandatory identity disclosure, as specified in paragraph (c)(1) of Proposed Rule 615.[562] Obtaining this certification would involve utilizing in-house and outside counsel to update and review existing policies and procedures, as well as an in-house General Counsel and a Chief Compliance Office to review and approve updated policies and procedures. Outside counsel would also be needed to review the updated policies and procedures. These initial compliance costs are estimated at $33,800 per broker, totaling $675,000 for all 20 firms.[563]

These 20 broker-dealers would also incur ongoing costs to review and update existing policies and procedures, estimated at $4,500 per broker-dealer and $90,000 for all 20 firms.[564] The various compliance costs involved in

[554] *See supra* section IV.B.2 and section VII.C.1.a for further discussion on the incentives for exchanges and ATSs to offer qualified auctions.

[555] *See supra* notes 290 and 296 for a detailed description of these estimated costs.

[556] *See supra* notes 291–292; 295; 297 for a detailed description of these estimated costs.

[557] *See supra* notes 301–303 for a detailed description of these estimated costs.

[558] *See supra* notes 304–305 for a detailed description of these estimated costs.

[559] *See supra* notes 312–313 for a detailed description of these estimated costs.

[560] *See supra* notes 314–315 for a detailed description of these estimated costs.

[561] The Commission estimates that around 2.1 billion orders would need to be marked annually, and calculates that this would require between approximately 24,000 and 290,000 total hours, based on its estimates of the duration of time used to mark each order. *See supra* notes 316–320 and corresponding discussion.

[562] *See supra* note 288 and corresponding discussion.

[563] *See supra* notes 322–326 for a detailed description of these estimated costs.

[564] *See supra* notes 327–329 for a detailed description of these estimated costs.

obtaining and maintaining originating broker certification (that it has established, maintained, and enforced written policies and procedures designed to assure that its identity will not be disclosed), as specified in paragraphs (c)(1)(iii) and (e)(3) of Proposed Rule 615, are summarized above in Table 21. It is uncertain how many broker-dealers would choose to exercise this option. If fewer or greater than (the Commission's estimate of) 20 firms seek certification to withhold their identity as the originating broker during a qualified auction, aggregate compliance costs would be different from those found in Table 21.

NMS Stock ATSs that participate in qualified auctions would incur costs in order to comply with the requirements regarding ATS policies and procedures for excluding subscribers, as specified in proposed Rule 615(d)(1). Compliance costs would initially involve reviewing existing policies and procedures for consistency with the proposed rule, making modifications as appropriate, and putting the policies and procedures in writing. These initial costs, which the Commission expects would apply to 3 NMS Stock ATSs, are predicted to cost $3,100 per firm, and $9,300 for all 3 firms.[565] In addition, these ATSs would face the ongoing cost of reviewing and updating the relevant existing policies and procedures, estimated at $2,700 per firm and $8,000 for all 3 firms (*see* Table 21 above). Note that these estimated compliance costs are based on the Commission's assumption that at least some ATSs would operate qualified auctions. As discussed above, ATSs would have to make significant adjustments to their business models (especially with regards to segmenting customer orders and displaying quotes) in order to meet the requirements to operate a qualified auction.[566]

It should be emphasized that the estimated compliance costs described above and summarized in Table 21 are the Commission's best estimate for the required technological, operational, and legal services resources that would be utilized in the initiation and ongoing operation of qualified auctions.

b. Costs to Individual Investors

i. Greater Variation in Execution Quality

The Commission is cognizant of concerns regarding the possibility of a decline in execution quality due to the implementation of qualified auctions. This includes the possibility that a qualified auction host could decide not to host an auction for a particular stock.[567] However, if an order fails to execute in one auction, it could be directed quickly to other auctions,[568] and/or the wholesaler would have the option to internalize the order at the same or better price at which it was exposed in the first auction. Although it is also possible that the quotes may move against the order during this time and the wholesaler would have to route it to an exchange LOB or expose the order in another qualified auction before it could execute. Also, wholesalers would have the option to internalize the trade without exposing it in an auction if the wholesaler were willing to execute the order at midpoint or better. More generally, however, the Commission believes that at least one open competition trading center would be incentivized to operate qualified auctions and serve as the qualified auction host for every segmented order in order to increase its volume/market share relative to other trading venues, as well as to potentially earn revenue from any net capture between the fees and rebates the qualified auction might charge.[569]

An additional concern is that there could be a general lack of interest from liquidity suppliers to participate in a qualified auction. However, in cases where there was insufficient competition from liquidity providers, then the majority of individual investor orders could simply be internalized by wholesalers, similar to the current market, though perhaps at inferior prices compared to what they might have received under the current market structure. Moreover, while this occurrence might occur for any individual order, it would be extremely unlikely at the market level, because marketable order flow of individual investors has lower adverse selection risk than order flow routed to exchanges and most liquidity suppliers would profit by trading with it if the predicted realized spread was large enough.[570]

A related concern regarding the functioning of qualified auctions is the possibility of slippage costs. More specifically, there is the potential that the NBBO could change while the qualified auction was in process. Since Proposed Rule 615 would require an auction message to be disseminated once an individual investor order is brought to a qualified auction, the concern is that these messages would trigger a response in quoted prices.

The Commission performed an empirical analysis to estimate this risk by observing the likelihood that that the NBBO spread moves (*i.e.,* the ''fading probability'') as the time lag increases (in milliseconds) from the internalization of an individual investor order in comparison to the fade probability after NBBO quote movements.[571] Results from this analysis [572] indicate that the probability of the NBBO quotes adversely moving after the execution of an individual investor order range from 1.8% at 25 milliseconds after an internalized trade, to 2.8% at 100 milliseconds—an increase of 1 percentage point. Extending the duration to 300 milliseconds, the maximum time of the auction as proposed, increases the likelihood of adverse fading to 4.6%.[573]

[565] *See supra* notes 334–335 for a detailed description of these estimated costs.

[566] *See* discussion in *supra* section VII.C.1.a.

[567] Qualified auction hosts would have the discretion to determine for which stocks they would run auctions.

[568] An additional risk is that there could be price slippage when the order is routed to a different qualified auction.

[569] *See supra* notes 503–507 and accompanying discussions for estimates of net capture rates for fees and rebates related to qualified auctions.

[570] The Commission is uncertain how liquidity would be impacted by increased volatility within the context of qualified auctions. The risk that individual investors may receive worse prices compared to the current market structure may not be significantly elevated because wholesalers could still internalize the trades if they cleared the auctions or route them to the LOB for execution.

[571] The Commission's ''fade analysis'' estimates the possibility of adverse price movements to individual investors. It's also possible to consider the likelihood of adverse price movements (and the resulting increase in trading costs) from the perspective of the bid winner. However, bidders would be much less exposed to risk of fade because their connectivity capacities would allow them to cancel bids should they expect adverse price movements. Individual investors, however, would have no control over where their orders are executed: auction vs. internally. Therefore, the Commission's focus is on the risk of adverse price movements from the perspective of individual investors.

[572] The Commission's ''fade analysis'' uses an algorithm from Boehmer et al. (2021) to identify retail trades. A recent paper by Barber et al. (2022) finds that the algorithm correctly identifies only 35% of trades as retail. However, plausibly a significant fraction of the retail trades unidentified by the algorithm reflects orders executed on a risk-less principal basis, *i.e.,* executions that would not be relevant to the order flow targeted by the Proposal. In addition, the internalized retail trades missed by the algorithm are likely idiosyncratic across buy and sell orders. Therefore, aggregation of the data, which was performed as part of the Commission fade analysis, would likely have minimized any directional bias that these errors would have otherwise caused. Therefore, empirical results regarding the estimated risk of adverse pricing movements are likely to still be consistent despite limitations in identifying retail trades. *See* Ekkehart Boehmer et al., *Tracking Retail Activity,* 76 J. Fin. 2249 (2021), and Brad M. Barber et al., *A (Sub)penny For Your Thoughts: Tracking Retail Investor Activity in TAQ* (last revised Sept. 30, 2022) (unpublished manuscript), *available at https://ssrn.com/abstract=4202874* (retrieved from Elsevier database).

[573] Moreover, the substantially lower fade probability of less than 5% following internalized investor trades relative to the cross-stock fade probability of more than 16% following a given

Auction announcements would differ from SIP trade messages for trades executed off-exchange, which could potentially result in different quote movements compared to those observed in the analysis. Auction announcements would represent announcements of pre-trade interest as opposed to SIP trade messages being announcements of post-trade interest, which could lead to different responses by the liquidity suppliers setting the NBBO.[574] Additionally, auction announcements would disclose more information than SIP messages for off-exchange trades, including, among other things, the direction of the segmented order, the venue it was on, and, potentially, the identity of the originating broker.[575] Disclosure of this information in qualified auctions, including the originating broker as mandated by the Proposal (absent a certification from the originating broker that its identity not be disclosed), would provide potential bidders with more information about an order than is currently provided by the SIP trade message, which in turn could lead to increased variation in the adverse fade that could follow auction announcements. That is, adverse fade could be reduced when bidders learn that an order stems from an originating broker with relatively low adverse selection risk, while announcements of orders from retail brokers with higher adverse selection risk could trigger greater adverse fade relative to a SIP trade announcement of an identical order. However, despite the likely increase in the variation of adverse fade, the average risk of adverse fade under qualified auctions may be similar to SIP trade announcements used to generate the estimates reported above. Overall, the results of the Commission's fade analysis suggest that auction messages would result in minimal adverse movements in best quotes due to the low adverse selection risk of individual investors, but, for the reasons discussed above, there may be greater variability in the risk of adverse quote movements. Because auction messages would differ from SIP messages, there is uncertainty regarding their overall effects on the risk of adverse quote movements.

Fade analysis only estimates the possibility that adverse price slippage will occur, not the magnitude of the adverse fade. Thus, it is not possible to directly compare the potential loss to individual investors due to adverse fading with the gains that could stem from qualified auctions, which the Commission estimates would range from 0.86 bps to 1.31 bps, or in dollar terms, 0.15 to 0.47 cents per share.[576] However, one way to possibly quantify the potential cost of fading is to consider the price impact of an auction that did not result in a bid, which might increase the *probability* that the NBBO would be worse after a 300 millisecond auction by (the fade analysis's estimate of) 4.6%. If we assume the quote moved 1 cent, which the Commission believes is the most frequent movement over a short time span, then the (expected value of the) potential average higher transaction cost to the order would face could be 1 cent × 4.6% = 0.046 cents—significantly smaller than the estimated 0.15–0.47 cent per share gain stemming from qualified auctions.

A similar analysis could be used to estimate that the adverse fade that would occur during the course of a successful auction, which would be a minimum of 100 milliseconds, with the current duration of wholesaler internalized executions, which have a median duration of 3.54 milliseconds. In other words, even successful qualified auctions that result in execution after the minimal duration of time will be (100 milliseconds—3.54 milliseconds) = 96.56 milliseconds slower than the median wholesaler execution. If we use the fade probability of 2.8% for 100 milliseconds, then the (expected value of the) adverse fade cost of a successful auction relative to internalization, assuming 1 cent slippage, would be 1 cent × 2.8% = 0.028 cents. This estimated cost is significantly below the estimated 0.15–0.47 cent per share gain stemming from qualified auctions. However, this calculation relies on the assumption of the minimum length of a qualified auction (100 milliseconds) and the median duration of a wholesaler internalized order (3.54 milliseconds). This calculation would generate different results if we assumed longer auction lengths, which would increase the fade cost of the auction, and longer (or shorter) internalization execution times. Given that a number of auctions in the options market have a duration of 100 milliseconds,[577] the Commission preliminarily believes that a majority of open competition trading centers may elect to choose an auction duration of 100 millisecond for their qualified auctions. Therefore, a significant share of auctions may be successfully concluded within the 100 millisecond minimum auction duration, although some orders could take longer to conclude, while other orders would likely fail to have a successful outcome. Overall, the Commission believes the Proposal would result in price improvement for individual investors, although it is possible that *variation* in price improvement and overall execution quality might increase.

Besides potentially greater volatility stemming from a failed auction, an additional cost for some orders may arise to the extent that lower execution quality for some orders currently subsidizes better execution quality for others. Table 10 shows that wholesalers execute 13.82% of orders at prices superior to midpoint for the investor.[578] On average, unless the orders have systematically negative price impact, the wholesaler may not be earning a positive marginal profit on these executions.[579] This could imply they currently subsidize the additional price improvement on these trades with marginal profits earned on other executions. To the extent this occurs, if wholesalers' marginal profits decline under the Proposal, then customers could receive less price improvement and experience higher transaction costs on trades that are currently subsidized. However, on average, the Commission expects that execution quality for individual investor orders would likely improve under the Proposal.[580]

The Commission recognizes that wholesalers may provide consistency with regard to the execution quality that they deliver to individual investor orders.[581] There is the concern that the Proposal would undermine the wholesaler business model, which in turn could hinder the ability of

quote update is consistent with low adverse selection costs of currently internalized individual investor orders.

[574] Although this difference may be limited given the lower adverse selection risk of segmented orders.

[575] The SIP trade message would not reveal what venue the trade took place on, its direction (although it may be able to be estimated based on the transaction price), or whether the trade belonged to an individual investor vs another market participant (although, similar to this analysis, this information may be inferred based on if the trade executed at a sub-penny price).

[576] *See supra* section VII.C.1.b.

[577] *See supra* note 243 for further discussions of the duration of auctions in the options market.

[578] Table 10 indicates that wholesalers executed 46.05% of shares at midpoint or better and 32.23% of shares at midpoint.

[579] For these statistics, the NBBO midpoint is measured at the time the wholesaler receives the order, so it is possible that quotes may have changed by the time the wholesaler executes the order. Therefore, it is possible that wholesalers execute some of these trades at prices worse than the NBBO midpoint at the time of execution, in which case the wholesaler could still earn a positive realized spread on these trades even if price impact measured against the NBBO midpoint at the time of execution was positive.

[580] *See supra* section VII.C.1.b.

[581] *See* discussion in *supra* section VII.B.2.b.

wholesalers to continue to provide consistency in their execution services. The Commission believes, however, that while bidders in qualified auctions may not provide as much consistency as wholesalers, some orders could receive improved execution quality while others would receive reduced execution quality (relative to wholesalers). Based on the competitive shortfall analysis presented in section VII.C.1.b above, the net result would likely be improved execution quality, but the standard deviation of this execution quality would likely increase.

ii. Resumption of Commissions on NMS Stock Orders

An additional concern is that if the Proposal results in a significant or complete loss of PFOF, then retail brokers would be forced to start charging commissions again for online NMS stock and ETF trades.[582] There are several reasons that retail brokers would be unlikely to resume charging commissions for these orders. First, the majority of retail brokers receive relatively little or no PFOF, and yet they have nevertheless successfully managed to support commission-free trading through their other revenue-generating lines of business.[583] In fact, several retail brokers, including some that do not accept PFOF, earned record revenues and profits after zero-commission trading was initiated.[584] While most brokers had already reduced commissions to under $10, there was still considerable concern that the zero commissions would lower profits. Despite these concerns, industry profit grew in 2020.[585]

Moreover, the average PFOF payment that brokers receive on a 100 share order is 10–20 cents.[586] The PFOF for a 1000 share order is less than the commission fees previously charged by broker-dealers, which had generally been $5 or more.[587] Thus, just as the loss of commission fees was not offset by the receipt of PFOF, the loss of PFOF might not necessitate the return of commission fees.[588]

Additionally, to the extent that rebates paid for the routing of segmented orders to qualified auctions are passed through to retail brokers, it could reduce the likelihood that they resume charging commissions. The 5 mil cap on rebates that qualified auctions could pay for the submission of segmented orders under the Proposal is approximately 40% of the average combined PFOF rate paid by wholesalers for marketable orders as estimated in Table 2.[589] If rebates paid by qualified auction hosts for the submission of segmented orders to the qualified auction are passed through to retail brokers (assuming the retail broker does not route the segmented order to the qualified auction directly), then it could supplement the revenue they may lose from a reduction in PFOF.[590] This could reduce the likelihood that retail brokers resume charging commissions.

iii. Other Possible Costs to Investors

The Commission is aware of other possible increases in trading costs stemming from the Proposal that might be experienced by some individual investors. For example, some individual investor orders that are currently eligible for RLP programs might not meet the proposed definition of segmented orders and might be excluded from the qualified auctions, which could reduce the price improvement that they currently receive via wholesalers or RPLs.[591]

Furthermore, since the Proposal would require that the identity of the originating retail broker be disclosed (unless the originating broker certifies that the identity of the originating broker will not be disclosed to any person that potentially could participate in the qualified auction or otherwise trade with the segmented order[592]), orders from retail brokers that do not offer this certification and that are perceived to have higher adverse selection costs could end up receiving worse execution quality (*i.e.,* less price improvement) than they currently experience, but only if wholesalers today do not already price in such risk when interacting with each retail broker. Customers of retail brokers that certify they will not disclose their identity could potentially receive worse execution quality if non-disclosure signals to market participants that the adverse selection risk of the order flow are high relative to orders from other

[582] Almost all retail brokers continue to charge a commission fee for human broker-assisted orders.

[583] CAT analysis shows that PFOF brokers originated about 80% of the share volume and about 74% of dollar volume of individual investor marketable orders that were routed to wholesalers and executed (*see* Table 14). The Commission notes that trading revenue for many discount brokers rose to record levels in 2020, shortly after these discount brokers dropped commissions to zero. It's unclear how much of this increase was due to individual investors being incentivized by zero commissions and new trading options such as fractional share trading, and how much was due to COVID-related factors that made online trading more appealing, including a shift towards remote work and a rise in discretionary funds from government stimulus. *See* Maggie Fitzgerald & Kate Rooney, *E-brokers Defy Odds by Recording Record Trading Revenue While Dropping Commissions to Zero,* CNBC (Aug. 20, 2020), *available at https://www.cnbc.com/2020/08/20/e-brokers-defy-odds-by-recording-record-trading-revenue-while-dropping-commissions-to-zero.html.* It's also important to note that even brokers that do not accept PFOF experienced increased revenue and profits, despite adopting zero commissions. *See* Kenneth Corbin, *Fidelity Posts 6th Straight Record Profit,* Barrons (Mar. 9, 2022), *available at https://www.barrons.com/advisor/articles/fidelity-earnings-2021-51646853970.* However, the recent increase in individual investor trading volume did not result in the loss of order-by-order competition. Isolation of individual investor orders by wholesalers preceded the recent rise in trade volume and a subsequent decline in trade volume would not remove the rationale for the Proposal because individual investor orders will continue to comprise a substantial share of overall trade volume with the potential for improved execution quality if order-by-order competition is incorporated into this market.

[584] *Id.*

[585] Pre-tax income of FINRA-registered broker-dealers rose from $43,943 million (2019) to $77,212 million (2020), an increase of 75.7%. This was substantially larger than the 2.7% increase in profits from 2018 to 2019 ($42,780 million to $43,943 million). *See* FINRA, *2021 FINRA Industry Snapshot* (2021), *available at https://www.finra.org/sites/default/files/2022-02/21_0078.1_Industry_Snapshot_v10.pdf.* However, it is possible that this increase in industry profits was transitory because of the spike in individual investor trading volume related to COVID.

[586] *See* analysis in *supra* Table 17.

[587] The average retail order size has declined since the shift to zero commission trading. *See* Pankaj K. Jain et al., *Trading Volume Shares and Market Quality: Pre- and Post-Zero Commissions* (last revised Sept. 16, 2022) (unpublished manuscript), *available at https://ssrn.com/abstract=3741470 (retrieved from Elsevier database).* Assuming a PFOF rate of 20 cents per 100 shares, orders over 2500 shares would have lower per share revenue for the retail broker under a $5 fixed commission model than a PFOF model, while orders under 2500 shares would have higher per share revenue.

[588] Commission fees were reduced to zero for online NMS stock trades, but not broker-assisted stock trades. Therefore, commission revenues have continued to exceed PFOF revenues for most PFOF firms, excluding the two PFOF firms that are online brokers and collect no commission revenue.

[589] The 5 mil rebate would not be earned unless the order was routed to a qualified auction. If the wholesaler chose instead to internalize the order at midpoint (and thereby be exempted from the auction), it would not earn the 5 mil rebate.

[590] Similarly, if a wholesaler routes a segmented order to a qualified auction and receives the rebate for the submission of a segmented order, the wholesaler may indirectly pass the rebate from the qualified auction through to the retail broker by using the rebate to subsidize PFOF payments it makes to the retail broker. *See infra* section VII.C.2.d.ii for further discussions on retail broker loss of PFOF revenue.

[591] These orders could also be internalized by the wholesaler or executed on an ATS.

[592] Proposed Rule 615 would require the identity of the originating broker to be disclosed unless it received certification that it has established, maintained, and enforced written policies and procedures designed to assure that its identity will not be disclosed, as specified in proposed Rule 615(e)(3). *See supra* section IV.B.4. The impact of this certification is uncertain. Non-disclosure would likely signal increased adverse selection risk of the order to market participants. However, results from *supra* section VII.B.5.b indicate that broker-dealers with higher adverse selection risk receive worse execution quality from wholesalers, so it is unclear whether orders stemming from certified broker-dealers will receive inferior execution quality relative to wholesaler internalization under the current market structure.

broker-dealers. However, results from *supra* section VII.B.5.b indicate that broker-dealers with higher adverse selection risk receive worse execution quality from wholesalers, so it is unclear whether orders stemming from certifying broker-dealers would receive inferior execution quality relative to wholesaler internalization under the current market structure.

Currently, wholesalers may choose not to internalize individual investor orders with high adverse selection risk but instead pass them on to other market makers, where they might be pooled with other individual investor orders. This pooling might cause these orders to receive greater price improvement from RLP programs or other hidden liquidity on exchanges or ATSs than they would otherwise receive if liquidity suppliers knew the identity of the originating broker. It is therefore possible that the Proposal's requirement to disclose the identity of the originating broker (absent a certification from the originating broker that its identity not be disclosed) might result in such orders receiving reduced execution quality relative to what they currently receive to the extent they are pooled with orders from retail brokers with lower adverse selection risk. However, to the extent individual investor orders with high adverse selection risk orders are currently rerouted to exchange limit order books, where they may be effectively pooled with orders from other market participants with potentially higher adverse selection risk, then it is also possible that such orders could receive increased price improvement through execution in qualified auctions relative to what they receive in the current market structure. In sum, the more wholesalers already price in the adverse selection risk from each retail broker, the less impactful is the proposed requirement that retail brokers' identities be disclosed in the auction.

c. Cost to Wholesalers

The Commission recognizes that the Proposal would significantly impact the wholesaler market/business model. Wholesalers would have to compete directly with other liquidity providers on an order-by-order basis to provide price improvement to segmented orders in order to execute against such individual investor orders in qualified auctions.[593] This would likely result in wholesalers filling fewer individual investor orders than they do currently and would likely pressure wholesalers to provide greater price improvement in order to remain competitive in providing liquidity to segmented orders.[594]

The Commission recognizes that a wholesaler who exposes an order in a qualified auction would still be able to internalize the order if it submits the winning bid in the auction. However, because the order would be subject to competition from other liquidity suppliers, wholesalers would most likely not submit the winning bids in all of these auctions and thus would ultimately internalize a smaller share of order flow than they do now. Additionally, if a wholesaler decided to internalize an individual investor order at the midpoint or better, the order would not be required to be brought to a qualified auction. However, the E/Q ratios presented in Table 9 indicate that, on average, the execution prices of internalized individual investor orders are between 30% to 80% worse than the midpoint at the time of order receipt by the wholesaler. As such, the Commission believes that it would be unlikely for wholesalers to internalize all segmented order flow priced at the NBBO midpoint or better, although a fraction of segmented orders are expected to be internalized at the NBBO midpoint, as they are today.

Wholesalers could still end up trading with the majority of marketable orders of individual investors, although more of these orders might be executed on exchanges. Moreover, qualified auctions would provide wholesalers with an opportunity to access individual investor orders initially sent by retail brokers to other wholesalers. That is, individual investor orders brought by a given wholesaler to a qualified auction could be filled by another wholesaler that ends up submitting the winning bid to the qualified auction. More generally, wholesalers could have competitive advantages in supplying liquidity in these auctions due to their economies of scale and market making expertise. Therefore, while institutional investors would likely take advantage of the opportunity to directly access low-cost order flow provided by qualified auctions, it is nevertheless possible that wholesalers would still end up frequently winning qualified auctions and trading against a significant share of segmented orders. However, individual investor order flow might end up being more spread out across wholesalers rather than concentrated among two leading firms.[595]

The Commission recognizes that retail brokers might consider routing their orders directly to a qualified auction instead of through wholesalers, especially if wholesalers discontinue offering PFOF.[596] Furthermore, retail brokers could also route orders directly to a national securities exchange, which could result in access fees but also exchange rebate revenue.[597] While the Commission is unable to quantify the net effect of these factors on the overall routing decisions of retail brokers, it is likely that the overall share of individual investor order flow initially routed to wholesalers would decrease, while the share initially routed to exchanges and ATSs operating qualified auctions would increase.

The predicted decline in wholesaler profit margins from internalization might force wholesalers to reduce or cease paying PFOF, which in turn, would remove a key incentive for some broker-dealers to route to wholesalers. PFOF brokers route 97–98% of their market orders to wholesalers, while non-PFOF brokers route around 71–72% of their market orders to wholesalers.[598] PFOF brokers could reduce their dependence on wholesalers to usage rates similar to non-PFOF brokers if PFOF ceased.

Furthermore, the decline in wholesaler revenue and profit could cause wholesalers to start charging retail brokers for the order handling services that they provide. This could increase competition in the market for exchange execution services and cause wholesalers to lose market share against other providers of routing and execution services. Alternatively, wholesalers might try to preserve their share in order-handling services by continuing to not charge for their routing and execution services to retail brokers (and thereby earn lower profit margins),

[593] A wholesaler would not have to compete on an order-by-order basis for an individual investor order if it internalized the individual investor order at a price equal to the midpoint or better, pursuant to Proposed Rule 615(b)(3).

[594] As specified in section VII.B, the economic baseline against which we measure the economic effects of this proposal, including its potential effects on efficiency, competition, and capital formation, includes the changes to the current arrangements for consolidated market data in the MDI Rules; but those amendments have not been implemented.

[595] *See supra* section VII.B.1.

[596] The Proposal would allow retail brokers to route customer orders directly to a qualified auction with a specified limit price (such that they would not be bidding on the order). *See supra* section IV.A.

[597] Broker-dealers would always have the option to direct their orders to open competition trading centers or national securities exchanges instead of qualified auctions under the Proposal. Unlike qualified auctions, which would have auction fee and rebate caps of 5 mils (for orders valued at $1.00 or greater per share), national securities exchanges would continue to be able to charge tiered fees and rebate revenue, consistent with the requirements of Section 19(b) and Rule 19b–4.

[598] *See* analysis in *supra* Table 4.

especially if handling marketable order flow provides additional benefits, either in the qualified auctions or internalized individual investor orders at the midpoint.[599] The Commission is unable to quantify the likelihood that wholesalers would continue to not directly charge retail brokers to route and execute their orders, but believes that it is possible that the majority of wholesalers would still not charge retail brokers for order-handling services.

The Commission also recognizes that a decline in wholesaler market share would not only reduce wholesaler profits but might have spillover effects on wholesaler costs. For example, a reduction in the volume of individual investor order flow internalized by wholesalers could increase wholesaler inventory risk, which in turn could cause wholesalers to reduce the liquidity they supply as exchange market makers or to institutional investors via SDPs.

d. Costs to Retail Brokers

i. Potential Initiation of Order Handling Fees by Wholesalers

Currently, wholesalers do not charge retail brokers for routing and execution services, and pay some retail brokers PFOF for the right to provide these services. If the implementation of qualified auctions results in a significant loss of wholesaler profits, wholesalers might have to begin charging for routing and execution services. If wholesalers begin charging a fee for routing services, retail brokers would have to absorb this cost and earn lower profits and/or pass on a share of this cost to their customers. Retail brokers could also respond to the initiation of wholesalers routing fees by paying the compliance costs necessary to serve as an originating broker, or instead pay fees to brokers that are able to route directly to qualified auctions.

Retail brokers that certify that their identity would not be subject to the proposed disclosure requirement would not only face explicit costs for this certification (as discussed in *supra* section VI.B.3) but also would either have to route the order to the qualified auction themselves or use a routing service that wouldn't trade with the orders, as mandated by the Proposal. If instead the broker-dealer used a wholesaler to route its order, the wholesaler would have to agree not to trade with the order (as mandated by the Proposal). In response to this restriction, the wholesaler may offer less PFOF (if it was currently receiving PFOF from the wholesaler) or potentially even charge a fee for handling the order.

ii. Loss of PFOF Revenue

The Commission recognizes that the implementation of qualified auctions, as mandated by the Proposal, could lead to a significant decline or perhaps disappearance of PFOF in the markets for NMS stocks. PFOF amounted to $235 million in Q1 2022 but was received almost entirely (93.8%) by four firms.[600] One concern is that the loss of PFOF would cause PFOF brokers, and potentially other discount brokers, to resume charging commissions for online NMS stock trades.[601] Just as PFOF brokers led discount brokers into zero-commission trading in 2019, it is possible they too could lead discount brokers back to charging commissions if they stopped receiving PFOF.

The Commission is unable to quantify the risk that some discount brokers would resume charging commissions on NMS stock and ETF trades, but there are a number of factors that might make this risk low. First, the majority of PFOF received by retail brokers comes from transactions in the options market.[602] The Proposal would not have a significant effect on the PFOF brokers receive from options transactions because it applies only to transactions in NMS stocks.[603] Additionally, wholesalers may also continue paying retail brokers for segmented non-marketable limit orders in NMS stocks, which may not need to be exposed in qualified auctions under the Proposal if their limit price is at the midpoint or a more favorable price. Therefore, to the extent that retail brokers do rely on PFOF, they might be able to retain the majority of the PFOF revenue they currently receive.

Second, retail brokers might be able to expand existing revenue lines or develop other lines of business to compensate for the loss of PFOF revenue from NMS stock transactions. This includes the possibility of increasing revenue from margin interest and securities lending, which PFOF brokers currently utilize more heavily than the average broker-dealer.[604] Moreover, the retail broker industry did not experience a drop in profits following the end of commissions.[605] This includes non-PFOF brokers, who did not choose to make up for lost commission revenue by charging wholesalers PFOF. The ability to maintain or increase profits stemmed in part from the sudden increase in customer accounts, due to, among other factors, increasingly accessible online trading platforms and the initiation of fractional share trading.[606] Fractional share trading began with a single broker-dealer in late 2019, but has grown dramatically since that time, with an increasing number of broker-dealers offering this functionality.[607] Thus, just

[599] Even if wholesalers do not internalize individual investor orders, there might still be informational value from handling individual investor order flow. Wholesalers could be incentivized to offer free order routing to retail brokers in order to continue receiving this information, which would include the identity of the originating broker, the stock being traded and its order size, direction of the trade, and any handling instructions that may have been relayed to the broker, as well as the limit price if it's a limit order. All of this information could help the wholesaler assess the direction of the market. In addition, the wholesaler could choose to internalize the order at midpoint (an allowable exception to qualified auctions), which would provide additional information on the direction of order flow that other market participants would not have since there would be no auction message in this case. Besides receiving a possible informational advantage of having first look at individual investor orders, wholesalers could also receive rebate revenue for submitting the order to a qualified auction as well as SIP revenue, although the Commission expects the rebate to be under 5 mils in order to be less than the 5 mil auction fee cap. *See supra* section IV.C.4 for a discussion of fees and rebates. Finally, wholesalers could choose to internalize the order if it was exposed in a qualified auction but did not execute.

[600] *See* analysis in *supra* Table 16 and corresponding discussion.

[601] *See supra* section VII.C.2.b.ii for a discussion.

[602] *See supra* note 586.

[603] There are key differences between the options market and the market for NMS stocks; *see supra* note 235 for further discussion. Proposed Rule 615 is designed to achieve policy objectives that are particular to mandatory auctions in NMS stocks.

[604] *See* discussion in *supra* section VII.B.6.b.

[605] *See supra* note 505 and corresponding discussion.

[606] After falling during the 2016–2019 period from $229.2 billion to $197.8 billion, the average daily value of executions rose in 2020 to $312 billion. *See* 'Order Audit Trail System (OATS) Activity—Daily Average OATS Events, 2016–2020', *available at https://www.finra.org/sites/default/files/2022-02/21_0078.1_Industry_Snapshot_v10.pdf.* Fractional share trading allows individual investors to trade and enter orders for fractional shares of a security, *e.g.,* an individual investor could submit an order to buy 0.2 shares of a stock. Fractional share orders often arise from retail brokers allowing individual investors to submit orders for a fixed dollar value. It is the Commission's understanding that retail or clearing brokers generally trade in a principal capacity against their customers' fractional share orders and in turn send out principal round lot sized orders for execution to manage their inventory risk.

[607] Evidence suggests that this growth is in great part due to the rise in direct individual investor participation in equity markets. *See, e.g.,* Zhi Da, Vivian W. Fang & Wenwei Lin, *Fractional Trading* (last revised May 6, 2022) (unpublished manuscript), *available at https://ssrn.com/abstract=3949697* (retrieved from Elsevier database). *See also* Rick Steves, *Fractional Shares Experts Weigh In Amid Exploding Retail Trading Volumes,* FinanceFeeds (June 7, 2021) *available at https://financefeeds.com/fractional-shares-experts-weigh-in-amid-exploding-retail-trading-volumes/*, which shows that trading volume increased substantially (in one case, more than 1,400%) for brokers after they introduced the use of fractional shares. Furthermore, an analysis using CAT data

as retail brokers adjusted to the loss of commission revenue, they could also adjust to the loss of PFOF revenue.

Third, to the extent that rebates paid on segmented orders routed to qualified auctions are passed through to retail brokers, it could supplement the revenue they may lose from a reduction in PFOF.[608] The 5 mil cap on rebates that qualified auctions could pay for the submission of segmented orders under the Proposal is approximately 40% of the average combined PFOF rate paid by wholesalers for marketable orders as estimated in Table 2.

Furthermore, there is reason to believe that adjustment to the loss of PFOF would be much more manageable for the retail broker industry than the loss of commissions from online NMS stock and ETF orders. The average PFOF payment that brokers receive on a 100 share order is 10 to 20 cents,[609] far less than the commission fees previously charged by broker-dealers, which had generally been $5 or more.

While PFOF payments per order are relatively small, the small group of retail brokers (10 firms) that earn at least 2% of their revenue from PFOF on NMS stocks [610] could be pressured to develop or increase other revenue lines and/or attract additional customers to make up for the loss of PFOF. However, the dependence on PFOF for some of the top recipients of PFOF stemming from NMS stock orders has diminished in recent years due to mergers between PFOF-dependent firms and firms with less reliance on PFOF. This includes the single largest recipient of PFOF, which was purchased by a larger (*i.e.,* higher revenue) retail broker firm that had a much smaller share of its revenue stemming from PFOF.[611] Moreover, the purchasing firm in this merger had a much more diversified revenue portfolio, including a large collection of proprietary mutual funds and ETFs under management and a banking unit. In addition, the third largest recipient of PFOF was purchased in 2020 by a larger, full service broker with no reliance on PFOF. These mergers should help insulate leading recipients of PFOF from the financial damage that would result from the loss of PFOF due to Proposed Rule 615.

e. Costs to Exchanges

The Commission is mindful that the increase in competition to attract and execute orders of individual investors due to the Proposal could significantly impact costs for some exchanges and ATSs.[612] These costs would be in addition to the compliance costs estimated in section VII.D.2.a., and include the potential loss of market share for some exchanges and ATSs. The Commission believes that most marketable orders of individual investors would end up being exposed and executed in qualified auctions hosted by exchanges, which would increase the overall percentage of individual investor orders executed on exchanges, and decrease the percentage internalized by wholesalers. The market share of ATSs is expected to be stable because they do not handle significant fractions of marketable individual investor orders and thus are not affected by the proposed introduction of qualified auctions. The Commission believes that few ATSs would operate qualified auctions, either because it would be difficult for new ATSs to meet the requirements to run qualified auctions or because the requirements of operating a qualified auction would be incompatible with the business models of most currently operating ATSs.[613]

An NMS Stock ATS that wanted to run qualified auctions would face numerous requirements, including the need to: permit any registered broker-dealer to become a subscriber; provide equal access among all subscribers of the NMS Stock ATS and the registered broker-dealer of the NMS Stock ATS to all services that are related to a qualified auction operated by the NMS Stock ATS or to any continuous order book operated by the NMS Stock ATS; [614] display quotes in the ADF (and thus in the consolidated market data feed); and reveal the identity of the trading venue for trades executed on the ATS and report those trades to the TRF (which would report the trades and identity of the trading venue to the consolidated market data feed); operate as an automated trading center pursuant to Regulation NMS Rule 603(b) and have an average daily share volume of 1.0 percent or more of the aggregate average daily share volume for NMS stocks.[615] ATSs would have to make significant adjustments to their business models (especially with regards to segmenting customer orders and displaying quotes) in order to meet these requirements.[616] Additionally, new ATSs that could meet the other requirements might find it difficult to achieve 1% market share of trading volume in four out of six months without being able to concurrently operate a qualified auction.

The Commission acknowledges that Proposed Rule 615 might improve the competitive position of higher volume exchanges that offer qualified auctions and harm the competitive position of lower volume exchanges that do not. Higher volume exchanges that executed 1% or more of the average aggregate daily share volume for NMS stocks during 4 of the last 6 months would be eligible to run qualified auctions for segmented orders.[617] Exchanges that offered qualified auctions would have a competitive advantage in attracting marketable individual investor order flow because they would be able to segment the individual investor order flow and allow liquidity suppliers to trade against this order flow in smaller pricing increments in their qualified auctions.[618] Lower volume exchanges that do not meet the volume thresholds to run qualified auctions would not be able to segment individual investor order flow, unless they did so under one of the exceptions, such as offering

reveals that more than 46 million fractional share orders were executed in Mar. 2022, originating from more than 5 million unique accounts. Over 31 million of these orders were for less than 1 share, and they originated from more than 3.3 million accounts. The overwhelming majority (92%) of fractional share orders were attributed to natural persons, *i.e.,* individual investors. While fractional shares orders represented only a small fraction (2.1%) of total executed orders, they represent a much higher fraction (15.3%) of executions received by individual investors.

[608] Similarly, if a wholesaler routes a segmented order to a qualified auction and receives the rebate for the submission of a segmented order, the wholesaler may indirectly pass the rebate from the qualified auction through to the retail broker by using the rebate to subsidize PFOF payments it makes to the retail broker.

[609] *See* analysis in *supra* Table 17.

[610] *See* analysis in *supra* Table 16.

[611] The largest dollar recipient of PFOF received $101.5 million in PFOF from NMS stocks in Q1 2022, equal to 5.7% of its total revenue. The purchasing firm in this merger received $28.9 million in PFOF in NMS stocks Q1 2022, equal to 1.5% of its total revenue.

[612] Retail brokers may also choose to directly route their orders to qualified auctions, and may therefore compete with wholesalers, ATSs, and exchanges in executing retail orders. However, the Commission believes that broker-dealers will play a much more minor role in this competition.

[613] Of the 32 NMS Stock ATSs, the Commission estimates that approximately 3 would operate qualified auctions. *See supra* section VI.C.4 for further discussions of the estimates of how many NMS Stock ATSs would operate qualified auction.

[614] This would prohibit the ATS from segmenting customer orders outside of qualified auctions (unless the orders were executed at midpoint) and require it to charge the same fee to all subscribers (*see supra* section IV.C.4), thereby prohibiting them from charging tiered auction fees or providing tiered rebates.

[615] *See supra* section IV.B.2.b.

[616] The Commission estimates that 3 NMS stock ATSs would participate in qualified auctions. *See supra* section VI.C.4.

[617] The Commission estimates that six national securities exchanges would meet the proposed threshold. These include one exchange each from the NYSE, NASDAQ, and CBOE groups, as well as MEMX, IEX, and MIAX PEARL.

[618] *See supra* section IV.G for discussions on restrictions on exchanges from operating any separate trading mechanism for segmented orders other than qualified auctions.

liquidity to individual investor orders only at the NBBO midpoint.[619] Additionally, exchanges not offering qualified auctions would be unable to execute segmented orders at the finer 0.1 pricing increments that would be available in the qualified auctions. These factors could all limit the competitiveness of smaller exchanges.

There is also the possibility that if a disproportionate share of order flow is routed to one or more exchanges offering qualified auctions, these exchanges might become the preferred trading location for any given stock. This, in turn, could cause a liquidity externality to develop, making these venues the preferred routing destination for all orders.[620] Under such circumstances, while the consolidation of liquidity on these exchanges might benefit market participants in the short run, it may also lead to barriers to entry in the market for trading services, as new entrants would have a harder time attracting sufficient liquidity away from established liquidity centers. Lower volume exchanges could also be adversely impacted by the fact that under the Proposal, exchanges would have to stop offering RLP programs unless the program resulted in trades only at the NBBO midpoint, consistent with a proposed exception. This could result in a reduction in the trading volume and revenues received by lower-volume exchanges that do not meet the threshold to offer qualified auctions.[621]

The Commission is unable to quantify the likelihood that one or more exchanges that would be unable to offer qualified auctions would cease operating. However, the Commission preliminarily believes that this risk of this is low because the majority of individual investor marketable orders are not currently routed to exchanges. Therefore, even if they are not eligible to run qualified auctions under the Proposal, the reduction in trading volume that these exchanges might experience is unlikely to be large enough to require them to exit the market. Even if such an exit were to occur, the Commission does not believe this would significantly impact competition in the market for trading services because the market is served by multiple competitors. Consequently, if one or more lower-volume exchanges were to exit the market, demand would likely to be swiftly met by existing competitors. The Commission recognizes that lower-volume exchanges might have unique business models that are not currently offered by competitors, but believes that a competitor could create similar business models if demand were adequate, and if they did not do so, it seems likely new entrants would do so if demand were sufficient.

f. Costs to Institutional Investors

The Commission recognizes that the Proposal could increase the risk of information leakage for institutional investors in at least two ways.

First, the risk of information leakage may increase for those institutional investors that choose to supply liquidity in qualified auctions. Specifically, market participants could use auction message information[622] to identify the trades in consolidated market data that correspond to executions of individual investors orders in qualified auctions, which could allow these market participants to back out information about the corresponding institutional bids.[623] For example, if a market participant observes that a large volume of individual investor buy orders are filled in qualified auctions, they could correctly discern that an institutional investor may be providing a large sell order. However, in response to this concern, institutional investors could decide to route their orders to ATSs and OTC market makers, where information about their orders may be better concealed.[624] To the extent that concerns over the risk of information leakage prevent institutional investors from seeking liquidity through qualified auctions, this could limit the benefits of the Proposal.

Second, as individual investors' marketable orders would be increasingly routed to and executed in qualified auctions under the Proposal, and as these orders would become more easily identifiable through the information contained in auction messages as described above, it may become increasingly possible to identify information about off-exchange institutional trades in TRF data.[625] In the most extreme case, if virtually all individual investor orders are routed to and executed in qualified auctions, market participants may be able to identify nearly all off-exchange institutional transactions reported in the TRF data as originating from institutional trades.[626] In this way, information leakage might increase even for institutional investors that choose not to participate in qualified auctions.

However, it is possible that information on institutional order flow

[619] *See supra* section IV.B.2.a for a discussion of lower-volume exchanges.

[620] A liquidity externality could emerge if orders tended to concentrate in one auction, such that it would become the preferred routing destination and attract more orders. Orders in more liquid venues would be more likely to execute at better prices, which in turn, would provide such venues with a competitive advantage over less liquid venues.

[621] The Commission believes that the mandated auction mechanism largely would remove the need for RLPs run by exchanges that would meet the criteria to run qualified auctions. However, exchanges that operate RLPs that do not serve as qualified auctions host would be negatively impacted by having their RLP services curtailed. Individual or institutional investors, however, should not be significantly adversely impacted by the loss of these RLP services. From the perspective of individual investors, it would be unnecessary to execute orders through RLPs because any non-directed retail order would have a chance to be exposed to open competition, either because the order would be filled on a riskless principal basis, or because the wholesaler who considers internalizing an order would first be required to bring it to a qualified auction. From the perspectives of other market participants, *e.g.,* institutional investors, qualified auctions would provide a superior means, relative to RLPs, for these participants to directly interact with retail orders. This is the case because (1) unlike RLPs, qualified auctions require that characteristics of the order are communicated to bidders, including its price, size, and the name of the underlying retail broker; and (2) qualified auctions would allow market participants to interact with a substantially larger and more persistent pool of segmented retail order flow, relative to that available through RLPs. However the Commission acknowledges that the loss of RLP services may adversely impact market participants that may currently supply liquidity through existing RLPs but would not be fast enough to submit an auction response to a qualified auction message.

[622] Proposed Rule 615(c)(1) specifies that an auction message announcing the initiation of a qualified auction for a segmented order must be provided for dissemination in consolidated market data, including the disclosure that the auction is for a segmented order, the identity of the open competition trading center, NMS stock symbol, side (buy or sell), size, limit price, and identity of the originating broker for the segmented order (unless they certified that no bidder in the qualified auction knew the identity of the originating broker). Note that institutional bids in qualified auctions would not be revealed unless they were the winning bid and resulted in an execution.

[623] *See, e.g.,* Liyan Yang & Haoxiang Zhu, *Back-Running: Seeking and Hiding Fundamental Information About Institutional Order Flows,* 33 Rev. Fin. Studies 1484, 1487 (2020) (''. . .information about retail order flows is equivalent to information about institutional order flows, by market clearing.'').

[624] Trades executed off-exchange, including those executed on ATSs and by OTC market makers, are reported to Trade Reporting Facilities (TRFs), which are facilities through which members report transactions in NMS stocks, as defined in SEC Rule 600(b)(47) of Regulation NMS. *See Trade Reporting Facility (TRF),* FINRA, *https://www.finra.org/filing-reporting/trade-reporting-facility-trf.* However, as a result of the Proposal, it may be easier to identify institutional trades using TRF data; *see infra* this section for further discussion. Furthermore, it may currently be possible to identify institutional trades in TRF data; *see infra* note 627 and corresponding discussion.

[625] *See, e.g.,* Yang & Zhu, *supra* note 623, for further discussions on the identifying institutional investor orders.

[626] For those individual investor orders that would have been internalized by wholesalers and reported as a trade to the TRF but are instead executed in qualified auctions, these trades would be reported as trades executed on the exchange or ATS operating the qualified auction, rather than reported to the TRF. This would reduce the number of individual investor trades reported to the TRF.

is already discernable through multiple means. First, there is evidence that institutional order flow can be inferred by first identifying individual investor order flow, which can be estimated using sub-penny trades in TRF data.[627] In addition, wholesalers already may have the ability to discern institutional order flow due to their knowledge of individual investor order flow. Thus, while there is concern over information leakage for institutional order flow, it may be the case that much of this information is already identifiable. To the extent that qualified auctions would result in further information leakage, the Proposal may result in additional costs for institutional investors.[628] However, this effect could be balanced by the increased price improvement that institutional traders would receive by being able to interact directly with individual investor order flow in qualified auctions.

The Proposal may also result in wholesalers reducing the liquidity they supply to institutional investors via SDPs.[629] With reduced wholesaler liquidity provision on SDPs, institutional investors might have to resort to other sources of liquidity, *e.g.,* exchanges and ATSs or supplying liquidity to qualified auctions. An appealing feature of SDPs from an institutional investor perspective is the possibility of disclosing intended order size without being detected by other market participants competing for the same liquidity. By switching to other sources of liquidity, institutions would no longer enjoy this benefit. Hence, these institutions might find it more costly to locate liquidity as they need to protect their intended trade sizes to minimize price impact of trades.[630]

g. Effects on Exchange Limit Order Books (LOBs) Liquidity

There is a possibility that Proposed Rule 615 could cause displayed LOB liquidity to decrease. The Commission believes that the Proposal might entice some liquidity provision to be redirected from exchange LOBs to qualified auctions,[631] which could have an adverse impact on quoted LOB depth and the NBBO. More specifically, if liquidity is diverted to qualified auctions, there is the risk that the NBBO could widen because some market participants might reduce the frequency or the size of the orders they submit to the LOB, including orders that set the NBBO prices.[632] However, there would be trade-offs regarding the execution risk and execution price that might limit the incentives to bid in an auction compared to supplying liquidity in the LOB.[633] Moreover, the majority of marketable orders of individual investors are already segmented from exchanges and thus are not currently reaching exchange LOBs.[634] Therefore, although LOB liquidity may decline under the Proposal, there is the potential that the direct effect of qualified auctions on LOB liquidity may not be significant.

An additional possibility is that if the Proposal results in the elimination of zero-commission trading, retail trading volume could decline and the overall pool of liquidity could shrink due to increased wholesaler inventory risk.[635] A lower overall liquidity level might also manifest itself in lower displayed liquidity in exchange LOBs. For example, the introduction of qualified auctions might induce some (more sophisticated) individual investors to switch from placing non-marketable limit orders priced at or outside the NBBO to placing (a) marketable orders or (b) non-marketable orders priced between the midpoint and the NBO (NBB) for buy (sell) orders, which may participate as segmented orders in qualified auctions.[636] In this sense, the pool of non-marketable resting orders that would be routed to exchanges might shrink, potentially reducing the depth at the NBBO.

3. Competition

a. The Market for Trading Services in NMS Stocks

As discussed in more detail below, the creation of qualified auctions under the Proposal would result in most marketable orders of individual investors being exposed in qualified auctions on exchanges and ATSs that are eligible to serve as open competition trading centers.[637] The Commission estimates that 6 exchanges and 3 ATSs could operate qualified auctions. Exchanges should have strong economic incentives to offer qualified auctions because the lower adverse selection risk of marketable order flow of individual investors makes it a valuable commodity that would attract trading interest from other market participants and increase the exchange's trading volume and the associated revenue it delivers.[638] For this reason, it is likely that there would always be at least one

[627] *See, e.g.,* Boehmer et al., *supra* note 572, who use this methodology to identify individual investor activity. Specifically, using TRF data, the authors identify transactions as retail buys if the transaction price is slightly below the round penny and as retail sells if the transaction price is slightly above the round penny. Some institutional trades receive sub-penny price improvement as a result of midpoint trade price ends in a half-penny. Thus, trades at or near a half-penny are likely to be from institutions and are not assigned to the retail category.

[628] For example, in a study of the Swedish equity market, one academic paper found that a one-standard-deviation increase in the extent to which HFTs trade in the same direction as large institutional orders is associated with a $4,480 higher order execution cost for institutional investors. This result led the authors to conclude that the detection of large institutional orders is costly for institutional investors. *See* Vincent Van Kervel & Albert J. Menkveld, *High-Frequency Trading Around Large Institutional Orders,* 74 J. Fin. 1091 (2019).

[629] *See supra* section VII.C.2.c.

[630] However, institutional investor costs could also fall when they are able to trade against individual investor orders in qualified auctions. *See supra* section VII.C.1.c.

[631] The Commission also is proposing to amend rules addressing minimum pricing increments. *See* Minimum Pricing Increments Proposal, *supra* note 98. The Commission encourages commenters to review that proposal to determine whether it might affect their comments on this proposing release.

[632] The submission of smaller orders might also require aggregation of odd-lot orders across more price levels to reach a round lot size, which would cause the NBBO to widen.

[633] *See infra* section VII.C.3.a.iii for further discussion on the trade-offs involved in supplying liquidity to a qualified auction vs. submitting an order to an LOB.

[634] *See supra* section VII.B.2.a for a discussion of estimates that appear to indicate that over 90% of individual investor marketable orders are routed to wholesalers and *supra* section VII.B.2.b for estimates that wholesalers internalize 90% of executed dollar volume in individual investor marketable orders that were routed to them.

[635] A reduction in retail trading volume as a result of the Proposal may decrease a wholesaler's ability to manage their inventory risk associated with their other trading activities, such as exchange market making or supplying liquidity through their SDPs. This may cause wholesalers to reduce the liquidity they supply in their other activities.

[636] A segmented order in a qualified auction could have the benefit of an increased likelihood of execution compared to non-marketable limit orders submitted to a LOB because bidders may supply liquidity (and potentially earn part of the spread) to orders submitted to a qualified auction. Non-marketable limit orders submitted to a LOB would have to wait until an opposite side marketable order arrived to potentially execute, which could result in a greater risk of the order not executing. However this increased likelihood of execution would come at the cost of earning a spread by using a non-marketable limit order.

[637] Proposed Rule 615 covers only NMS stocks. Qualified auctions would be conducted for ''segmented orders,'' which would be defined in Proposed Rule 600(b)(91) as an order for an NMS stock for an account of a natural person, or an account held in legal form on behalf of a natural person or group of related family members, and that for such an account, the average daily number of trades executed in NMS stocks must be less than 40 in each of the preceding six calendar months. *See supra* note 194 and corresponding text for a discussion of a Commission analysis indicating that during the six-month period (Jan. 1, 2022, to June 30, 2022), slightly more than 99.9% of individual investor accounts averaged 40 or fewer orders per day that resulted in a trade. Moreover, during the same period, 99% of individual customer accounts averaged 1.86 or fewer orders per day that resulted in a trade; *see* analysis in *infra* Table 22.

[638] *See supra* section IV.B.2 for further discussion on the incentives for exchanges and ATSs to offer qualified auctions.

exchange or ATS operating a qualified auction.[639]

Exchanges and ATSs operating qualified auctions would significantly increase competition among liquidity suppliers to fill marketable orders of individual investors, since the majority of these orders are currently internalized by wholesalers without competition on the individual order basis.[640] This increase in competition would have a significant effect on the business model of wholesalers and might reduce the volume of order flow that they internalize. This would affect the competitive dynamics between exchanges, wholesalers and ATSs related to how they compete for both individual and institutional order flow and could result in more orders being routed to exchanges that run qualified auctions. Additionally, there would be competitive implications for how qualified auctions interact with exchange LOBs. Additional analysis is provided below regarding the expected impact of the Proposal on competition: (i) in the market to supply liquidity to individual investor orders, (ii) between exchanges, ATSs, and wholesalers, and, (iii) between exchange LOBs and qualified auctions.

i. Competition To Supply Liquidity to Individual Investor Orders

Qualified auctions would enhance competition to provide liquidity to individual investors at the individual order level by drawing additional liquidity from other market participants besides the wholesaler handling the individual investor order, including other wholesalers that could bid in the auctions. Currently, once a wholesaler receives order flow, another wholesaler is unable to interact with these orders unless they are rerouted to that other wholesaler. Routing these orders to qualified auctions would prevent these orders from being isolated and instead allow them to be exposed to other market participants, including other wholesalers, that could bid for the right to execute them.

The lower adverse selection risk of individual investor orders should incentivize other liquidity providers to participate in qualified auctions. It is the Commission's understanding that market participants quote significant liquidity at prices superior to the NBBO.[641] This liquidity primarily includes inside-the-NBBO odd-lot liquidity quoted on exchanges and non-displayed liquidity quoted on exchanges and ATSs, originating from various market participants, including institutional investors, market makers, and individual investors. In addition, some market participants that currently use marketable orders to demand liquidity from intermediaries might benefit from participating in qualified auctions, *i.e.,* quote liquidity at prices better than the NBBO, to satisfy their liquidity needs. Proposed Rule 615 would provide an opportunity for these participants to potentially trade with individual orders with lower adverse selection by redirecting their liquidity provision to open qualified auctions or to switching from demanding to supplying liquidity through qualified auctions.

It would also give institutional investors a chance to directly interact with individual investor orders with a minimal degree of intermediation. For example, institutional investors with pressing liquidity demand typically rely on optimal trade execution algorithms that split their trades into child orders, which may demand liquidity, including on SDPs, where they may potentially end up paying the full spread.[642] The availability of marketable individual investor order flow at qualified auctions would likely draw institutional trade execution algorithms to supply liquidity in qualified auctions, where they might trade at the quote midpoint or at least inside the NBBO. By doing so, institutional orders would be filled without paying the full spread. This would not only increase the competition in liquidity provision against individual investor orders, but would also reduce institutional trading costs.

Some auction features would also enhance competition to supply liquidity to individual investor orders. The Proposal would facilitate finer price improvements for inside-NBBO orders by allowing a 0.1-cent quoting increment for shares priced at $1.00 or more per share. This would enhance competition by improving the ability of market participants to be able to compete on price in their auction responses, since they could quote in finer increments than they could on exchange or ATS LOBs.[643] An additional source of increased competition to supply liquidity would stem from the implementation of a 5 mil auction fee and rebate cap for shares priced at $1.00 and above and 0.05% for share prices under $1.00. Mandating low, flat fees and rebates in qualified auctions should promote a level playing field among all potential market participants that may wish to trade with segmented orders and therefore serve to increase competition among liquidity suppliers.[644]

The Commission is uncertain what effect the proposed requirement to give customer orders priority if auction responses are at the same price would have overall on the competition to supply liquidity to individual investor orders. On the one hand, giving priority to customer orders may encourage more customers, including institutional investors, to participate in qualified auctions, potentially increasing competition to supply liquidity to segmented orders. On the other hand, it could discourage liquidity provision by broker-dealers in qualified auctions, potentially decreasing competition to supply liquidity to segmented orders. However, qualified auctions overall would still enhance competition among broker-dealers to supply liquidity to individual investor marketable orders, because a significant portion of these would be exposed to multiple broker-dealers in a qualified auction instead of being execution in isolated at a wholesaler.

The Commission acknowledges that there could be some limitations on the increases in competition to supply liquidity to individual investor orders. The Commission recognizes that there are some institutional investors that may currently source liquidity from SDPs in order to avoid triggering reactions by market participants who would observe institutional trades might avoid qualified auctions and instead continue to access liquidity via other

[639] In cases where no open competition trading center chose to operate a qualified auction for a security, the broker-dealer or wholesaler handling the order would have the option to internalize the order. *See supra* section IV.A for further discussion of options for segmented orders that did not receive an execution in a qualified auction. However, it's very likely that at least one exchange or ATS would operate a qualified auction for an order. Because of the low adverse selection risk associated with segmented orders, if a single exchange or ATS operated a qualified auction, the trading facility would likely attract additional order flow to supply liquidity to segmented orders, which would increase its trading volume. This could potentially increase the exchange or ATS's revenue because a portion of SIP revenue is allocated among facilities based on trading volume (FINRA also rebates SIP revenue it receives for the TRF back to its members based on their trading volume).

[640] *See supra* section VII.B.2.b for a discussion of wholesaler internalization.

[641] *See supra* Table 20 and accompanying discussion in *supra* section VII.C.1.b for estimates of liquidity available at the NBBO midpoint on exchanges and NMS Stock ATSs when a wholesaler internalizes a trade.

[642] *See supra* section VII.B.3 for further discussions on how institutional investors may indirectly interact with individual investor orders via trading on SDPs.

[643] *See supra* section VII.C.1.a for further discussions on how the auction pricing increment could improve competition among liquidity suppliers.

[644] *See id.* and *supra* section IV.C.4 for additional discussions on the auction fee and rebate caps.

methods. Additionally, due to the sub-second duration of the auctions mandated by the Proposal, participation would require access to algorithmic trading technology, which could prevent some potential providers of liquidity from participating in qualified auctions.[645] In sum, however, the net effect of qualified auctions would be an increase in competition to supply liquidity to the orders of individual investors.

ii. Competition Among Exchanges, ATSs, and OTC Market Makers

Proposed Rule 615 would increase competition among wholesalers, ATSs, and exchanges in attracting and executing order flow of individual investors.[646] It is likely that the share of order flow currently internalized by wholesalers or executed on ATSs that do not serve as auction hosts would decline. Wholesalers receiving order flow from retail brokers could still end up internalizing a substantial portion of orders that they route to qualified auctions. However, because the orders would be subject to competition from other liquidity suppliers, wholesalers would likely win a smaller share of auctions compared to the share of orders that they currently internalize, for which they do not face competition at the individual order level.

The Proposal might improve the competitive position of higher volume exchanges that offer qualified auctions and harm the competitive position of lower volume exchanges that do not. Higher volume exchanges that execute 1% or more of the average daily share volume for NMS stocks during 4 of the last 6 months would be eligible to run qualified auctions for segmented orders.[647] Exchanges that offered qualified auctions would have a competitive advantage in attracting marketable individual investor order flow because they would be able to segment this order flow and allow liquidity suppliers to trade against it in smaller pricing increments ($0.001) in the qualified auctions that they host compared to the minimum price increment on national exchanges ($0.01).[648] The Commission is unable to quantify the likelihood that one or more exchanges that would be unable to offer qualified auctions would cease operating. Even if such an exit were to occur, the Commission does not believe this would significantly impact competition in the market for trading services because the market is served by multiple competitors.[649]

The Proposal would also likely increase competition between exchanges, ATSs, and OTC market makers to attract institutional order flow. The requirement to expose segmented orders in qualified auctions could improve the competitive position of exchanges and ATSs that run qualified auctions relative to most ATSs [650] and all OTC market makers, including SDPs, which would not be allowed to host auctions. The resulting increase in marketable orders of individual investors routed to exchanges and ATSs that operate qualified auctions, relative to other venues, would entice institutional investors to seek to supply liquidity to marketable individual investor orders through these auctions.

The Proposal would likely have an adverse impact on the competitive positions of wholesaler-affiliated SDPs to attract institutional order flow by reducing the liquidity available therein to institutional investors.[651] Specifically, the Proposal might lead retail brokers to directly route more of their customer orders to exchanges and ATSs operating qualified auctions instead of directing their orders to wholesalers.[652] In addition, wholesalers receiving orders from retail brokers that they then route to qualified auctions could lose a significant share of these auctions to other bidders. These effects would hamper the ability of wholesaler-operated SDPs and other OTC market makers to manage their inventory risk by internalizing incoming individual investor order flow. This might reduce the ability of these wholesalers and other market makers to provide liquidity to institutional investors, who might instead rely on other trading venues, including qualified auctions, to meet their liquidity needs. The Commission is unable to quantify the extent to which institutional order flow would migrate to exchanges or ATSs that run qualified auctions.

The risk of information leakage from institutional investors' orders participating in qualified auctions could also impact competition between exchanges, ATSs and OTC market makers. The Commission recognizes that concerns over the risk of information leakage could prevent institutional investors from seeking to provide liquidity in qualified auctions.[653] One possible way that leakage could occur is if a large volume of individual investor buy orders are filled consecutively at the midpoint, then market participants might correctly discern that an institutional investor is working a large sell order. Because the side and venue of an institutional order executed off-exchange would continue not to be revealed in a TRF trade print under Proposed Rule 615, ATSs and OTC market makers would remain competitive in terms of their ability to conceal intended institutional trades.[654] Institutional investors would likely weigh the trade-off between potentially lower trade costs provided by qualified auctions and the greater concealment of their trading intentions provided by off-exchange executions. In cases where the latter objective was paramount, institutional investors could decide to avoid routing some of their orders to qualified auctions. As such, ATSs and OTC market makers might remain attractive trading venues for such institutional orders.

Overall, however, the increase in marketable order flow on exchanges and

[645] *See supra* section VII.C.1.a for further discussion on the effect of not having access to algorithmic technology on qualified auction participation.

[646] Retail brokers might also choose to directly route their orders to qualified auctions, and might therefore compete with wholesalers, ATSs, and exchanges in executing individual investor orders. However, the Commission believes that broker-dealers would play a much more minor role in this competition.

[647] The Commission estimates that six national securities exchanges would meet the proposed threshold. These include one exchange each from the NYSE, NASDAQ, and CBOE groups, as well as MEMX, IEX and MIAX PEARL.

[648] Qualified auctions would have a price increment of $0.001 for shares priced at $1.00 or greater and 0.1% for shares under $1.00, in contrast to national exchanges, which have a minimum price increment of $0.01.

[649] *See supra* VII.B.1 for a discussion of the market for trading services in NMS stocks. *See also supra* section VII.C.2.e for additional discussion on the effects of the Proposal on small and large exchanges.

[650] As discussed in *supra* section VI.C.4, the Commission believes that 3 ATSs would operate a qualified auction.

[651] Institutional investors (or the brokers that represent them) would be able to bid in qualified auctions in order to directly interact with individual investor orders. This could give the execution of institutional orders better terms because institutional investors would not need to compensate the wholesaler for the intermediation services provided by their SDPs. As such, some of the institutional interest would migrate from its SDPs to qualified auctions due to more competitive pricing in the qualified auctions. Therefore, the loss of access to liquidity for institutional investors provided by SDPs would be mitigated by the ability of institutional traders to supply liquidity to marketable orders of individual investors in qualified auctions. *See supra* section VII.B.3 for further discussions on institutional investors interactions with SDPs.

[652] *See supra* section VII.C.1.a.

[653] *See supra* section VII.C.2.f for additional discussions on how the Proposal could affect information leakage of institutional investor orders.

[654] Institutional bids in qualified auctions would also have some ability to be concealed, because they would not be revealed unless they were the winning bid. If they do have the winning bid, the side, venue, and price of the institutional bid would be revealed, which may provide more information leakage than some trades on ATSs.

ATSs that operate qualified auctions, relative to other venues, would entice institutional investors to supply liquidity to marketable individual investor orders through these auctions. Due to the enhanced competition provided by qualified auctions, it is likely that execution costs of institutional investors' parent orders would be reduced, which in turn, should further the likelihood that institutional order flow would be attracted to exchanges and ATSs that operate auctions. The execution priorities of Proposed Rule 615 would reinforce this effect. Under paragraph (c)(5)(ii) of the proposed rule, if an institutional investor and a wholesaler (broker-dealer) were bidding the same price in a qualified auction, the investor would have execution priority. As such, all else constant, institutional investors would win qualified auctions when competing with wholesalers. This would reduce execution uncertainty from the perspectives of institutional investors who would consider bidding in qualified auctions on exchanges, as well as reduce their trading costs as a result of direct interactions with individual investor order flow. These collective effects would result in less institutional orders being routed to ATSs and OTC market makers, including SDPs.

The Proposal would also generate competition between qualified auctions that are offered on different exchanges and ATSs.[655] Open competition trading centers running qualified auctions might compete with each other by trying to offer the most price improvement in their auctions.[656] They might also compete with each other through innovations in their auctions protocols in order to differentiate themselves and attract more segmented orders and liquidity suppliers. Open competition trading centers might also try to compete with each other on the basis of fees or rebates they charge in their qualified auctions. However, the Commission believes that this form of competition might be limited because of the flat 5 mil auction fee and rebate cap on executed auction responses and the flat 5 mil rebate cap on segmented orders submitted to auctions.[657] More specifically, while providers of qualified auctions could compete by charging a fee *under* the 5 mil cap, this discount would provide far less latitude for attracting orders compared to the 30 mil fee cap on the LOB.[658] Furthermore, volume-based rebate and fees, which are utilized by many exchanges in their transaction based fee schedules, would not be permitted within qualified auctions (but would remain permitted on exchange LOBs). Therefore, the Commission believes that competition based on auction fees and rebates would be minimal.

iii. Competition Between Qualified Auctions and Exchange LOBs

The Commission believes that the Proposal might entice some liquidity provision from exchanges' LOB to qualified auctions. A core function of the mandated qualified auction mechanism under Proposed Rule 615 would be to segment order flow of individual investors, leading to a concentration of this order flow in qualified auctions. As a result, some market participants might consider redirecting liquidity provision from the LOB to qualified auctions. In doing so, market participants would need to consider the following under the Proposal: (1) Displayed orders on the LOB would have priority over auction responses if they were listed at the same price, and a winning auction response would have priority over hidden orders on the LOB; (2) for shares priced $1 or greater, LOB quoting is subject to a 1-cent price increment,[659] while qualified auctions would accept bids using a 0.1-cent price increment, allowing auction responses to jump in front of LOB quotes by quoting at sub-penny prices; and (3) broker-dealers with knowledge of where a segmented order is to be routed would not be allowed to submit LOB orders that could have priority to trade with the segmented order.[660] To the extent that market participants quoting visible or hidden liquidity on the LOB prefer to trade against the individual investor segment of the order flow through qualified auctions, they might provide liquidity to auctions rather than quote liquidity on the LOB.

The Commission is unable to quantify the magnitude of this potentially redirected liquidity from the LOB to qualified auctions. However, the Commission recognizes that there would be a trade-off between adverse selection risk (which would be higher on an exchange LOB compared to qualified auctions, where individual investor orders would be segmented) and execution risk (*i.e.,* the risk of non-execution, which would be higher for auctions). In general, qualified auctions should provide greater price improvement due to their lower adverse selection risk. However, redirecting displayed liquidity to qualified auctions might increase the execution risk and trading costs associated with the order. There might be less certainty regarding whether a bid in a qualified auction would execute because it would be competing against other bids that would not be displayed.[661] Additionally, bids in qualified auctions would lead to execution only if the market participant is willing to trade at worse prices that could lead to winning the auction, which may lower the spread that they would earn relative to executing their non-marketable limit order on a LOB.[662] Thus, the execution risk of submitting a bid in a qualified auction could be greater than posting an order at or inside the NBBO on a LOB. However, these risks associated with auctions would be somewhat offset by the lower adverse selection risk of trading against a segmented order in a qualified auction. Overall, the Commission believes that redirection of liquidity from the LOB to qualified auctions would be limited and would not significantly reduce execution quality on the LOB.

In addition, the name-give-up requirement could potentially reduce wholesaler liquidity on the LOB if a wholesaler handled a segmented order where the originating broker made the certification under proposed Rule 615(c)(1)(iii) that the identity of the originating broker will not be disclosed, directly or indirectly, to any person that potentially could participate in the qualified auction or otherwise trade with the segmented order. Some retail brokers may seek certification to not disclose their identity, which would impose explicit costs on these broker-dealers (as discussed above in section VI.C.3). In addition, it could curtail wholesaler activity if a wholesaler had an order resting on the limit order book and routed a segmented order originating from a broker that made the certification under proposed Rule 615(c)(1)(iii) to a qualified auction on the same exchange. In this case, the wholesaler would likely have to cancel its resting limit order if it wanted to trade against the segmented order in the auction, since the limit order book is included in the auctions. Thus,

[655] The Commission includes ATSs to the degree that they would offer qualified auctions. *See supra* section VII.C.1.a.

[656] *See supra* section VII.C.1.a.

[657] *See supra* section VII.C.1.a for further discussions on the effects of auction fees and rebates.

[658] *See* 17 CFR 242.610(c).

[659] *See supra* note 146.

[660] *See* Proposed Rule 615(f)(2).

[661] Bids in qualified auctions would not be displayed.

[662] Additionally, a non-marketable limit order may earn a greater rebate from supplying liquidity on a maker-taker exchange LOB compared to in a qualified auction, which would have rebate cap of 5 mils on executed auction responses.

certification could impact wholesaler quoting on exchanges.[663]

b. Market Access

Retail brokers choose how to access the market for trading services in NMS stocks in order to fill their customers' orders. Currently, retail brokers primarily access this market via wholesaler internalization, although broker-dealers with exchange memberships or ATS subscriptions can access the market directly.[664] Retail brokers without these memberships or subscriptions must route their order to wholesalers or to other brokers that either have direct access to exchanges and ATSs, or have the routing resources to deliver orders to market centers. The introduction of qualified auctions would likely reduce the profit that wholesalers earn on internalizing marketable order flow, which in turn could result in the decision by wholesalers to start charging a fee for routing services. This would improve the competitive position of broker-dealers with routing access to qualified auctions.[665] Retail brokers might further choose not to route to wholesalers if they want to avoid the requisite identity disclosure requirement. It is likely that other routing brokers with access to qualified auctions would compete to receive order flow from retail brokers without this access. The Commission is uncertain of the extent to which routing services would shift away from wholesalers towards other routing brokers. However, the implementation of qualified auctions could generally be expected to reduce the benefit of wholesaler vertical integration and the potential profits they get from internalizing individual investor orders.[666]

c. The Market for Retail Broker Services

Wholesalers have been able to secure larger profits by accessing and internalizing the majority of marketable order flow of individual traders, which carries less adverse selection risk. The Proposal would require wholesalers to route this order flow to qualified auctions,[667] opening these orders to competition with other market participants. This competition could result in the wholesaler not winning the auction. In the event that the wholesaler actually wins the auction, it is likely that the increased competition would cause the realized spread (*i.e.,* the wholesaler's profit margin) it receives from internalizing these orders to fall. Declining profit margins could reduce the financial latitude that wholesalers needed to pay PFOF to retail brokers.[668] The Commission also recognizes that the decline or disappearance of PFOF would impact retail brokers, although this impact would vary widely across brokers, since only some broker-dealers receive PFOF, and the amount of PFOF differs across retail brokers that do receive it. In particular, as discussed in Section VII.B.6.a,[669] four retail brokers received 94% of all PFOF in 2021, and PFOF represented only a fraction of these four retail brokers' total revenues.

The Commission acknowledges that the implementation of qualified auctions and the likely subsequent reduction in PFOF could pose a competitive threat to retail brokers that are dependent on PFOF and lack alternate revenue sources to compensate for this loss of revenue. If wholesalers reduce PFOF or begin charging a fee for routing services, PFOF retail brokers would have to absorb this cost and earn lower profits and/or pass on a share of this cost to their customers. This would, in particular, depend upon the competition they face. For instance, if PFOF retail brokers earn economic rents, then they could absorb some of these costs, which would come out of their profit. If PFOF retail brokers primarily face competition from other PFOF retail brokers, then these brokers could pass on the costs to their consumers. That said, to the extent that PFOF brokers face competition from non-PFOF brokers, then their ability to pass on costs to their customers, such as in the form of higher commissions on stock and ETF trades, could be constrained. More specifically, non-PFOF brokers (which would not be harmed by the disappearance of PFOF) would be unlikely to resume charging commissions, which would put competitive pressure on commission rates that other retail brokers could charge and still retain customers. In this context, if the ability of smaller retail brokers to charge commissions is constrained by competition, it could increase the competitive advantage of larger retail brokers, which could raise the barriers to entry for new brokers and cause some smaller retail brokers to exit the market. The Commission is unable to quantify the likelihood one or more retail brokers would cease operating.

Another feature of Proposed Rule 615 that could impact competition in the market for retail brokers is the option that allows an originating broker to avoid disclosure of its identity by certifying that its identity will not be disclosed, directly or indirectly, to any person that potentially could participate in the qualified auction or otherwise trade with the segmented order, as specified in Proposed Rule 615(c)(1)(iii) and (e)(3).[670] Broker-dealers carrying the greatest adverse selection risk could determine that their execution risk is improved by remaining anonymous, despite the possibility that their anonymity could signal that they carry above average adverse selection risk.[671] However, the Commission estimates that this effect on the market would be relatively minor due to the modest number of retail brokers (20 firms)[672] that would be expected to choose to use this certification.

4. Efficiency

The Commission believes the Proposal might have both positive and negative effects on efficiency. The Proposal might have negative effects on the efficiency of wholesaler operations and the efficiency with which marketable individual investor orders are executed, but the Commission believes both these effects might be minimal. On the other hand, price efficiency might improve due to an increase in pre-trade and post trade transparency for the segmented orders

[663] Wholesalers could indirectly pass their costs for this back to the originating brokers if wholesalers charged them a fee for handling segmented orders where the originating brokers made the certification under proposed Rule 615(c)(1)(iii).

[664] *See supra* section VII.B.2.a for further discussion of broker-dealer routing and market access.

[665] The Commission estimates that 182 retail brokers (157 originating brokers and 25 routing brokers) would be able to route orders to qualified auctions. *See supra* note 286 and accompanying text.

[666] *See supra* section VII.C.3.a.ii for a discussion of how Proposed Rule 615 would increase competition among wholesalers, ATSs, and exchanges in attracting and executing order flow of individual investors.

[667] This would be the case unless the wholesaler internalized the order under one of exceptions, such as executing it at the midpoint. If the wholesaler chose to internalize individual investor orders at midpoint, the marginal profit earned from supplying liquidity, represented by the wholesaler's realized spread, would be reduced. Currently, wholesalers have an average realized spread of 0.72 (*see* Table 6). Midpoint execution, by definition, generates, at best, a zero realized spread, assuming no adverse price impact. While the broker-dealer may have other incentives to execute a trade with a negative realized spread, such as reducing inventory risk or as part of a hedging strategy, all else equal, a positive realized spread would always be preferable.

[668] *See supra* section VII.B.5.c.

[669] *See supra* Table 16 and corresponding discussion for an analysis of the rate of PFOF across retail brokers.

[670] *See supra* note 477.

[671] *See* discussion in *supra* section VI.C.3. The Commission's estimate is based on the number of broker-dealers that are believed to have sufficiently large number of informed traders.

[672] *See supra* section VI.D.3.

that are exposed in a qualified auction.[673]

The Proposal might decrease the overall efficiency of wholesaler operations, although this effect is likely to be minimal. The success of wholesalers typically relies in part on significant investment spending on high frequency trading technology. It also relies on firm-specific expertise that has been cultivated over time on how to most effectively utilize this technology. However, if increased competition due to a mandated qualified auction system reduces the volume and/or profit margins of wholesalers, it is conceivable that one or more wholesalers might exit the business of handling and internalizing individual investor orders.[674]

Assuming that the market power of the industry's most active wholesalers is at least partially (if not primarily) due to the particular efficiencies that these firms provide, the possibility of exit by one of these firms perhaps poses a risk of overall diminished efficiency. However, remaining wholesalers (or, alternatively, other executing brokers or OTC market makers) should be able to provide the routing and execution services to the customers of the exiting wholesaler. In fact, Rule 606 reports reveal that broker-dealers currently route to multiple wholesalers and do not restrict their routing to a single wholesaler. Moreover, the Commission's view is that all current wholesalers would likely remain operating, albeit possibly with reduced profit margins. Net profit margins among wholesalers are fairly high, averaging 39.9% in Q1 2022, compared to 19.9% for the broker-dealer industry as a whole.[675] Finally, the Commission believes that retail brokers would be able to shift their orders towards other wholesalers without much difficulty in the event that any wholesalers chose to exit the business. In fact, retail brokers regularly re-assess whether their current allocation of trading interest to liquidity providers, including wholesalers, exchanges, and ATSs, is optimal. As a result, the Commission does not expect the Proposal to have a significant adverse effect on the overall efficiency of wholesaler operations.

Additionally, the Proposal might reduce the efficiency with which marketable individual investor orders are executed, but these effects would likely be minimal. The proposed requirement that wholesalers expose marketable orders of individual investors to qualified auctions might reduce the efficiency with which these orders are filled because the trade execution would become less streamlined as a new layer of intermediation would be added to the lifecycle of each trade. Even in cases where originating brokers would route customer orders directly to qualified auctions, this process could be more complex or time-consuming for retail brokers than routing order flow to wholesalers that manage routing, market access and execution services.[676] Any additional complexity or reduction in the speed of execution would tend to reduce the efficiency of order executions. However, the duration of the qualified auction would be less than or equal to 300 milliseconds,[677] and the process would be automated, both of which would serve to limit the complexity and duration of the qualified auction. Therefore, the Commission believes that the overall efficiency with which marketable orders of individual investors are executed would not be significantly affected by the Proposal.

5. Capital Formation

The Commission believes that the improvements in execution quality for individual investors and other market participants[678] as well as improvements in price efficiency[679] that might result from the Proposal would potentially promote capital formation.

As investors would benefit from improved execution quality as a result of the proposed amendments, these investors would also likely benefit from lower transaction costs. Higher transaction costs may hinder customers' trading activity that would support efficient adjustment of prices and, as a result, may limit prices' ability to reflect fundamental values. Less efficient prices may result in some firms experiencing a cost of capital that is higher than if their prices fully reflected underlying values, and in other firms experiencing a cost of capital that is lower than if their prices accurately reflected their underlying value, as a result of the market's incomplete information about the value of the issuer. This, in turn, may limit efficient allocation of capital and capital formation. By improving order execution quality and reducing transaction costs, the proposed amendments would reduce financial frictions and promote investor's ability to trade. Furthermore, improvements in price efficiency as a result of the Proposal would cause firms' prices to more accurately reflect their underlying values, which may also improve capital allocation and promote capital formation.

D. Reasonable Alternatives

A central aim of Proposed Rule 615 is to retain the benefits of segmenting individual investor orders. A second concern that this proposal addresses involves the nature of the information transmitted to the market by the originating broker. The first type of reasonable alternatives discussed below varies by who can segment, the degree of segmentation, and whether prescriptive changes to routing practices are required. The discussion addresses these questions with options that vary along degrees of prescriptive rules, versus relying on market incentives alone. The Commission also considered additional types of alternatives, namely: (1) alternative definitions of segmented orders, (2) alternative auction designs, including the degree to which auction design is set by rules or determined by open competition centers, (3) alternative exceptions to the order competition requirement, and (4) variation in the definition of open competition center. Finally, the Commission also considered alternatives such as mandating information barriers within wholesaler business functions, allowing exchanges to display quotes in retail liquidity programs, and a separate retail NBBO as well as a disclosure-only alternative. These alternatives could be used together or in combination with each other and could also be paired with other elements of the Proposal. Where applicable the Commission has

[673] *See supra* section VII.C.1.d for further discussion of how the Proposal would increase pre-trade transparency and price efficiency.

[674] Wholesalers also have other business lines. While a wholesaler might stop handling and internalizing individual investor orders, it is possible that the wholesaler may continue to supply liquidity to individual orders through qualified auctions if one of its other business lines, such as an exchange market maker or proprietary trading desk, bids in qualified auctions.

[675] Profit margin data are calculated using FOCUS data, and calculated as [(total revenue − total expenses)/(total revenue)] × 100. *See supra* Table 16 for the share of revenue stemming from PFOF for NMS stock orders across PFOF brokers. The two largest wholesalers in terms of volume earned 44% and 41% profit margins, respectively.

[676] This is assuming that the wholesalers internalize the routed orders. For those individual investor orders that are re-routed by wholesalers, it is possible that directly routing orders to qualified auctions may reduce complexity and time-to-execution for retail brokers.

[677] More specifically, once the proposed qualified auction receives the order and sends out the auction message, the duration of the auction is 100 to 300 milliseconds.

[678] *See supra* section VII.C.1.b for a discussion of how the Proposal would improve execution quality for individual investors and *supra* section VII.C.1.c for how the Proposal would improve execution quality for other market participants, including institutional investors.

[679] *See supra* section VII.C.1.d for further discussion of how the Proposal would increase pre-trade transparency and price efficiency.

specified which alternatives would likely be paired together when considering the economic impact of the alternative.

1. Variation in Provisions Regarding Segmentation and Routing

a. Trade-at Requirement

The first alternative to the Proposal is that the Commission could introduce a trade-at prohibition as part of Regulation NMS. A trade-at prohibition would: (1) prevent a trading center that was not quoting from price-matching protected quotations and (2) permit a trading center that was quoting at a protected quotation to execute orders at that level, but only up to the amount of its displayed size. Orders would not be able to be executed at a trading center not displaying a quote unless the orders were executed with at least a minimum amount of price improvement as established by the Commission. There could be exceptions for trades at the NBBO midpoint or trades based on a reference price, such as VWAP trades. This would mean that any trading center not displaying a quote, including ATSs and wholesalers, could not execute a trade unless it offered at least the minimum amount of price improvement over the NBBO. Exchanges would still be able to offer separate RLP programs in order to segment the marketable orders of individual investors. However, because quotes in RLPs would not be displayed, quotes in RLPs would also be restricted from executing orders unless they offered the minimum amount of price improvement over the NBBO.[680]

The Commission could establish a low value for the minimum amount of price improvement of 0.1 cent. It could alternatively establish higher values for a minimum amount of price improvement ranging up to a full tick size (*i.e.,* 1 cent), with exceptions for midpoint executions.[681] If the Commission chose a higher value for the minimum amount of price improvement, then the economic effects of this alternative would be larger (*i.e.,* a greater increase in displayed liquidity, a greater share of orders being routed to exchanges, etc.).

A number of markets have examined the effects of a trade-at rule. Studies have examined the introduction of a trade-at prohibition in Canada and Australia. In Canada, results indicate that dark trading declined and trading on lit venues increased when the trade-at prohibition was imposed.[682] There were not significant changes in overall spreads or volatility. Displayed depth increased, but total market depth, *i.e.,* hidden plus displayed depth, did not change.[683] Some measures showed a decline in price efficiency.[684] Empirical research has also looked at differences in trader-types and found that the trade-at prohibition eliminated intermediation of individual investor orders in dark venues and shifted individual investor orders onto the lit market with the lowest trading fee.[685] Findings indicate that this resulted in individual investors receiving less price improvement, retail brokers paying higher trading fees to exchanges, and high-frequency traders earning higher revenues from trading fees.[686] Using Australian market data, researchers found that a trade-at prohibition decreased off-exchange trading and internalization, with more off-exchange trades executing at the midpoint.[687] They also found that the trade-at prohibition increased quoted spreads.[688] However, because these countries had different market structures than the U.S. market in NMS stocks (*e.g.,* less fragmentation and less trading occurring off-exchange) the effects observed from the trade-at-prohibitions in these studies may not be similar if a trade-at-prohibition were applied to NMS stocks in the US.

The U.S. Tick Size Pilot in NMS stocks imposed a trade-at requirement for one of the test groups (Test Group 3), although there were a number of exceptions, including for individual investor orders.[689] One academic paper that examined the effects of the Tick Size Pilot, including the effects of the trade-at prohibition,[690] found that the effects of the trade-at prohibition varied based on whether the stock was tick-constrained or unconstrained.[691] The authors generally found that in tick-constrained stocks the trade-at prohibition decreased quoted and effective spreads, increased displayed depth at the NBBO, and increased trading volume. In contrast, unconstrained stocks did not experience significant changes in spreads or displayed depth and experienced a decrease in trading volume. Both tick-constrained and unconstrained stocks experienced an increase in quote volatility and a decrease in average trade size. Other empirical research indicates that the trade-at prohibition reduced the volume of trading off-exchange, with more trading occurring

[680] If this alternative were combined with the alternative to allow exchanges to display quotes in RLPs, then displayed quotes in RLPs would be able to execute at NBBO without offering price improvement.

[681] The Commission also is proposing to amend Rule 612 regarding the tick size. *See* Minimum Pricing Increments Proposal, *supra* note 98. The Commission encourages commenters to review that proposal to determine whether it might affect their comments on this proposing release.

[682] *See* Baiju Devani, Lisa Anderson & Yifan Zhang, Inv. Indus. Regulatory Org. Can., *Impact of the Dark Rule Amendments* (May 7, 2015), *available at https://paperzz.com/doc/8507782/impact-of-the-dark-rule-amendments.*

[683] *Id.*

[684] *Id.*

[685] *See* Carole Comerton-Forde, Katya Malinova & Andreas Park, *Regulating Dark Trading: Order Flow Segmentation and Market Quality,* 130 J. Fin. Econ. 347 (2018).

[686] *Id.*

[687] *See* CFA Inst., *Trade Rules in Australia and Canada: A Mixed Bag for Investors* (Nov. 2014), *available at https://www.cfainstitute.org/-/media/documents/issue-brief/policy-brief-trade-at-rules.ashx.*

[688] *Id.*

[689] The Tick Size Pilot Program was an NMS plan designed to allow the Commission, market participants, and the public to study and assess the impact of wider minimum quoting and trading increments—or tick sizes—on the liquidity and trading of the common stocks of certain small-capitalization companies. The Tick Size Pilot began in Oct. 2016 and ended in Sept. 2018. The Tick Size Pilot included NMS common stocks that had a market capitalization of $3.0 billion or less, a closing price of at least $2.00, and a consolidated average daily volume of one million shares or less (''Pilot Securities''). The Pilot Securities were divided into one control group and three test groups. Each test group contained approximately 400 Pilot Securities and the remaining Pilot Securities were in the control group. The Pilot Securities assigned to Test Group One (''TG1'') were quoted in $0.05 per share increments but continued to trade at the current price increments, subject to limited exceptions. The Pilot Securities assigned to Test Group Two (''TG2'') were quoted in $0.05 per share increments like those in TG1, but were traded in $0.05 per share increments, subject to certain exceptions, including exceptions that permit executions that were the (1) midpoint between the national or protected best bid and the national or best protected offer, (2) retail investor orders with price improvement of at least $0.005 per share, and (3) negotiated trades. The Pilot Securities assigned to Test Group Three (''TG3'') were quoted in $0.05 per share increments and traded in $0.05 per share increments consistent with TG2. TG3 Pilot Securities were also subject to a Trade-at Prohibition, which generally prevented price matching by a trading center that was not displaying the best price unless an exception applied. The Trade-at Prohibition had exceptions that were similar to those provided in Rule 611 of Regulation NMS. Pilot Securities in the control group continued to quote and trade at the current tick size increment of $0.01 per share. *See* Order Approving the National Market System Plan to Implement a Tick Size Pilot Program, Securities Exchange Act Release No. 74892 (May 6, 2013), 80 FR 27541.

[690] *See* Barbara Rindi & Ingrid M. Werner, *U.S. Tick Size Pilot* (Fisher Coll. Bus. Working Paper No. 2017–03–018, Charles A. Dice Ctr. Working Paper No. 2017–18, last revised Mar. 17, 2019), *available at https://ssrn.com/abstract=3041644* (retrieved from Elsevier database) (hereinafter ''Rindi and Werner (2019)'').

[691] Rindi and Werner (2019) defined tick-constrained as a stock having an average quoted spread of five cents or less during the time period before the Tick Size Pilot was implemented. They define an unconstrained stock as one having an average quoted spread of 10 cents or greater during the time period before the Tick Size Pilot was implemented.

on inverted exchanges (*i.e.,* those exchanges that pay a rebate for demanding liquidity and charge a fee for supplying liquidity).[692] However, the results observed from the trade-at-prohibition in the Tick Size Pilot may not be similar if a trade-at-prohibition were applied to all stocks, because the Tick Size Pilot was limited to stocks with smaller market capitalizations and also involved a simultaneous increase in the tick size to five cents.[693]

Overall, the Commission believes that a trade-at prohibition would result in more orders being routed from ATSs to exchanges and an increase in displayed depth on the LOB compared to the Proposal.[694] However, it is uncertain to what degree total depth would increase because the increase in displayed depth could mostly come from market participants choosing to display orders they currently hide on LOBs. If most of the increase in displayed depth came from market participants choosing to display orders they currently hide, then total depth in the LOB (*i.e.,* hidden plus displayed depth) under this alternative may be similar to total depth in the LOB under the Proposal. However, LOB depth may increase if OTC market makers that currently internalize trades off-exchange increased their liquidity supplied to the LOB in order to be able to trade without offering the minimum amount of price improvement.[695] There is also uncertainty about what would happen to spreads under this alternative. Based on the evidence from implementing a trade-at rule in other countries, spreads (both quoted and effective) may not significantly change compared to the Proposal. However, it is also possible that quoted and effective spreads could decline on exchanges if more orders from individual investors are routed for execution to exchange LOBs.[696] More trading volume (including more orders from institutional investors) may also shift from ATSs to exchanges because the trade-at rule may prevent ATSs not displaying quotes from executing a trade unless they provide a minimum amount of price improvement to the NBBO.[697] This shift in order flow from ATSs to exchanges could increase transparency and may further lower spreads, increase liquidity, and improve price efficiency relative to the Proposal.

Under this alternative, wholesalers would likely internalize more individual investor marketable orders compared to the Proposal. However, the threshold the Commission selects for the minimum amount of price improvement would affect to what degree wholesalers internalize the marketable orders of individual investors.[698] If the Commission selected a smaller threshold, *e.g.,* a threshold of 0.1 cents or 0.2 cents, then this would result in more marketable orders of individual investors being internalized by wholesalers.[699] Because these orders would not be exposed to order-by-order competition when they are internalized by wholesalers, the average price improvement individual investors receive on their marketable orders would likely be reduced, and the transaction costs of these orders would be higher, relative to the Proposal.

Under this alternative, broker-dealers and trading centers would not have the costs associated with identifying and handling segmented orders, but they would have additional costs associated with developing policies and procedures and adjusting their systems to implement the trade-at requirements.

b. Permit Exchanges To Offer Auctions in Smaller Pricing Increments

As an alternative to mandating segmented orders be routed to qualified auctions, the Commission could allow exchanges to run auctions with 0.1 cent pricing increments that the orders of all market participants would be eligible to trade in.[700] Exchanges would be able to run separate auctions for their RLPs and for orders that were not eligible to be submitted to their RLPs, which would allow exchanges to maintain some degree of segmentation (alternatively, the Commission could permit a greater degree of segmentation as in the alternative below). This less prescriptive alternative would allow exchanges to offer sub-penny price improvement to a wider set of market participants outside of their RLP programs. As in the trade-at alternative considered above, it would maintain the current separation between how market entities are allowed to segment orders, and the relative anonymity of orders on exchange. By not contributing to further segmentation of orders, relative to the Proposal, this alternative might lower the cost for trading for investors currently identified as having order flow with greater price impact. Because broker-dealers and trading centers would not have to establish policies and procedures for identifying and handling segmented orders, this alternative would have significantly lower costs than the Proposal. However, it offers no clear mechanism for creating significantly greater competition for segmented orders, nor in improving execution quality for segmented orders as defined in the Proposal.

c. Trade-at Requirement for Segmented Orders Only

As a variation on the Trade-at Requirement alternative discussed above, the Commission could only establish a trade-at requirement for segmented orders, as defined by the Proposal or in combination with an alternative definition of segmented

[692] *See* Carol Comerton-Forde, Vincent Grégoire & Zhuo Zhong, *Inverted Fee Structures, Tick Size, and Market Quality,* 134 J. Fin. Econ.141 (2019).

[693] Additionally, a number of exceptions applied to the Tick Size Pilot trade-at prohibition, including an exception for retail orders.

[694] This may help reverse a decline in pre-trade transparency. Market participants have stated that liquidity displayed at or near the NBBO on exchanges has declined over time. An analysis by an exchange separately finds off-exchange trading has also increased over a similar time period. *See supra* notes 375 and 376 and accompanying text.

[695] If the minimum pricing increment were larger, then OTC market makers may submit more liquidity to a LOB.

[696] Because individual investor orders exhibit lower adverse selection risk, the average adverse selection risk faced by liquidity suppliers on exchanges could decrease, which may cause them to quote at more aggressive prices, resulting in a reduction in quoted and effective spreads. *See* Glosten and Milgrom (1985) for a discussion of how adverse selection risk affects quoted spreads. However it is also possible that this effect may be limited if tighter quoted spreads also cause market participants that pose greater adverse selection risk to increase their liquidity demanding orders, which could potentially increase the adverse selection risk faced by liquidity suppliers on exchange LOBs.

[697] The shift in volume from ATSs to exchanges would be greater if the Commission set a larger threshold for the minimum amount of price improvement needed to execute the order.

[698] This effect would also vary based on the quoted spread of the stock. For stocks with quoted spreads above two cents, even if the minimum threshold price improvement threshold was set at a full tick, wholesalers would likely internalize more order flow compared to the Proposal because they would have had to offer more than 1 cent of price improvement in order to internalize individual investor orders at the midpoint without having to expose them in qualified auctions. If the Commission selected a minimum price improvement threshold of a full tick, then stocks with quoted spreads less than two cents may have wholesalers internalize less individual investor orders under this alternative compared to the Proposal. These effects would vary if the minimum tick size for a stock was different. The Commission also is proposing to amend Rule 612 regarding the minimum tick size. *See* Minimum Pricing Increments Proposal, *supra* note 98. The Commission encourages commenters to review that proposal to determine whether it might affect their comments on this proposing release.

[699] The proportion of individual investor order flow internalized by wholesalers would decline as the threshold for the minimum amount of price improvement increases, because wholesalers would have to offer more price improvement to internalize these orders.

[700] Currently, exchanges are able to offer smaller pricing increments in their RLPs, but Rule 612 still applies to other auctions that they run (*e.g.,* open and closing auctions and auctions following a trading halt). This alternative would allow exchanges to offer smaller pricing increments for these other auctions.

orders as discussed below. This alternative would limit both the potential positive and negative effects of the Trade-at alternative because it would apply to a smaller set of orders. Relative to the two alternatives above, it would maintain the definition of segmented orders, thereby still contributing to the complexity that these two alternatives seek to avoid. However, like the Proposal, it would potentially expose segmented orders to order-by-order competition. The degree of this competition would depend on the minimum price improvement threshold selected because a higher threshold would result in less internalization and more routing of orders to exchanges, where they would be exposed to order-by-order competition. It would also depend on whether these orders were revealed to be segmented orders—given a flag, or sent to an existing RLP program—and whether they also identify the originating broker. The less information, the lower the degree of segmentation, which may help liquidity in general and segmented orders presenting more adverse selection risk, but might limit the ability for segmented orders presenting less adverse selection risk to gain price improvement. Unlike the Trade-at Requirement alternative discussed above, this alternative is explicitly compatible with the provision in the Proposal to prevent a routing broker to post a quote in a way that has priority, thereby potentially lessening the information asymmetry and increasing competition if it works as intended.

d. Create a Segmented Order Definition but Not Require Segmented Orders To Be Exposed in Qualified Auctions

As an alternative, the Commission could introduce the proposed definition of a segmented order and permit exchanges to offer separate auction mechanisms for segmented orders with finer trading increments, but not introduce a requirement for segmented orders to be exposed in these auctions. There would be no minimum trading volume requirement in order for exchanges to be able to run these segmented auctions and exchanges would have greater flexibility in designing these auctions, similar to the alternative discussed in section VII.D.3.a below. Similar to the Proposal, this alternative would introduce the definition of segmented orders and with it the additional complexity. Relative to the Proposal, it contains no prescriptive requirements for auctions, and thus may have lower costs for implementing them, similar to the alternative in section VII.D.1.b. Because more exchanges would be able to offer segmented auctions, there may be greater competition among market centers that are able to offer segmented auctions compared to the Proposal.

e. Continue To Permit National Securities Exchanges To Offer Separate Trading Mechanisms for Segmented Orders in Addition to Qualified Auctions

As an alternative, the Commission could allow national securities exchanges to offer separate trading mechanisms for segmented orders in addition to qualified auctions, such as allowing exchanges to continue to operate RLPs. In addition to being able to submit a segmented order to an exchange LOB or a qualified auction, broker-dealers could also submit a segmented order to execute in other exchange trading mechanisms designed for segmented orders.[701] Separate trading mechanisms for segmented orders could also be priced in 0.1 cents increments, but, similar to current market practices, quotes in exchange RLP programs would not be displayed in exchange proprietary feeds or consolidated market data.[702]

Compared to the Proposal, this alternative might improve competition among exchanges, and improve the competitive position of lower-volume exchanges, because they would be allowed to offer trading mechanisms for segmented orders even if they fell below the 1% average daily volume requirement necessary to run a qualified auction. This might result in less trading volume in segmented orders concentrating on larger exchanges, which could reduce the risk that one or more small exchanges might exit the market. It would also improve the ability of market participants that might not possess the speed necessary to respond to qualified auction messages, *e.g.,* individual investors or professional traders that do not utilize algorithmic trading technology, to compete to supply liquidity to segmented orders. There may be more methods available for them to supply liquidity to segmented orders that do not require the speed necessary to respond to qualified auction messages, such as posting quotes in exchange RLP programs.[703]

However, compared to the Proposal, this alternative may increase the ability of wholesalers or other broker-dealers handling segmented orders to indirectly internalize an order by executing it against a quote they are posting in another trading mechanism for segmented orders, such as an RLP program. In these other trading mechanisms, the broker-dealer may maintain a larger information advantage than it would have with qualified auctions, because these other trading mechanisms may not require identity disclosure of the originating retail-broker. However, since qualified auctions would still be available and there may be additional competition from liquidity on smaller exchanges, the average price improvement and trading costs for marketable orders of individual investors may not be significantly different under this alternative compared to the Proposal.

This alternative could also allow quotes in RLPs to be displayed in proprietary feeds and in consolidated market data. This would potentially increase the transparency of liquidity available to segmented orders and may further improve their order routing and execution quality compared to not displaying RLP quotes under this alternative. Displaying quotes in RLP programs may also further enhance the competitive position of smaller exchanges and new exchanges that enter the market that do not meet the criteria for an open competition trading center but may operate an RLP. Displaying exchange RLP quotes would provide more transparency into the liquidity available to the orders of individual investors on these exchanges, which might result in more individual investor orders being routed to these exchanges when the prices of displayed quotes are equal to or better than the expected execution prices individual investor orders may expect to receive in qualified auctions (*e.g.,* if the RLP is posting a quote at the NBBO midpoint).

[701] Exchanges could either adjust the definitions of orders they accepted to their RLPs to conform with the definition of segmented orders or they could allow a broader set of individual investor orders of which segmented orders would be a subset.

[702] A flag would still be disseminated next to an exchange quote in consolidated market data indicating that there was liquidity present in an exchange's RLP program at a price better than the NBBO.

[703] If an exchange operated both a qualified auction and an RLP program, liquidity supplying orders submitted to the exchange's RLP program could be incorporated into qualified auctions. Because they could submit resting orders to RLP programs, liquidity suppliers that were not fast enough to submit bids in qualified auctions would still be able to submit an order in 0.1 cent pricing increments that would only supply liquidity to a segmented order. However, they may not be able to factor in information on the originating broker submitting the segmented order into the liquidity supplying orders they submit to qualified auctions.

2. Alternate Definitions of Segmented Orders

a. Current Market Practice as a Definition of Segmented Order

The Commission understands that current market practices concerning definitions of retail orders often relies on brokers representing retail flow as coming from natural persons.[704] In addition, a number of SRO rules prohibit the use of trading algorithms or computerized technology for the eligibility of retail orders for their RLP programs.[705] As an alternative to the proposed definition of segmented order, the Commission could adopt a definition of segmented order that consisted of these two elements, *i.e.,* the order must be submitted by a natural person and does not originate from a trading algorithm or any other computerized methodology,[706] but without any thresholds based on the number of trades executed or orders submitted by the account.

Compared to the Proposal, this could result in fewer orders meeting the definition of a segmented order. Although a small number of additional individual investor accounts would now meet the definition of segmented order because there would be no minimum trade threshold,[707] a number of orders that previously would have been included under the Proposal could be excluded because they originate from a trading algorithm or any other computerized methodology.[708] The Commission does not have data on how many retail orders originate from trading algorithms or any other computerized methodology, but the Commission understands that a number of retail brokers allow individual investors to trade through APIs and that a number of retail brokers may use trading algorithms to generate orders for individual accounts.[709] To the extent that orders originating from a trading algorithm or computerized methodology have larger adverse selection risk than other orders originating from individual investors that met the definition of a segmented order, then the adverse selection risk of segmented orders in qualified auctions may decrease and liquidity suppliers might offer slightly greater price improvement to segmented orders in qualified auctions under this alternative compared to the Proposal. The costs to originating brokers for identifying segmented orders under this alternative may be similar to the Proposal.[710]

b. Use a Quantitative Threshold Other Than Trades To Identify Segmented Orders

Rather than using average number of trades, the Commission could rely on an alternative metric, such as average number of orders submitted by an individual investor's account to identify the threshold for the definition of segmented orders. The Commission understands that some exchanges in the options market have designed definitions of retail orders that rely on a criteria based on the average number of orders an account originates per day, as opposed to the average number of trades.[711]

The economic effects of using an average order threshold would largely depend on the threshold selected. If the Commission selected an average order threshold that corresponded to a similar percentage of accounts being excluded as the proposed trade threshold, *i.e.,* if the Commission selected an average orders per day cutoff so that 99.9% of individual investor accounts were below the threshold, then the economic effects of this alternative would likely be similar to those described in the Proposal. If the Commission varied the threshold, then the economic effects would likely be similar to the effects of varying the average trade threshold discussed below in section VII.D.2.c. Similar to the Proposal, originating brokers would have to develop systems to identify individual investor accounts that meet definition of a segmented order. However, these costs may be higher if it is more difficult for an originating broker to develop systems that track the average number of orders that originate from a customer's account compared to the number of trades.

c. Vary the Daily Trade Threshold of Individual Investors Covered by the Proposal

The Commission could adopt alternative definitions of a segmented order by varying the threshold for the average daily number of trades in NMS stocks that a natural person or group of related family members would need to be under in order for their orders to qualify as segmented orders, including not having a maximum number of trades per day threshold.[712]

Table 22 estimates the distribution of the average daily number of orders that an individual investor's account originates and results in a trade (conditional on the individual investor submitting an order during the observation period). The analysis shows that 99.9% of individual investor accounts average 14.3 or fewer orders that result in a trade each day and that 99% of individual investor accounts average 1.86 or fewer orders that result in a trade each day.

[704] *See supra* notes 188, 189, and 190 and related discussions (discussing natural person in context of definitions of retail orders).

[705] *See supra* note 193 (discussing restrictions on retail orders originating from a trading algorithm).

[706] Similar to the proposed definition 600(b)(91)(i), the order could originate from a natural person or an account held in legal form on behalf of a natural person or group of related family members.

[707] *See* analysis and discussion of the distribution of individual investors' average daily number of orders resulting in a trade in *infra* Table 22.

[708] It is also possible that the orders from individual investor accounts that average 40 or more trades a day could also be excluded under this alternative if the orders originate from a trading algorithm or any other computerized methodology.

[709] For example, if a retail broker has automated methods for rebalancing an individual investor's account, it may generate orders using a trading algorithm.

[710] Although originating brokers may not need to keep track of the average number of trades each individual investor account executes under this alternative, they would need to have systems to track if an order submitted by an account originated from a trading algorithm or computerized methodology.

[711] *See supra* note 197 for a discussion of how the average number of orders submitted per day from a customer's account is included in the definition of a ''Professional'' order.

[712] If there were no trade threshold, then the segmented order definition would be similar to the criteria that some exchanges use to determine which investor orders are eligible to execute in their RLP programs. Although some exchanges also have criteria using the average number of orders submitted by the natural person as a threshold for determining which orders are eligible to be submitted to their RLP programs. *See supra* note 188 and accompanying text for discussions of the orders that are eligible to be submitted to RLPs.

TABLE 22—DISTRIBUTION OF INDIVIDUAL INVESTORS' AVERAGE DAILY NUMBER OF ORDERS RESULTING IN A TRADE

Mean	Std	Min	25%	50%	75%	99%	99.9%	99.99%	99.999%	Max
0.20	118.74	0.00	0.01	0.02	0.06	1.86	14.30	83.92	318.83	667,289.34

This table uses CAT data to estimate the distribution of the average daily number of orders that an individual investor's account originates and are associated with a trade. This is estimated from CAT identified Individual Customer accounts that originated an order during the six month period from Jan. 1, 2022, through June 30, 2022. Because this analysis only includes Individual Customer Accounts that originated an order during this time period, it may overestimate the value at a given percentile because accounts originating zero orders are not included in the distribution. *See supra* note 194 for additional details on the analysis.

If the average trade threshold were lowered, fewer individual investors would meet the definition of a segmented order and be eligible to have their orders be routed to qualified auctions. Individual investors that no longer met the definition of segmented orders would experience lower execution quality than under the Proposal because their orders would not be eligible to be segmented and participate in qualified auctions. Instead, these orders would likely either be internalized by wholesalers without being subject to order by order competition if they have lower adverse selection risk or routed and executed on an exchange LOB or ATS if wholesalers don't want to internalize them. If these orders have larger adverse selection risk than the average orders of individual investors that fall below the average trade threshold, then the average adverse selection risk of segmented orders in qualified auctions may decrease and liquidity suppliers might offer slightly greater price improvement to segmented orders in qualified auctions under this alternative compared to the Proposal. However, as long as the average trade threshold remained above 15 trades per day, then the effects of this alternative may not be that significant, because it would affect less than 0.1% of individual investors.

If the average trade threshold were increased or eliminated, then orders of more individual investors would be included in qualified auctions. However, the proportion of individual investors that meet the definition of segmented orders under this alternative, but do not under the Proposal would be small because more than 99.9% of individual customer accounts average less than 40 trades per day. The marketable orders of individual investors that average more than 40 trades per day and meet the definition of segmented order under this alternative may receive more price improvement and lower transaction costs compared to the Proposal because their orders would now be eligible to be included in qualified auctions. However, the orders of these individual investors that trade more frequently may have greater adverse selection risk compared to orders from individual investors that trade less frequently. Compared to the Proposal, this may result in the average adverse selection risk increasing in qualified auctions and liquidity suppliers bidding in auctions may offer less price improvement on average. This would result in the orders of individual investors that average less than 40 trades per day receiving less price improvement on their marketable orders and paying higher transactions costs than they would under the Proposal. This would effectively result in a transfer from individual investors that average less than 40 trades per day to the ones that average more than 40 trades per day. Institutional investors may also see increased transactions costs compared to the Proposal because they may be more likely to supply liquidity to individual investors with higher adverse selection risk. However, if individual investors with more than 40 trades per day are limited to a few broker-dealers, then the potential disclosure of the originating broker in qualified auctions may limit the effect to these broker-dealers.

3. Variation in Auction Design

a. Allow Open Competition Trading Centers More Flexibility in Designing Qualified Auctions

As one alternative, the Commission could allow open competition trading centers more flexibility in designing qualified auctions. This would include allowing open competition trading centers more flexibility in setting matching protocols, priority structure, auction duration, disclosure of the identity of the originating broker, and auction fees and rebates. However, the Commission could still specify a minimum auction duration (open competition centers could choose greater times). The Commission could also still specify that execution priority shall not be based on time of receipt of the auction response (otherwise, it is not clear how an auction might differ significantly from the limit order book).

Compared to the Proposal, this alternative could lead to greater innovation in the design of qualified auctions and foster greater competition among open competition trading centers that run qualified auctions. However, it could also lead to the design of qualified auctions with mechanisms that could provide a greater advantage to certain liquidity suppliers, which could result in less competition among liquidity suppliers, and reduced benefits that come from it, including less improvement in individual investor and institutional investor execution quality compared to the Proposal.

Allowing more flexibility in the design of qualified auctions could enhance innovation compared to the Proposal by allowing open competition trading centers to incorporate auction features that better fit the needs of different market participants, which in turn could improve order execution quality for some market participants compared to the Proposal. More flexibility in the design of qualified auctions could also promote further competition among open competition trading centers and lead to greater differentiation among qualified auction mechanisms in order to attract segmented orders and liquidity suppliers. It could also lead to more open market trading centers operating qualified auctions, since an exchange group might be more likely to operate multiple qualified auctions if it has the flexibility to implement different designs at different exchanges. This, however, could result in greater fragmentation of individual investor order flow and liquidity supply across qualified auctions compared to the Proposal and result in decreased competition among liquidity suppliers to individual qualified auctions and less price improvement for individual investors relative to the Proposal.

Compared to the Proposal, allowing greater flexibility in qualified auction designs could result in some open competition trading centers designing auction mechanisms that provide a greater competitive advantage to some types of bidders over others. For example, an open competition trading center could design an auction that includes an auto-match pricing feature (where the order automatically adjusts

to match the price of the best auction bid), and an allocation guarantee to the participant that initially brought the order to the auction if it provided the best bid. This would provide a competitive advantage to whichever market participant brought the order to the auction and increase the likelihood that it would trade with the individual investor order. This could result in market participants directing individual orders to qualified auctions that offered them a greater competitive advantage, which would result in less competition among market participants to supply liquidity to individual investor orders and worse execution quality for individual investor orders compared to the Proposal.

Additionally, because this alternative would not require qualified auctions to ensure customer priority if multiple bids are at the same price, it could reduce the likelihood of other investors trading directly with individual investor orders compared to the Proposal (*e.g.,* it could increase the chance of broker-dealers bidding in qualified auctions getting priority over institutional orders at the same price compared to the Proposal). This could result in less improvement in the execution quality for the orders of institutional investors compared to the Proposal.[713]

[713] *See supra* section VII.C.1.c discussing improvements in execution quality for institutional investors.

b. Variation in the Duration of Qualified Auctions

As an alternative, the Commission could vary the minimum and maximum durations for the qualified auction, making both larger or smaller. Variations in the duration of qualified auctions results in a trade-off between NBBO slippage and the exposure of the auctioned order flow to potential bidders. Because the NBBO may vary over short time horizons, auctioned orders may become stale or priced outside the NBBO as best quotes move. This effect calls for shorter auction durations. However, longer auction durations provide a longer opportunity, after observing the auction message through the SIP, for other participants to interact with the auctioned order flow, potentially raising the number of bidders in qualified auctions.

The Commission performed analysis to estimate the risk of quote slippage for different auction lengths by observing the likelihood that that the NBBO spread moves (*i.e.,* the ''fading probability'') as the time lag increases (in milliseconds) after internalization of an individual investor order.[714] Research indicates there is a few-millisecond gap between an off-exchange trade and the reporting of that trade to the SIP.[715] Assuming this lag applies to internalized individual investor orders as well, NBBO movements were measured during the initial moments following internalization of an individual investor order. This analysis is performed on 600 randomly selected stocks that are divided into three groups: high, medium, and low activity stocks.[716] The probability of fading is calculated at the stock level as the overall likelihood that the NBO (NBB) will be higher (lower) than the current NBO (NBB) for increasing durations of time after internalization. These probabilities are then averaged across stocks in each of the three groups of stocks. Figure 1 below indicates slippage probabilities for different periods of delay after internalization:[717]

[714] From Daily TAQ's NBBO and Quote files, NBBO updates are constructed based on nanoseconds time-stamps. Each quote update is matched up with the NBBO that is in effect for different durations of time (in milliseconds) after internalization. These durations include 25, 50, 75, 100, 200, 300, and 500 milliseconds.

[715] *See* Thomas Ernst & Chester S. Spratt, *Payment for Order Flow and Asset Choice* (last revised May 16, 2022) (unpublished manuscript), *available at https://ssrn.com/abstract=4056512* (retrieved from Elsevier database).

[716] Six hundred stocks were randomly selected from the population of all NMS common shares and ETFs in Mar. 2022. Three buckets were formed from the population of stocks based on trading volume: top-500 (high activity), 501–1,000 (medium activity), and 1,001–3,000 (low activity). Then 200 stocks were randomly selected from each bucket in a stratified manner, such that the final sample included stocks from all levels of quoted spread.

[717] Filters were used to identify off-exchange transactions (sub-penny trades) that are attributable to individual investors. An algorithm from Boehmer et al., *supra* note 572, was then used to identify buyer vs. seller initiated such trades. *See supra* note 572 for further discussions of this algorithm.

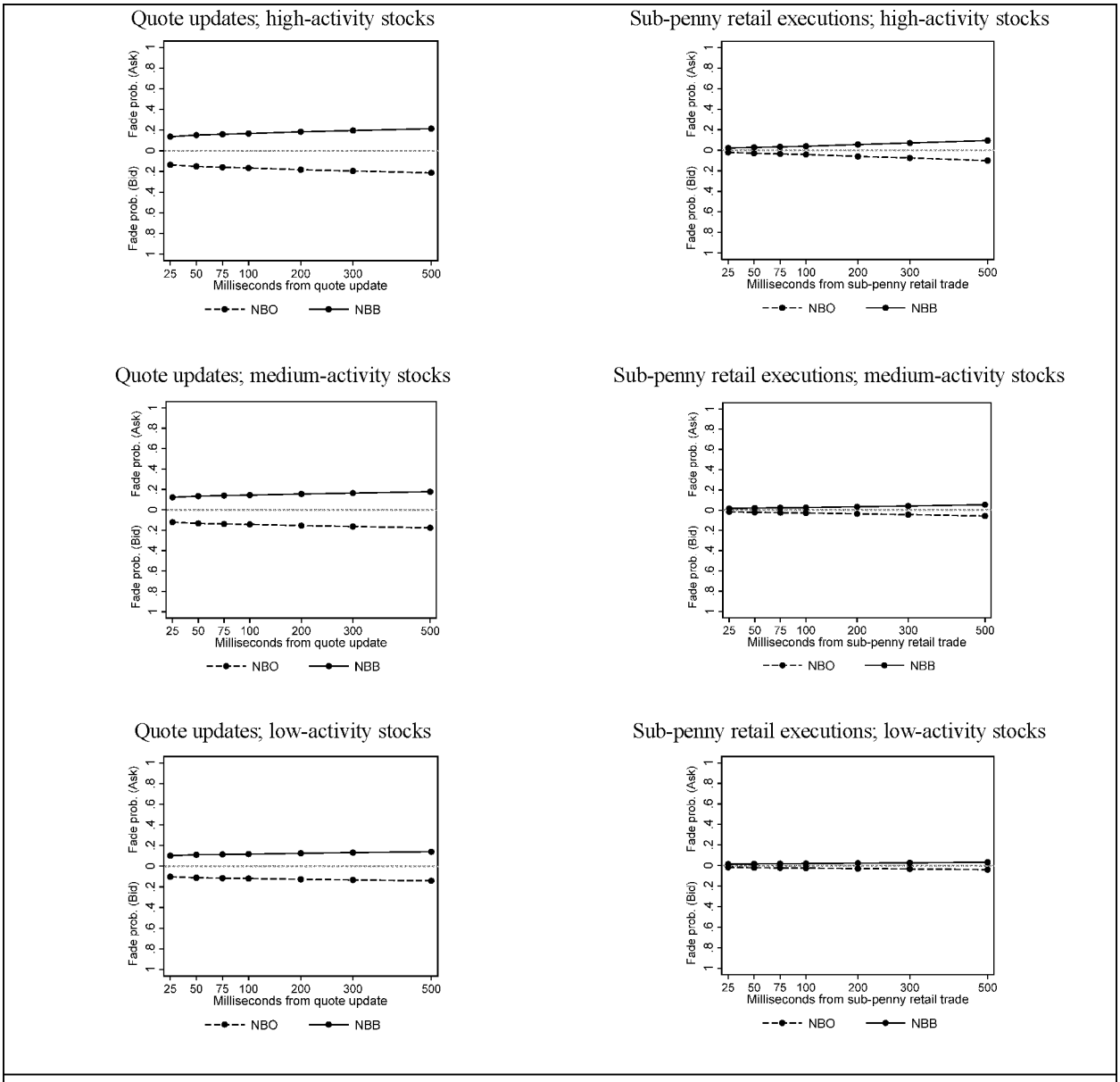

Figure 1: Probability of NBBO Quote Fade following Quote Updates and Sub-Penny Off-Exchange Executions

Probabilities are estimated from NYSE TAQ data in Mar. 2022 for a sample of 600 stocks that were randomly selected from the population of all NMS common shares and ETFs.

Results indicate that the fade probability goes from a cross-stock average of 12% at 25 milliseconds after a quote update, to 14% at 100 milliseconds—an increase of only 2 percentage points. Focusing on individual investor orders, the fade probability goes from an average of 1.7% at 25 milliseconds after an internalized individual investor order, to 2.9% at 100 milliseconds—an increase of only 1.2 percentage points.

These findings suggest that changing qualified auction lengths relative to the proposed 100 milliseconds length would not significantly change the chance of ''adverse'' price movements when an auction message is disseminated. The Commission believes, based on this analysis, that the chance of the quotes moving against the individual investor order does not significantly increase over horizons from 20 milliseconds to 500 milliseconds long. However, the Commission observes that the likelihood of slippage may be greater in volatile markets.

In addition to the low risk of slippage within the Proposal's auction durations, the Commission does not believe that changing the qualified auction length would materially substantially impact the number of potential bidders. Trading algorithms used by most market participants may be fast enough to respond to an auction message in the SIP in 10 milliseconds, so reducing or increasing the auction length from the proposed 100 to 300 millisecond range may not have a significant effect on the number of bidders. The Commission

also observes that, even at 1 second most traders using screens would not be fast enough to participate, limiting the additional market participants that could potentially join the auctions as bidders. However, auctions below 10 milliseconds may prevent some participants that utilize algorithms from responding timely to SIP auction messages. These limitations likely reflect geographical delay in the SIP, which is estimated to be up to one millisecond between trading centers in New York and New Jersey and up four milliseconds from Chicago to New York/New Jersey.[718]

c. Vary the Minimum Pricing Increment in Qualified Auctions

The Proposal sets the minimum pricing increment at 0.10 cents in a qualified auction. As an alternative, the Commission could lower the minimum pricing increment requirement to 0.01 cents in the qualified auctions. Concern about a minimum pricing increment tends to occur around pennying on a limit order book, which economically acts as an erosion of time priority. However, auctions as required do not have time priority, and so this is less of a concern. Lowering the minimum pricing increments would allow bidding at more competitive prices. It could, however, increase the possibility of de minimis price improvement relative to the limit order book. This would drain liquidity from the limit order book with little benefit to investors. Varying the minimum pricing increment could affect the competitiveness among liquidity suppliers in qualified auctions and also the potential price improvement that segmented orders may receive.

d. Qualified Auctions With Liquidity Provider Backstop

As another alternative, the Commission could require qualified auction operators to have a designated liquidity provider (DLP) for each security to serve as a backstop and guarantee execution of a portion of the segmented order at the NBBO if an auction does not produce any bids. For each symbol, the number of shares a DLP would be obligated to guarantee execution for in an order could be set at the minimum of some percentage of the average quoted size at the NBBO or some percentage of the average daily executed share volume, whichever is smaller.[719] In return for the DLP backstopping the qualified auction, if the DLP were tied with other bidders at the best price, the DLP would be given an allocation guarantee of some percentage of the size of the segmented order or the size of their bid, whichever is smaller.[720] If there were multiple bidders besides the DLP at the best price, each liquidity supplying order at the same price level would be assigned a random priority and, after the DLP received its allocation guarantee, any remaining shares would be filled based on the random priority ranking. However, qualified auction features that gave the DLP additional advantages, such as allowing it to automatically match the best price, would not be allowed.

Compared to the Proposal, this alternative would provide more certainty regarding individual investor orders executing in qualified auctions, particularly in less liquid securities where there may be a higher chance that no liquidity suppliers bid in the auctions. This execution certainty would be greater if the DLP's percentage execution guarantee were higher. However, the DLP would also be taking on greater risk, because they might have a larger inventory position, which would put them at greater risk if prices moved against them.

Giving allocation guarantees to DLPs may reduce the incentive for other market participants to compete to supply liquidity to segmented orders compared to the Proposal, because they would be less likely to execute against the segmented order if they submitted an order at the same price as the DLP.[721] The incentives of other market participants to compete to supply liquidity may be reduced more if the percentage of the segmented order the DLP is guaranteed priority to execute (*i.e.,* the DLPs allocation guarantee) is greater.

e. Two-Sided Auctions

Under this alternative, qualified auction messages would not include information on the direction of the segmented order (*i.e.,* whether it was a buy or sell order). Bidders would be able to submit a one sided bid (*i.e.,* a directional bid to either buy or sell) or a two sided bid (*i.e.,* a bid indicating the bidder was willing to both buy and sell).[722]

On the one hand, not disclosing the direction of the segmented order may reduce bidding from some market participants,[723] potentially resulting in less competition to supply liquidity to the segmented order, which may result in segmented orders receiving less price improvement compared to the Proposal. On the other hand, not disclosing the direction of the segmented order may also reduce the risk of information leakage if an institutional investor was bidding in the auction compared to the Proposal, because it would be more difficult to discern the direction of the trade.[724] This could incentivize more bids from institutional investors, which could increase the competition to supply liquidity to segmented orders and potentially provide more improvement in institutional investor execution quality compared to the Proposal.

Not disclosing the direction of the segmented order may also reduce the risk of the NBBO slippage during the qualified auction, *i.e.,* the risk of the NBBO quotes moving against the individual investor order (*e.g.,* the probability of an increase in the NBO for a segmented buy order or a decrease in the NBB for a segmented sell order).[725] Because market participants setting the NBBO quotes would not know the direction of the segmented order, to the extent they would have adjusted their quotes in response to an auction announcement under the Proposal, they may be less likely to adjust their quotes under this alternative.

[718] *See* MDI Adopting Release, *supra* note 81, note 1692 and accompanying text.

[719] For example, the Commission could require the DLP to guarantee execution of a number of shares that would be equal to 25% of the average quoted size at the NBBO in a security or 0.1% of the average daily executed share volume in a security, whichever is smaller.

[720] For example, the Commission could guarantee that a DLP would have priority to execute 25% of the shares in the segmented order if it were tied with other bidders at the same price.

[721] The reduction in incentives to compete to supply liquidity to segmented orders compared to the Proposal may be larger for customer orders, including the orders of institutional investors, because, in addition to the DLP allocation guarantee, the random priority structure would further reduce their chance of executing against an order when their order is tied with others at the same price compared to the Proposal (in which customer orders had priority in the event of a tie).

[722] A two sided bid could be submitted as providing some sort of price improvement over the NBBO. For example, a market participant supplying liquidity in the qualified auction could submit a two-sided response specifying that they were willing to execute the segmented order (*i.e.,* they were willing to both buy and sell to the individual investor) at 0.2 cents better than the NBBO.

[723] For example, not knowing the direction of the segmented order may reduce the willingness of some market participants to cancel a resting order with queue position on another venue and submit it as a bid in the qualified auction because it is more difficult to know if their order was going to execute.

[724] *See supra* section VII.C.2.f for a discussion on the risk of information leakage from institutional investors supplying liquidity in qualified auctions.

[725] *See supra* section VII.C.2.b for a further discussion on individual investor slippage costs in qualified auctions.

f. Alternative Maximum Fee for Auctions

The Proposal imposes a 5 mil access fee cap on executed auction responses and does not allow a fee to be charged for submitting auction responses or the submission or execution of segmented orders. The alternative discussed in section VII.D.3.a allows more flexibility in designing auctions, which could include more flexibility for exchanges to charge greater fees (and offer greater rebates), both from those routing orders to an exchange and from those bidding in an exchange. As exchanges compete to offer auctions, it is possible that access fees would be competed down to levels that make a cap unnecessary. However, because the auctions are required for certain segmented orders prior to internalization, there remains the possibility that this requirement could lead to access fees being set above those that would occur in the absence of such a requirement. Due to this market failure, setting a maximum fee may be necessary. Alternatively the Commission could raise the 5 mil qualified auction access fee cap to, for example, 10 mils, and could allow a capped fee on auction respondents and on those routing segmented orders to qualified auctions. This could raise the access fees charged to auction responses and lower the price improvement received by segmented orders, but it would raise the incentives for exchanges to offer auctions.

g. No Requirement for Customer Priority in Case of Auction Responses at Same Price

The Proposal currently requires qualified auctions to give priority to auction responses for the account of a customer over auction responses for the account of a broker or dealer at the same price. Under this alternative, the Commission could not specify priority rules requiring giving priority to customer auction responses. The Commission could still maintain priority restrictions prohibiting time priority and prohibiting priority rules favoring the broker-dealer that routed the segmented order to the auction, the originating broker for the segmented order, the open competition trading center operating the auction, or any affiliate of the foregoing persons.[726] Additionally, the Commission could also still maintain the proposed priority rules regarding how qualified auctions would interact with the continuous limit order book.[727]

While one of the goals of the Proposal is to promote the NMS objective set forth in section 11A(a)(1)(C)(v) of the Exchange Act and maximize the potential for customer orders to interact with other customer orders,[728] giving priority to customer orders may discourage liquidity provision by broker-dealers in qualified auctions. Compared to the Proposal, this alternative could encourage greater participation by traditional liquidity providers, such as exchange market makers and other OTC dealers, in qualified auctions. However, it might discourage other customers, including institutional investors, from participating in qualified auctions, which may be contrary to one of the goals of the proposal.

h. Do Not Reveal Identity of Originating Broker in Qualified Auction Message

As an alternative, the Commission could not permit the identity of the originating broker to be disclosed in qualified auction messages. If the identity of the originating broker were not revealed to bidders in qualified auctions, then they would need to price their auction responses based on the average adverse selection risk of the segmented orders in the qualified auctions. Relative to the proposal, this has the potential to improve pricing and liquidity for the individual investor orders from retail brokers presenting greater adverse selection risk, thereby increasing incentives for information production and potentially improving price efficiency. However, it may also potentially reduce the price improvement and increase transaction costs for individual investor orders of retail brokers presenting lower adverse selection risk, since their orders could not be distinguished from the orders of customers of retail brokers that imposed greater adverse selection risk. Additionally, if wholesalers continue to route segmented orders and bid in qualified auctions, then they would have a larger information advantage relative to other participants in qualified auctions because they would be aware of the identity of the originating broker of a segmented order they submit to the qualified auction. This could reduce the incentives of other market participants to supply liquidity in qualified auctions, because they may be more likely to suffer from winner's curse, *i.e.,* they would be more likely to only win qualified auction in which the wholesaler submitting the segmented order to the auction didn't want to bid aggressively because the individual investor order posed greater adverse selection risk. This could reduce competition among liquidity suppliers in qualified auctions and result in less price improvement and higher transactions costs for segmented orders compared to the Proposal.

4. Variation in Exceptions to the Order Competition Requirement

a. Vary the Market Value of the Segmented Order Exception for Executing a Segmented Order at a Restricted Competition Trading Center

As an alternative, the Commission could consider varying the proposed $200,000 threshold of the order dollar value exception for having to expose a segmented order in a qualified auction by either increasing or decreasing the threshold. Table 23 estimates the distribution of the dollar value of executed orders submitted by individual investors. Approximately 98.9% of individual investor orders have a dollar value less than $200,000 and more than 95% of individual investor orders have a dollar value less than $55,000. Therefore, unless the proposed order dollar value exception threshold is reduced significantly, the vast majority of individual investor orders would remain below the threshold level. Similarly, increasing the threshold level would not significantly increase the percentage of orders that would be required to be exposed in qualified auctions.

[726] *See supra* section IV.C.5 for further discussions on these priority restrictions.

[727] *See id.* (discussing proposed Rule 615(c)(5)(v)).

[728] *See id.* (discussing proposed Rule 615(c)(5)(ii)).

TABLE 23—DISTRIBUTION OF DOLLAR VALUE OF ORDERS SUBMITTED BY INDIVIDUAL INVESTOR

10 Pct	25 Pct	50 Pct	75 Pct	90 Pct	95 Pct	99 Pct
$21.21	$136.13	$1,019.01	$6,232.51	$25,243.63	$54,728.69	$209,281.75

This table presents analysis of CAT data showing the distribution of the original dollar value of orders that resulted in trades and originated from CAT Individual Customer accounts at one of the 58 MPIDs in the CAT retail analysis identified in Table 7 during March 2022. The distribution is calculated from all market and limit orders that originated from CAT Individual Customer accounts and resulted in a trade. Dollar values for limit orders were calculated based on the limit price of the order (limit price times shares in the order). Dollar values of market orders were calculated based on the far side NBBO quote at the time of order entry and then multiplying that by the number of shares in the order. The execution price was used in the rare instances when the NBBO wasn't available. *See supra* Table 7 for details on how the broker-dealers were identified.

A smaller threshold value would result in more segmented orders potentially being excepted from qualified auctions. Orders above this value and below $200,000 would be more likely to not be exposed in a qualified auction and would instead be more likely to be internalized by a wholesaler without the wholesaler being subject to competition at the individual order level. This may decrease price improvement offered to these orders compared to the Proposal. It would also reduce the chance that other market participants could interact with these individual investor orders, potentially increasing their transaction costs compared to the Proposal. However, it may also result in less of a reduction in wholesaler revenue compared to the Proposal, which may result in wholesalers not reducing PFOF as much. It may also increase the likelihood of wholesalers continuing to not charge retail brokers for their routing services. Both of these changes may also reduce the chance retail brokers would resume charging commissions compared to the Proposal.

A larger threshold value would result in more individual investor orders potentially being included in qualified auctions. This could result in more individual investors orders over $200,000 receiving greater price improvement compared to the Proposal, because they would be more likely to be exposed in qualified auctions. However, this benefit may be limited, because the auctions may be less likely to attract sufficient liquidity to fill the entire order.

b. Exception of Beyond-the-Midpoint Non-Marketable Limit Orders

As another alternative, the Commission could create an additional exception to Proposed Rule 615 that would apply to all segmented orders that were classified as non-marketable limit orders at the time of order receipt. Proposed Rule 615 includes beyond-the-midpoint non-marketable limit orders but exempts non-marketable limit orders with limit prices at and below the midpoint. Under this alternative, beyond-the-midpoint non-marketable limit orders that met the other criteria to be considered a segmented order would also be exempted from Proposed Rule 615.

Table 24 below provides a breakdown of the share of different order types for individual investors during Q1 2022. The data indicates that beyond-the-midpoint non-marketable orders only accounted for 1.9% of the executed dollar volume of orders individual investors routed to wholesalers.[729] Furthermore, only 17.7% of the dollar volume in these orders were executed in a principle capacity, equaling 0.3% of total executed dollar volume.[730] Thus, the share of non-marketable limit orders that is currently isolated at the order-by-order level is an extremely small share of overall individual investor order flow.

TABLE 24—DISTRIBUTION OF INDIVIDUAL INVESTOR ORDER TYPES, Q1 2022

Order type	Share of dollar trading volume (%)
Marketable Order (% of total)	80.6
Marketable Orders—Principle Execution (% of total)	73.5
Principle Share % of Marketable Orders	91.1
Marketable Limit Orders (% of total)	14.7
Marketable Limit Orders—Principle Execution (% of total)	12.7
Principle Share % of Marketable Limit Orders	86.4
Beyond-the-Midpoint Non-Marketable Limit Orders (% of total)	1.9
Beyond-the-Midpoint Non-Marketable Limit Orders—Principle Execution (% of total)	0.3
Principle Share % of Beyond-the-Midpoint Non-Marketable Limit Orders	17.7
Midpoint or below Non-Marketable Limit Orders (mp and farside) (% of total)	2.8
Midpoint or below Non-Marketable Limit Orders (mp and farside)—Principle Execution (% of total)	0.3
Principle Share of Midpoint or below Non-Marketable Orders (mp and farside)	10.5

This table looks at the percentage of dollar trading volume in NMS stocks and ETFs of different market and limit (as measured by marketability) order types that were routed to wholesalers from the 58 broker-dealer MPIDs in the CAT retail analysis in Q1 2022. *See supra* Table 7 for additional information on the sample.

The analysis shows the order type's percentage of dollar trading volume, *i.e.* the dollar trading volume belonging to a particular order type (out of the total dollar trading volume across all order types). The Principle Execution for an order type is the percentage of dollar trading volume executed in a principal capacity by a wholesaler belonging to a particular order type (out of the total dollar trading volume executed in a principal capacity by a wholesaler across all order types). The Principle Share % for a particular order type is the percentage of dollar trading volume that was executed by a wholesaler in a principal capacity (out of the total dollar trading volume in that order type).

[729] Over 95% of the executed dollar volume individual investors routed to wholesalers came from marketable orders.

[730] The majority of the executed dollar volume in beyond-the-midpoint non-marketable orders was executed in a riskless principal capacity or was rerouted and executed on an agency basis.

Marketability of a limit order was determined using the NBBO from the consolidated market data feed at the time the wholesaler received the order. Marketable limit orders are limit orders where the limit price is greater than or equal to the opposite side quote (NBB for sell orders and NBO for buy orders). Beyond-the-midpoint Non-marketable limit orders are limit orders with limit prices between the midpoint and the opposite side quote (NBB for sell orders and NBO for buy orders). Midpoint or below non-marketable limit orders are limit orders with limit prices between the midpoint and the same side quote.

Given the small volume of beyond-the-midpoint non-marketable limit orders, the costs and benefits of this alternative could be similar to the Proposal. However, fewer beyond-the-midpoint non-marketable limit orders would be submitted to qualified auctions. Instead, more of them may be internalized or executed on a riskless principal basis, which may reduce the price improvement they receive relative to the Proposal.[731]

5. Variation in the Definition of Open Competition Trading Centers

a. Vary Threshold To Become an Open Competition Trading Center

In addition to other requirements, the Proposal requires a trading center to have an average daily share volume of 1.0 percent or more of the aggregate average daily share volume for NMS stocks during at least four of the preceding 6 calendar months in order to qualify as an open competition trading center. As an alternative, the Commission could choose to require a higher or a lower percentage, including zero percent, of the average daily share volume in NMS stocks as the threshold to qualify as an open competition trading center.

If the threshold were higher, then fewer exchanges and ATSs would meet the definition of an open competition and be eligible to run qualified auctions. It could result in reduced competition between venues running qualified auctions. This may reduce innovation and, to the extent it occurs within the 5 mil fee and rebate caps, result in reduced competition between qualified auctions on the basis of access fees and rebates, which could increase the net capture rate open competition centers earn from their qualified auctions. However, the reduced number of qualified auctions could result in more liquidity suppliers competing in individual qualified auctions (*i.e.,* there would be less fragmentation of liquidity suppliers across qualified auctions), which may provide more price improvement to segmented orders submitted to these auctions.

If the threshold were lower, more exchanges and ATSs would be able to meet the definition of an open market trading center and be able to operate qualified auctions. More exchanges and ATSs might operate qualified auctions, which could enhance competition between venues running qualified auctions. This could encourage more innovation in qualified auctions. For example, exchange groups may be more likely to run multiple qualified auctions on different exchanges with different structures, priority rules, or fees. It would also reduce the competitive disadvantage of exchanges and ATSs that would be too small to run qualified auctions under the Proposal but would be under this alternative. However, it may result in greater fragmentation of liquidity suppliers across different qualified auctions, which may reduce competition between liquidity suppliers in individual qualified auctions and reduce price improvement to segmented orders submitted to these auctions. Additionally, greater fragmentation in qualified auctions could increase the risk that a broker-dealer could route a segmented order to a qualified auction with less competition from other liquidity suppliers so that the routing broker-dealer may have a greater chance to trade with the segmented order.

b. Only National Securities Exchanges as Open Competition Trading Centers

As an alternative, the Commission could limit the definition of an open competition trading center to only include national securities exchanges. This alternative could be in combination with the 1% average daily share volume in NMS stocks that the Proposal specifies, or some other threshold (including no threshold) as discussed in section VII.D.5.a. This would mean that NMS Stock ATSs would not be able to operate qualified auctions.

Compared to the Proposal, this alternative would put NMS Stock ATSs at a competitive disadvantage to exchanges. NMS Stock ATSs that would have met the criteria to be considered open competition trading centers under the Proposal would be considered restricted trading centers under this alternative and would not be able to execute segmented orders, unless it is via one of the exceptions.[732] More segmented orders would be routed to qualified auctions on exchanges, which could lead to these exchanges attracting additional order flow and result in a greater share of orders being executed on exchanges. This could raise the barriers to entry for new NMS Stock ATSs and increase the chance that a smaller NMS Stock ATS exits the market.

However, relative to the Proposal, this alternative could result in increased investor protection. Because qualified auctions would be limited to being operated by national securities exchanges, proposed rule changes to all qualified auctions would be subject to notice, comment and Commission approval. This would give the Commission greater ability to review and disapprove qualified auctions designs to ensure they met standards of the Proposal, which may increase investor protection.

c. Eliminate the Requirements for NMS Stock ATSs To Be Open Competition Trading Centers

As an alternative, the Commission could choose to allow NMS Stock ATSs to qualify as open competition trading centers and be eligible to run qualified auctions without imposing the requirements of proposed Rule 600(b)(64)(ii). However, any average daily NMS stock volume threshold that would apply to exchanges for being able to run qualified auctions would also apply to NMS Stock ATSs.[733] This would mean that the NMS Stock ATS would not be required to display quotes that are disseminated in consolidated market data, although it would still need to subscribe to the ADF so that its qualified auction messages are included in consolidated data. Additionally, if the NMS Stock ATS was not subject to the fair access requirements of Rule 301(b)(5), then it would be allowed to limit subscriber access to its ATS and to its qualified auction mechanisms. However, the NMS Stock ATS's

[731] Both the Proposal and this alternative would allow beyond-the-midpoint non-marketable limit orders to be routed to an exchange LOB instead of being submitted to qualified auctions. Therefore, this alternative may result in a similar portion of individual investor beyond-the-midpoint non-marketable limit orders being routed to exchange LOBs as under the Proposal.

[732] Under the Proposal, NMS stock ATSs operating qualified auctions may have had a competitive advantage over exchanges in the sense that they would have more flexibility in making changes to their qualified auctions, because their changes would not be subject to notice, comment, and Commission approval, like exchanges would.

[733] Either the proposed 1% average daily volume threshold or a higher or lower threshold (including zero percent) as discussed in *supra* section VII.D.5.a.

qualified auction would still be limited by any of the qualified auction requirements, either proposed Rule 615(c) or one of the alternatives discussed in section VII.D.3.

This alternative would make it easier for an NMS Stock ATS to operate a qualified auction and result in more NMS Stock ATSs operating qualified auctions compared to the Proposal. On the one hand, this could enhance competition between venues running qualified auctions and encourage more innovation in qualified auctions. However, NMS Stock ATSs operating qualified auctions would have a greater competitive advantage over exchanges. Compared to exchanges, they could limit access to their platform and the market participants that would be eligible to participate in qualified auctions.[734] Although they would have to charge the same fees and rebates to all bidders in the qualified auctions, they would have more flexibility in bundling other aspects of their ATS or services to give an advantage to some subscribers over others, which may allow these subscribers an indirect advantage in bidding in qualified auctions. This may limit competition among liquidity suppliers in these qualified auctions. NMS Stock ATSs that operate qualified auctions may also be a more attractive destination for some broker-dealers to route segmented orders because they may give the broker-dealer routing the order an increased chance of being able to trade with the segmented order compared to qualified auctions operated by exchanges. These competitive advantages of NMS Stock ATSs operating qualified auctions may limit the incentives for exchanges to operate qualified auctions, which could reduce competition between venues running qualified auctions.

6. Wholesaler Information Barriers

As an alternative, the Commission could establish a new information barrier rule specifying new policies and procedures for wholesalers that must be part of the policies and procedures for protecting material, non-public information that Exchange Act Section 15(g) requires of all broker-dealers. The new rule would require wholesalers to not share information on customer order flow, either on individual orders or in aggregate, outside of the wholesaler business functions that were responsible for the handling and execution of the customer orders. This would prevent wholesalers from sharing this information with other business units and affiliates that may engage in proprietary trading or other business functions not related to the handling or execution of the customer order. The rule particularly would focus on assuring that customer order information is not used in a way that would detract from the interests of customers in obtaining best execution of their orders.

A wholesaler information barrier rule would result in greater protection of customer order information at wholesalers, which would improve investor protection. It may also improve customer order execution quality by reducing the chance that another trader will be able to use customer order information to trade ahead of or adjust liquidity to disadvantage the customer order. This rule may reduce the profits of other wholesaler lines of business or affiliates that may have benefited from customer order information. This may reduce the incentives for wholesalers to handle individual investor orders, which may reduce the amount of price improvement they offer to individual investor orders or the PFOF they pay to retail brokers. To the extent that the use of this information by other wholesaler business lines increases information asymmetries and adverse selection risk for other market participants, the rule may reduce adverse selection risk faced by other liquidity providers, which could improve market quality.

7. Display Quotes in Retail Liquidity Programs

As an alternative the Commission could allow national securities exchanges to display the price and size of quotes in their RLP programs on their proprietary feeds and in the consolidated market data feed. Under this alternative, exchanges would not execute as large a share of marketable individual investor orders as under the Proposal. Instead, the majority of marketable individual investor orders would still be internalized by wholesalers. This would occur because liquidity providers quoting in exchange RLP programs would not know the identity of the retail broker of the marketable individual investor orders they are trading against. Therefore, they would usually need to set their quotes in the RLP programs wider to account for the risk of trading with individual investor order flow that imposed greater adverse selection risk. However, wholesalers would know the identity of the retail broker of the order they were handling. This means wholesalers could avoid internalizing individual investor order flow that posed greater adverse selection risk and give greater price improvement to individual investor orders with less adverse selection risk.

On average, marketable individual investor orders would receive less price improvement under this alternative than the Proposal because wholesalers would not need to compete on an order by order basis when they internalize an individual investor order. Institutional investor transaction costs would also be higher than under the Proposal because they would not be able to trade with marketable individual investor orders as frequently. A lack of order-by-order competition would also allow wholesalers to pay more PFOF to retail brokers than under the proposal, since wholesalers would be able to internalize order flow at more profitable spreads relative to those that would emerge under qualified auctions. From this increased profitability, wholesalers would be able to pay more PFOF. Increased PFOF revenue would reduce the incentive for broker-dealers to generate new revenue lines or expand existing revenue lines. Therefore, under this alternative there would not be as significant a change in retail broker business models.

Compared to the baseline, there would be greater transparency in the liquidity available to the marketable orders of individual investors. This could increase competition between exchange RLPs and wholesalers for the execution of individual investor marketable orders and result in more individual investor orders being executed in exchange RLPs (although the majority of individual investor orders would still likely be internalized by wholesalers). Because broker-dealers would be able to see the displayed quotes in RLPs, when marketable orders of individual investors are routed to execute in RLPs, it may be because the quoted prices in the RLP were better than the prices the wholesaler would have been willing to internalize the individual investor order at. Additionally, the increase in competition may result in wholesalers offering more price improvement to the marketable orders of individual investors to attract order flow from retail brokers. Both of these effects may result in lower trading costs for marketable orders of individual investors compared to the baseline. However, if wholesalers earn lower marginal profits from internalizing the orders of individual investors, they may reduce the amount of PFOF they pay to retail brokers that accept PFOF, which could indirectly get passed through to the retail brokers'

[734] Additionally, NMS stock ATSs would have more flexibility in making changes to their qualified auctions, because their changes would not be subject to notice, comment, and Commission approval, like exchanges would.

customers in the form of reduced services or an increased risk of the retail broker charging commissions.

8. Creation of a Retail Best Bid and Offer

As an alternative, in addition to displaying quotes in RLPs, the Commission could introduce a new, smaller-sized benchmark from the NBBO for segmented orders. The new benchmark would be called the Retail Best Bid and Offer (''RBBO''). It would be constructed similar to the NBBO, but the threshold for determining when an exchange's quotes qualified for the RBBO would be based on a $500 notional value. It would also incorporate information from smaller odd lot quotations and quotes from exchange RLPs, which would be aggregated up across multiple price levels by individual exchanges until they exceeded a value of $500 or greater. The least aggressive price level from this aggregation would be sent to the SIP for the purposes of determining the RBBO. The RBBO would be a protected quote for the purposes of executing segmented orders and would also be added as a benchmark in Rule 605 reports for calculating price improvements statistics for segmented orders.

Compared to the Proposal, this alternative would result in wholesalers internalizing a larger share of marketable orders of individual investors and fewer such orders being executed on exchanges. Although quotes in RLPs and smaller odd-lot quotes would be protected with respect to segmented orders, liquidity providers quoting in exchange RLPs would usually need to set their quotes in the RLPs wider than the prices at which wholesalers might internalize individual investor orders to account for the risk of trading with individual investor order flow that imposed greater adverse selection risk.[735]

On average, marketable orders of individual investors would receive less price improvement under this alternative than the Proposal because wholesalers would not need to compete on an order by order basis when they internalize an individual investor order. Institutional investor trading costs would also be higher than under the Proposal because they would not be able to trade with marketable orders of individual investors as frequently. A lack of order by order competition would also allow wholesalers to pay more PFOF to retail brokers than under the Proposal. Therefore, there would not be as significant improvements in retail broker business models.

However, compared to the baseline, there would be more price improvement and lower trading costs for marketable orders of individual investors. This would occur because wholesalers would need to offer price improvement against a tighter benchmark in order to internalize a segmented order. The disclosure of price improvement against the NBBO in Rule 605 reports might also enhance competition among wholesalers to offer greater price improvement in order to attract more order flow from retail brokers.

9. Disclosure of Execution Quality of Individual Investor Orders

Instead of requiring that segmented orders be routed to qualified auctions, the Commission could require that execution quality information concerning an individual investor's order be disclosed on their transaction confirmations. Specifically, under this alternative retail brokers would be required to disclose information on the number of shares executed, the price improvement relative to the NBBO, the effective-to-quoted spread ratio, and time to execution. This information would be provided along with the confirmation of each trade to the customer who had placed the order, enhancing transparency on each individual investor's own execution quality.

The Commission believes that this disclosure would not significantly increase transparency regarding how execution quality varies across retail brokers for two reasons. First, reflecting their small scale of trading activity, most individual investors rely on a single retail broker that executes orders on their behalf. As such, most customers would never have a chance to compare the execution quality of their trades via a given retail broker to similar executions at another retail broker. Second, even if a customer used services of more than one retail broker contemporaneously, the small sample of that individual investor's execution quality metrics as well as differences between the orders of the customer that were handled by different retail brokers may lead to misleading inferences about execution quality differences across brokers.

The Commission also believes that the benefits of this alternative are limited relative to the Proposal because marketable individual investor orders would remain mostly isolated, *i.e.,* mostly executed by the wholesaler handling these orders. A lack of interaction with trading interest from other market participants would prevent the execution quality improvements that would otherwise obtain under the Proposal. As such, there would be less of an increase in price improvement (and reduction in transaction costs) for individual investors compared to the Proposal. Additionally, compared to the Proposal, this alternative would not provide other market participants, including institutional investors, as great a chance to directly interact with order flow from individual investors, which may result in institutional investors receiving worse order execution quality compared to the Proposal.

E. Request for Comments

The Commission requests comment on all aspects of this initial economic analysis, including whether the analysis has: (1) identified all benefits and costs, including all effects on efficiency, competition, and capital formation; (2) given due consideration to each benefit and cost, including each effect on efficiency, competition, and capital formation; and (3) identified and considered reasonable alternatives to the proposed new rules and rule amendments. The Commission requests and encourages any interested person to submit comments regarding the proposed rules, the Commission's analysis of the potential effects of the proposed rules and proposed amendments, and other matters that may have an effect on the proposed rules. The Commission requests that commenters identify sources of data and information as well as provide data and information to assist us in analyzing the economic consequences of the proposed rules and proposed amendments. The Commission also is interested in comments on the qualitative benefits and costs identified and any benefits and costs that may have been overlooked. In addition to our general request for comments on the economic analysis associated with the proposed rules and proposed amendments, the Commission requests specific comment on certain aspects of the proposal:

38. Do commenters believe the Commission has adequately described the market failures due to the existing structure of U.S. stock markets? Why or why not?

39. Do commenters agree with the Commission's qualitative and quantitative baseline descriptions of the structure of trading for NMS stocks, including trading service, broker services, and access to market centers? Why or why not?

[735] Wholesalers would still know the identity of the retail broker whose orders they internalize. Compared to liquidity suppliers in exchange RLP programs, they would likely be able to further sub-segment individual investor order flow when considering how much price improvement to offer.

40. Do commenters agree with the Commission's qualitative and quantitative baseline descriptions of order routing behavior of retail brokers? Why, or why not?

41. Do commenters agree with the Commission's assessment of execution quality and fill rates of individual investor orders in NMS stocks? Why, or why not?

42. Do commenters agree with the Commission's assessment of brokers' handling of fractional individual investor orders? Why or why not?

43. Do commenters agree with the Commission's characterization of individual investor order flow segmentation by wholesalers? Why, or why not?

44. Do commenters agree with the Commission's characterization of the interaction between wholesalers and institutional investors? Please explain why, or why not?

45. Do commenters agree with the Commission's description of market making expenses of wholesalers? What other types of such market making costs should be considered? Please provide conceptual and quantitative context.

46. Do commenters agree with the Commission's description of the trade-off between PFOF and execution quality of individual investor orders faced by PFOF receiving retail brokers, driven by the business models of these brokers and the wholesalers who offer PFOF? Why, or why not?

47. Do commenters agree with the Commission's descriptions of different aspects of retail brokers' business models? Why, or why not?

48. Do commenters agree the Commission's assessment of conflict of interests on the parts of wholesalers and PFOF receiving brokers? Please explain your reasoning.

49. Do commenters agree with the Commission's assessment of the impacts of such conflicts of interest on the execution quality of individual investor orders? Why or why not?

50. Do commenters agree with the Commission that a lack of order-by-order competition is a key missing component in the individual investor order execution process? Please explain why or why not.

51. Do commenters agree with Commission's assessment that retail brokers' use of past execution quality metrics to determine the allocation of current individual investor order flow across wholesalers may lead to poor execution quality for some individual investor orders? Why or why not?

52. Do commenters agree with the Commission that the existing execution practices for individual investor orders makes the portion of individual investor order flow with the least adverse selection risk inaccessible to other market participants, including institutional investors? Please explain why or why not.

53. Do commenters agree with the Commission's assessment that the ability of wholesalers to choose which orders to internalize and which ones to allow to interact with trading interest with other market participants places wholesalers at a competitive advantage? Why or why not?

54. Do commenters agree that the proposed Rule would improve competition, including in the market for trading service and the market for broker-dealer services? Why or why not?

55. Do you agree with the Commission that the proposed Rule would lower trading costs to individual and institutional investors, enhance individual investor order execution quality and price discovery, and improve efficiency in the operations of retail brokers? Please explain why or why not?

56. Does the Economic Analysis in this release account for all compliance costs? If not, what other compliance cost would market participants or exchanges incur? Please provide estimates of the additional compliance costs that you believe should be considered.

57. Does the Economic Analysis in this release account for all relevant costs? If not, which other costs should the economic analysis consider? Please provide estimates of additional costs, other than compliance costs, that you believe should be considered.

58. Do commenters agree with the Commission's assessment of how the Proposed Rule would impact efficiency and capital formation? Why, or why not? Please explain.

59. Do commenters agree with the Commission's analysis of the benefits and costs of the reasonable alternatives to the Proposed Rule? Why, or why not? Please explain.

60. Are there any additional reasonable alternatives the Commission should consider? If so, please describe that alternative and provide the benefits and costs of that alternative relative to the baseline and to the proposed Rule.

61. Should the Commission specify a minimum set of auction standards as part of the reasonable alternative to allow open competition trading centers more flexibility in designing qualified auctions? If so, what minimum set of auction standards should the Commission specify and why? Please explain. What would be the costs and benefits or other economic effects of specifying this minimum set of auctions standards? Should the Commission specify a minimum auction duration as part of this alternative? Why or why not? If so, what minimum auction duration should the Commission specify? Please explain and provide as much analysis and discussion as possible. Should the Commission specify that execution priority shall not be based on time of receipt of the auction response as part of this alternative? Why or why not? Please explain.

62. Instead of requiring the consolidated tapes to amend their plans to include qualified auction messages, should the Commission accelerate the inclusion of all auction information in NMS data from the MDI Rules? What would be the costs and benefits or other economic effects of accelerating the inclusion of all auction information in NMS data? How would such an acceleration impact eventual competition among competing consolidators or the realization of the anticipated costs and benefits of the MDI Rules? Please explain.

VIII. Regulatory Flexibility Act Certification

The Regulatory Flexibility Act (''RFA'')[736] requires Federal agencies, in promulgating rules, to consider the impact of those rules on small entities. Section 603(a) of the Administrative Procedure Act,[737] as amended by the RFA, generally requires the Commission to undertake an initial regulatory flexibility analysis of the impact of the proposed rule amendments on ''small entities.''[738] Section 605(b) of the RFA states that this requirement shall not apply to any proposed rule or proposed rule amendment which, if adopted, would not have a significant impact on a substantial number of small entities.[739]

Certification for Proposed Rule 615 and the Related Amendments

Proposed Rule 615 and the proposed related amendments are discussed in detail in section IV (Description of Proposed Rule 615) above. The economic impact, including the estimated compliance costs and burdens, of Proposed Rule 615 are

[736] 5 U.S.C. 601 *et seq.*

[737] 5 U.S.C. 603(a).

[738] Although section 601(b) of the RFA defines the term ''small entity,'' the statute permits agencies to formulate their own definitions. The Commission has adopted definitions for the term ''small entity'' for the purposes of Commission rulemaking in accordance with the RFA. Those definitions, as relevant to this proposed rulemaking, are set forth in Rule 0–10 under the Exchange Act, 17 CFR 240.0–10.

[739] 5 U.S.C. 605(b).

discussed in section VI (Paperwork Reduction Act Analysis) and section VII (Economic Analysis). As discussed above in those sections, Proposed Rule 615 and the proposed related amendments would have an impact on certain broker-dealers, NMS Stock ATSs, national securities exchanges, and national securities associations.

Impact on Broker-Dealers

Although section 601(b) of the RFA defines the term ''small business,'' as stated above, the statute permits agencies to formulate their own definitions, and for purposes of Commission rulemaking in connection with the RFA, a small business includes a broker or dealer that: (1) had total capital (net worth plus subordinated liabilities) of less than $500,000 on the date in the prior fiscal year as of which its audited financial statements were prepared pursuant to Rule 17a–5(d) under the Exchange Act,[740] or, if not required to file such statements, a broker-dealer with total capital (net worth plus subordinated liabilities) of less than $500,000 on the last day of the preceding fiscal year (or in the time that it has been in business, if shorter); and (2) is not affiliated with any person (other than a natural person) that is not a small business or small organization.[741] Applying this test and based on a review of data relating to broker-dealers,[742] the Commission estimates, as discussed below, that of the 3,498 broker-dealers, there are only 4 that would be ''small entities'' and also in the scope of Proposed Rule 615.

Proposed Rule 615(a) would apply to any restricted competition center that executes internally segmented orders in NMS stocks. Restricted competition trading centers would include NMS Stock ATSs that do not meet the definition of open competition trading center, and, with the exception of national securities exchanges, any other trading center that executes segmented orders, which would include certain broker-dealers. The Commission has identified no broker-dealers that likely execute internally orders for customer accounts that would be ''small entities.''

Proposed Rule 615 and the related amendments would also apply to any broker or dealer that could potentially handle segmented orders. As discussed in section VI, this would include the 157 broker-dealers that the Commission has identified that carry customer accounts, and would be in the scope of Proposed Rule 615. Of these, the Commission has identified 1 that may be a ''small entity.'' Also as discussed in section VI, the Commission has identified 25 broker-dealers that may fall within the scope of Proposed Rule 615 because, although they report that do not carry customer accounts, they report that they do effect public customer transactions in equity securities on a national securities exchange or OTC and likely are acting as ''executing brokers.'' Of these, the Commission has identified 3 that may potentially be engaged in lines of business that would make them within the scope of Proposed Rule 615 and that may also be ''small entities.'' Finally, as discussed in section VI, the Commission has identified 1,267 broker-dealers that would likely be ''originating brokers'' with responsibility for monitoring customer accounts that could potentially fall within the scope of Proposed Rule 615. Of these, however, the Commission concludes that none of the approximately 20 broker-dealers that the Commission estimates would fall within the scope of Proposed Rule 615, because they may make the certification referred to in paragraph (c)(1) of Proposed Rule 615,[743] would be ''small entities.''

Impact on National Securities Exchanges, National Securities Associations, and NMS Stock ATSs

Also as discussed above in sections IV, VI and VII, Proposed Rule 615 and the proposed related amendments would impose requirements on national securities exchanges, national securities associations, and NMS Stock ATSs. With respect to national securities exchanges, the Commission's definition of a small entity is an exchange that has been exempt from the reporting requirements of Rule 601 of Regulation NMS, and is not affiliated with any person (other than a natural person) that is not a small business or small organization.[744] Applying this test, no national securities exchange is a small entity. The only national securities association, is also not a ''small entity.''[745]

With respect to NMS Stock ATSs, all ATSs, including NMS Stock ATSs, are required to register as broker-dealers.[746] The Commission examined recent FOCUS data for the broker-dealers that operate the 32 NMS Stock ATSs and applying the test for broker-dealers described above[747] believes that none of the NMS Stock ATSs currently trading were operated by a broker-dealer that is a ''small entity.''

For the above reasons, the Commission certifies that Proposed Rule 615 and the proposed related amendments would not have a significant economic impact on a substantial number of small entities for purposes of the RFA.

The Commission requests written comments regarding this certification. The Commission invites commenters to address whether the proposed rules would have a significant impact on a substantial number of small entities, and requests that commenters describe the nature of any impact on small entities and provide empirical data to support the extent of the impact.

IX. Consideration of Impact on the Economy

For purposes of the Small Business Regulatory Enforcement Fairness Act of

[740] 17 CFR 240.17a–5(d).

[741] *See* 17 CFR 240.0–10(c); *see also* 17 CFR 240.0–10(i) (providing that a broker or dealer is affiliated with another person if: such broker or dealer controls, is controlled by, or is under common control with such other person; a person shall be deemed to control another person if that person has the right to vote 25% or more of the voting securities of such other person or is entitled to receive 25% or more of the net profits of such other person or is otherwise able to direct or cause the direction of the management or policies of such other person; or such broker or dealer introduces transactions in securities, other than registered investment company securities or interests or participations in insurance company separate accounts, to such other person, or introduces accounts of customers or other brokers or dealers, other than accounts that hold only registered investment company securities or interests or participations in insurance company separate accounts, to such other person that carries accounts on a fully disclosed basis).

[742] The Commission considered FOCUS data and information about broker-dealers made publicly available by FINRA through reports *available at https://brokercheck.finra.org/*.

[743] *Supra* section VI.C.3 (discussing which broker-dealers would likely certify that they established, maintained, and enforced policies and procedures reasonably designed to assure that the identity of the originating broker will not be disclosed, directly or indirectly, to any person that potentially could participate in the qualified auction or otherwise trade with the segmented order).

[744] *See* 17 CFR 240.0–10(e) (providing that when used with reference to an exchange, means any exchange that: (1) has been exempted from the reporting requirements of Rule 601; and (2) is not affiliated with any person (other than a natural person) that is not a small business or small organization); *see also* 17 CFR 240.0–10(i) (providing that a person is affiliated with another person if that person controls, is controlled by, or is under common control with such other person; and a person shall be deemed to control another person if that person has the right to vote 25% or more of the voting securities of such other person or is entitled to receive 25% or more of the net profits of such other person or is otherwise able to direct or cause the direction of the management or policies of such other person).

[745] *See* 13 CFR 121.201.

[746] Rule 301(b)(1) of Regulation ATS. Also, while a national securities exchanges can operate an ATS, subject to certain conditions, such an ATS would have to be registered as a broker-dealer. *See* Regulation ATS Adopting Release, *supra* note 27, at 70891. Currently, no national securities exchange operates an ATS that trades NMS stocks.

[747] *Supra* note 741 and accompanying text.

1996, or ''SBREFA,'' [748] the Commission must advise OMB whether a proposed regulation constitutes a ''major'' rule. Under SBREFA, a rule is considered ''major'' where, if adopted, it results in or is likely to result in (1) an annual effect on the economy of $100 million or more; (2) a major increase in costs or prices for consumers or individual industries; or (3) significant adverse effects on competition, investment, or innovation. The Commission requests comment on the potential effect of the proposed amendments on the U.S. economy on an annual basis; any potential increase in costs or prices for consumers or individual industries; and any potential effect on competition, investment, or innovation. Commenters are requested to provide empirical data and other factual support for their views to the extent possible.

Statutory Authority

Pursuant to the Exchange Act (15 U.S.C. 78a *et seq.*), and particularly sections 3(b), 5, 6, 11A, 15, 15C, 17(a), 17(b), 19, 23(a), and 36 thereof (15 U.S.C. 78c(b), 78e, 78f, 78k–1, 78o, 78o–5, 78q(a), 78q(b), 78s, 78w(a), and 78mm), the Commission proposes to amend parts 240 and 242 of chapter II of title 17 of the Code of Federal Regulations as follows:

List of Subjects in 17 CFR Parts 240 and 242

Brokers, Reporting and recordkeeping requirements, Securities.

Text of the Proposed Rule and Amendments

For the reasons stated in the preamble, the Commission is proposing to amend title 17, chapter II of the Code of Federal Regulations:

PART 240—GENERAL RULES AND REGULATIONS, SECURITIES EXCHANGE ACT of 1934

■ 1. The general authority citation for part 240 continues to read as follows:

Authority: 15 U.S.C. 77c, 77d, 77g, 77j, 77s, 77z–2, 77z–3, 77eee, 77ggg, 77nnn, 77sss, 77ttt, 78c, 78c–3, 78c–5, 78d, 78e, 78f, 78g, 78i, 78j, 78j–1, 78k, 78k–1, 78*l,* 78m, 78n, 78n–1, 78*o,* 78*o*–4, 78*o*–10, 78p, 78q, 78q–1, 78s, 78u–5, 78w, 78x, 78dd, 78*ll,* 78mm, 80a–20, 80a–23, 80a–29, 80a–37, 80b–3, 80b–4, 80b–11, and 7201 *et seq.,* and 8302; 7 U.S.C. 2(c)(2)(E); 12 U.S.C. 5221(e)(3); 18 U.S.C. 1350; Pub. L. 111–203, 939A, 124 Stat. 1376 (2010); and Pub. L. 112–106, sec. 503 and 602, 126 Stat. 326 (2012), unless otherwise noted.

* * * * *

[748] Public Law 104–121, Title II, 110 Stat. 857 (1996) (codified in various sections of 5 U.S.C., 15 U.S.C. and as a note to 5 U.S.C. 601).

§ 240.3a51–1 [Amended]

■ 2. Amend § 240.3a51–1 by, in paragraph (a), removing the text ''§ 242.600(b)(55)'' and adding in its place ''§ 242.600(b)(58)''.

§ 240.13h–1 [Amended]

■ 3. Amend § 240.13h–1 by, in paragraph (a)(5), removing the text ''§ 242.600(b)(54)'' and adding in its place ''§ 242.600(b)(57)''.

PART 242—REGULATIONS M, SHO, ATS, AC, NMS, AND SBSR AND CUSTOMER MARGIN REQUIREMENTS FOR SECURITY FUTURES

■ 4. The authority for part 242 continues to read as follows:

Authority: 15 U.S.C. 77g, 77q(a), 77s(a), 78b, 78c, 78g(c)(2), 78i(a), 78j, 78k–1(c), 78*l,* 78m, 78n, 78*o*(b), 78*o*(c), 78*o*(g), 78q(a), 78q(b), 78q(h), 78w(a), 78dd–1, 78mm, 80a–23, 80a–29, and 80a–37.

§ 242.105 [Amended]

■ 5. Amend § 242.105 by:

■ a. In paragraph (b)(1)(i)(C), removing the text ''§ 242.600(b)(30)'' and adding in its place ''§ 242.600(b)(33)''.

■ b. In paragraph (b)(1)(ii), removing the text ''§ 242.600(b)(77)'' and adding in its place ''§ 242.600(b)(84)''.

§ 242.201 [Amended]

■ 6. Amend § 242.201 by:

■ a. In paragraph (a)(1), removing the text ''§ 242.600(b)(55)'' and adding in its place ''§ 242.600(b)(58)''.

■ b. In paragraph (a)(2), removing the text ''§ 242.600(b)(30)'' and adding in its place ''§ 242.600(b)(33)''.

■ c. In paragraph (a)(3), removing the text ''§ 242.600(b)(68)'' and adding in its place ''§ 242.600(b)(74)''.

■ d. In paragraph (a)(4), removing the text ''§ 242.600(b)(50)'' and adding in its place ''§ 242.600(b)(53)''.

■ e. In paragraph (a)(5), removing the text ''§ 242.600(b)(58)'' and adding in its place ''§ 242.600(b)(62)''.

■ f. In paragraph (a)(6), removing the text ''§ 242.600(b)(67)'' and adding in its place ''§ 242.600(b)(73)''.

■ g. In paragraph (a)(7), removing the text ''§ 242.600(b)(77)'' and adding in its place ''§ 242.600(b)(84)''.

■ h. In paragraph (a)(9), removing the text ''§ 242.600(b)(95)'' and adding in its place ''§ 242.600(b)(105)''.

§ 242.204 [Amended]

■ 7. Amend § 242.204 by:

■ a. In paragraph (g)(2), removing the text ''§ 242.600(b)(77) (Rule 600(b)(77) of Regulation NMS)'' and adding in its place ''§ 242.600(b)(84) (Rule 600(b)(84) of Regulation NMS)''.

■ 8. Amend § 242.600 by:

■ a. In paragraph (b) introductory text, removing the text ''(§§ 242.600 through 242.612)'' and adding in its place ''(§§ 242.600 through 242.615)'';

■ b. Redesignating paragraphs (b)(3) through (100) as follows:

Old paragraph	New paragraph
(b)(3)	(b)(4)
(b)(4)	(b)(5)
(b)(5)	(b)(6)
(b)(6)	(b)(7)
(b)(7)	(b)(8)
(b)(8)	(b)(9)
(b)(9)	(b)(10)
(b)(10)	(b)(11)
(b)(11)	(b)(12)
(b)(12)	(b)(13)
(b)(13)	(b)(14)
(b)(14)	(b)(15)
(b)(15)	(b)(16)
(b)(16)	(b)(17)
(b)(17)	(b)(18)
(b)(18)	(b)(19)
(b)(19)	(b)(20)
(b)(20)	(b)(21)
(b)(21)	(b)(24)
(b)(22)	(b)(25)
(b)(23)	(b)(26)
(b)(24)	(b)(27)
(b)(25)	(b)(28)
(b)(26)	(b)(29)
(b)(27)	(b)(30)
(b)(28)	(b)(31)
(b)(29)	(b)(32)
(b)(30)	(b)(33)
(b)(31)	(b)(34)
(b)(32)	(b)(35)
(b)(33)	(b)(36)
(b)(34)	(b)(37)
(b)(35)	(b)(38)
(b)(36)	(b)(39)
(b)(37)	(b)(40)
(b)(38)	(b)(41)
(b)(39)	(b)(42)
(b)(40)	(b)(43)
(b)(41)	(b)(44)
(b)(42)	(b)(45)
(b)(43)	(b)(46)
(b)(44)	(b)(47)
(b)(45)	(b)(48)
(b)(46)	(b)(49)
(b)(47)	(b)(50)
(b)(48)	(b)(51)
(b)(49)	(b)(52)
(b)(50)	(b)(53)
(b)(51)	(b)(54)
(b)(52)	(b)(55)
(b)(53)	(b)(56)
(b)(54)	(b)(57)
(b)(55)	(b)(58)
(b)(56)	(b)(60)
(b)(57)	(b)(61)
(b)(58)	(b)(62)
(b)(59)	(b)(63)
(b)(60)	(b)(65)
(b)(61)	(b)(66)
(b)(62)	(b)(67)
(b)(63)	(b)(68)
(b)(64)	(b)(70)
(b)(65)	(b)(71)
(b)(66)	(b)(72)
(b)(67)	(b)(73)
(b)(68)	(b)(74)
(b)(69)	(b)(75)
(b)(70)	(b)(76)
(b)(71)	(b)(77)

Old paragraph	New paragraph
(b)(72)	(b)(78)
(b)(73)	(b)(79)
(b)(74)	(b)(80)
(b)(75)	(b)(82)
(b)(76)	(b)(83)
(b)(77)	(b)(84)
(b)(78)	(b)(85)
(b)(79)	(b)(86)
(b)(80)	(b)(88)
(b)(81)	(b)(89)
(b)(82)	(b)(90)
(b)(83)	(b)(92)
(b)(84)	(b)(93)
(b)(85)	(b)(94)
(b)(86)	(b)(95)
(b)(87)	(b)(96)
(b)(88)	(b)(97)
(b)(89)	(b)(98)
(b)(90)	(b)(99)
(b)(91)	(b)(101)
(b)(92)	(b)(102)
(b)(93)	(b)(103)
(b)(94)	(b)(104)
(b)(95)	(b)(105)
(b)(96)	(b)(106)
(b)(97)	(b)(107)
(b)(98)	(b)(108)
(b)(99)	(b)(109)
(b)(100)	(b)(110)

■ c. Adding new paragraphs (b)(3), (b)(22), (b)(23), (b)(59), (b)(64), (b)(69), (b)(81), (b)(87), (b)(91), and (b)(100).

The additions read as follows:

§ 242.600 NMS security designation and definitions.

* * * * *

(b) * * *

(3) *Affiliate* means, with respect to a specified person, any person that, directly or indirectly, controls, is under common control with, or is controlled by, the specified person.

* * * * *

(22) *Continuous order book* means a system that allows orders for NMS stocks to be accepted and executed on a continuous basis.

(23) *Control* means the power, directly or indirectly, to direct the management or policies of a broker, dealer, or open competition trading center, whether through ownership of securities, by contract, or otherwise. A person is presumed to control a broker, dealer, or open competition trading center if that person:

(i) Is a director, general partner, or officer exercising executive responsibility (or having similar status or performing similar functions);

(ii) Directly or indirectly has the right to vote 25 percent or more of a class of voting securities or has the power to sell or direct the sale of 25 percent or more of a class of voting securities of the broker, dealer, or open competition trading center; or

(iii) In the case of a partnership, has contributed, or has the right to receive upon dissolution, 25 percent or more of the capital of the broker, dealer, or open competition trading center.

* * * * *

(59) *NMS Stock ATS* has the meaning provided in § 242.300(k).

* * * * *

(64) *Open competition trading center* means either:

(i) A national securities exchange that:

(A) Operates an SRO trading facility that is an automated trading center and displays automated quotations that are disseminated in consolidated market data pursuant to § 242.603(b);

(B) Provides transaction reports identifying the national securities exchange as the venue of execution that are disseminated in consolidated market data pursuant to § 242.603(b);

(C) During at least four of the preceding 6 calendar months, had an average daily share volume of 1.0 percent or more of the aggregate average daily share volume for NMS stocks as reported by an effective transaction reporting plan; and

(D) Operates pursuant to its own rules providing that the national securities exchange will comply with the requirements of § 242.615(c) for a qualified auction; or

(ii) An NMS Stock ATS that:

(A) Displays quotations through an SRO display-only facility in compliance with § 242.610(b);

(B) Operates as an automated trading center and displays automated quotations that are disseminated in consolidated market data pursuant to § 242.603(b);

(C) Provides transaction reports identifying the NMS Stock ATS as the venue of execution that are disseminated in consolidated market data pursuant to § 242.603(b);

(D) Permits any registered broker or dealer to become a subscriber of the NMS Stock ATS; provided, however, the NMS Stock ATS:

(*1*) Shall not permit any registered broker or dealer subject to a statutory disqualification to be or become a subscriber; and

(*2*) May, pursuant to written policies and procedures, prohibit any registered broker or dealer from being or becoming a subscriber, or impose conditions upon such a subscriber, that does not meet the standards of financial responsibility or operational capability as are prescribed by such written policies and procedures;

(E) Provides equal access among all subscribers of the NMS Stock ATS and the registered broker-dealer of the NMS Stock ATS to all services that are related to:

(*1*) A qualified auction operated by the NMS Stock ATS under § 242.615(c); and

(*2*) Any continuous order book operated by the NMS Stock ATS;

(F) During at least four of the preceding six calendar months, had an average daily share volume of 1.0 percent or more of the aggregate average daily share volume for NMS stocks as reported by an effective transaction reporting plan; and

(G) Operates pursuant to an effective Form ATS–N under § 242.304, and such Form ATS–N evidences compliance by the NMS Stock ATS with the requirements of § 242.615(c) for a qualified auction and with the provisions of paragraphs (b)(64)(ii)(A) through (b)(64)(ii)(F) of this section.

* * * * *

(69) *Originating broker* means any broker with responsibility for handling a customer account, including, but not limited to, opening and monitoring the customer account and accepting and transmitting orders for the customer account.

* * * * *

(81) *Qualified auction* means an auction that is operated by an open competition trading center pursuant to § 242.615(c).

* * * * *

(87) *Restricted competition trading center* means any trading center that is not an open competition trading center and is not a national securities exchange.

* * * * *

(91) *Segmented order* means an order for an NMS stock that is for an account:

(i) Of a natural person or an account held in legal form on behalf of a natural person or group of related family members; and

(ii) In which the average daily number of trades executed in NMS stocks was less than 40 in each of the six preceding calendar months.

(iii) For purposes of this paragraph (b)(91), group of related family members means a group of natural persons with any of the following relationships: child, stepchild, grandchild, great grandchild, parent, stepparent, grandparent, great grandparent, domestic partner, spouse, sibling, stepbrother, stepsister, niece, nephew, aunt, uncle, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother-in-law, or sister-in-law, including adoptive and foster relationships; and any other natural person (other than a tenant or employee)

sharing a household with any of the foregoing natural persons.

* * * * *

(100) *Subscriber* has the meaning provided in § 242.300(b).

* * * * *

§ 242.602 [Amended]

■ 9. Amend § 242.602 by, in paragraphs (a)(5)(i) and (ii), removing the text ''§ 242.600(b)(90)'' and adding in its place ''§ 242.600(b)(99)''.

§ 242.611 [Amended]

■ 10. Amend § 242.611 by, in paragraph (c), removing the text ''§ 242.600(b)(38)'' and adding in its place ''§ 242.600(b)(41)''.

§ 242.614 [Amended]

■ 11. Amend § 242.614 by, in paragraphs (d)(1), (2), and (3), removing the text ''§ 242.600(b)(20)'' and adding in its place ''§ 242.600(b)(21)''.

■ 12. Add § 242.615 to read as follows:

§ 242.615 Order competition rule.

(a) *Order competition requirement.* A restricted competition trading center shall not execute internally a segmented order for an NMS stock until after a broker or dealer has exposed such order to competition at a specified limit price in a qualified auction that meets the requirements of paragraph (c) of this section and is operated by an open competition trading center. If the segmented order is not executed in the qualified auction, a restricted competition trading center may, as soon as reasonably possible, execute the segmented order internally at a price that is equal to or more favorable for the segmented order than the specified limit price in the qualified auction.

(b) *Exceptions.* The order competition requirement of paragraph (a) of this section shall not apply if:

(1) The segmented order is received and executed by the restricted competition trading center during a time period when no open competition trading center is operating a qualified auction for the segmented order;

(2) The market value of the segmented order is at least $200,000 calculated with reference to the midpoint of the national best bid and national best offer when the segmented order is received by the restricted competition trading center;

(3) The segmented order is executed by the restricted competition trading center at a price that is equal to or more favorable for the segmented order than the midpoint of the national best bid and national best offer when the segmented order is received by the restricted competition trading center;

(4) The segmented order is a limit order with a limit price selected by the customer that is equal to or more favorable for the segmented order than the midpoint of the national best bid and national best offer when the segmented order is received by the restricted competition trading center; or

(5) The segmented order is received and executed by the restricted competition trading center during a time period when no open competition trading center is operating a qualified auction for the segmented order that accepts orders that are not entirely in whole shares, and the customer selected a size for a segmented order that is not entirely in whole shares of an NMS stock, in which case any portion of such segmented order that is less than one whole share of the NMS stock, and only such portion, shall not be subject to the order competition requirement of paragraph (a) of this section.

(c) *Qualified auction requirements.* An open competition trading center shall comply with the following requirements for operation of a qualified auction for segmented orders.

(1) *Auction message.* (i) An auction message announcing the initiation of a qualified auction for a segmented order shall be provided for dissemination in consolidated market data pursuant to § 242.603(b). Each such auction message shall invite priced auction responses to trade with a segmented order and shall include the identity of the open competition trading center and the symbol, side, size, limit price, and identity of the originating broker for the segmented order.

(ii) If more than one broker is an originating broker for a segmented order, the originating broker identified pursuant to paragraph (c)(1)(i) of this section shall be the broker responsible for approving the opening of accounts with customers.

(iii) Notwithstanding the provisions of paragraph (c)(1)(i) of this section, the identity of the originating broker shall not be disclosed in the auction message if such originating broker certifies that it has established, maintained, and enforced written policies and procedures reasonably designed to assure that the identity of the originating broker will not be disclosed, directly or indirectly, to any person that potentially could participate in the qualified auction or otherwise trade with the segmented order, and the originating broker's certification is communicated to the open competition trading center conducting the qualified auction.

(2) *Auction responses.* An open competition trading center shall accept auction responses for a period of at least 100 milliseconds after an auction message is provided for dissemination in consolidated market data and shall end the auction not more than 300 milliseconds after an auction message is provided for dissemination in consolidated market data. Auction responses shall remain undisplayed during the auction period and not disseminated at any time thereafter.

(3) *Pricing increments.* Segmented orders and auction responses shall be priced in an increment of no less than $0.001 for segmented orders and auction responses with prices of $1.00 or more per share, in an increment of no less than $0.0001 for segmented orders and auction responses with prices of less than $1.00 per share, or at the midpoint of the national best bid and national best offer.

(4) *Fees and rebates.* No fee shall be charged for submission or execution of a segmented order. No fee shall be charged for submission of an auction response. The fee for execution of an auction response shall not exceed $0.0005 per share for auction responses priced at $1.00 per share or more, shall not exceed 0.05% of the auction response price per share for auction responses priced at less than $1.00 per share, and otherwise shall be the same rate for executed auction responses in all auctions. Any rebate for the submission or execution of a segmented order or for the submission or execution of an auction response shall not exceed $0.0005 per share for segmented orders or auction responses priced at $1.00 per share or more, shall not exceed 0.05% of the segmented order or auction response price per share for segmented orders or auction responses priced at less than $1.00 per share, and otherwise shall be the same rate for segmented orders in all auctions and shall be the same rate for auction responses in all auctions.

(5) *Execution priority of auction responses and resting orders.* (i) The highest priced auction responses to buy and the lowest priced auction responses to sell shall have priority of execution.

(ii) Auction responses for the account of a customer shall have priority over auction responses for the account of a broker or dealer at the same price.

(iii) As long as an auction response is received within the prescribed time period, execution priority shall not be based on time of receipt of the auction response.

(iv) The terms of execution priority shall not favor the broker or dealer that routed the segmented order to the auction, the originating broker for the segmented order, the open competition

trading center operating the auction, or any affiliate of the foregoing persons.

(v) Orders resting on a continuous order book of the open competition trading center operating the qualified auction at the conclusion of an auction period shall have priority over auction responses at a less favorable price for the segmented order. Displayed orders resting on a continuous order book of the open competition trading center operating the qualified auction shall have priority over auction responses at the same price. Auction responses shall have priority over undisplayed orders resting on a continuous order book of the open competition trading center operating the qualified auction at the same price.

(d) *Open competition trading centers.* (1) A national securities exchange or NMS Stock ATS shall not operate a qualified auction for segmented orders unless it complies with the provisions of this section and meets the definition of open competition trading center in § 242.600(b)(64).

(2) An open competition trading center shall not operate a system, other than a qualified auction, that is limited, in whole or in part, to the execution of segmented orders unless any segmented order executed through such system:

(i) Is received and executed by the open competition trading center during a time period when no open competition trading center is operating a qualified auction for the segmented order;

(ii) Has a market value of at least $200,000 calculated with reference to the midpoint of the national best bid and national best offer when the segmented order is received by the open competition trading center; or

(iii) Is executed by the open competition trading center at a price that is equal to or more favorable for the segmented order than the midpoint of the national best bid and national best offer when the segmented order is received by the open competition trading center.

(iv) Is a limit order with a limit price selected by the customer that is equal to or more favorable for the segmented order than the midpoint of the national best bid and national best offer when the segmented order is received by the open competition trading center; or

(v) Is received and executed by the open competition trading center during a time period when no open competition trading center is operating a qualified auction for the segmented order that accepts orders that are not entirely in whole shares, and is a size, selected by the customer, that is not entirely in whole shares of an NMS stock, in which case any portion of such segmented order that is less than one whole share of the NMS stock, and only such portion, may be executed through such system.

(e) *Originating brokers.* (1) An originating broker shall establish, maintain, and enforce written policies and procedures reasonably designed to identify the orders of customers as segmented orders as defined in § 242.600(b)(91).

(2) An originating broker shall not route a customer order identified as a segmented order without also identifying such order as a segmented order to the routing destination.

(3) An originating broker that makes a certification referred to in paragraph (c)(1)(iii) of this section shall establish, maintain, and enforce written policies and procedures reasonably designed to assure that the identity of the originating broker will not be disclosed, directly or indirectly, to any person that potentially could participate in the qualified auction or otherwise trade with the segmented order.

(4) Where there are multiple originating brokers for a segmented order, an originating broker shall not be deemed to be in violation of the provisions of paragraphs (e)(1) through (3) of this section arising solely from a failure to meet a responsibility that was specifically allocated by prior written agreement to another originating broker.

(f) *Brokers or dealers.* (1) No broker or dealer that receives an order identified as a segmented order shall route such order without identifying such order as a segmented order to the routing destination.

(2) No broker or dealer with knowledge of where a segmented order is to be routed for execution shall submit an order, or enable an order to be submitted by any other person, to the continuous order book of an open competition trading center or of a national securities exchange that could have priority to trade with the segmented order at such open competition trading center or national securities exchange.

(g) *National securities exchanges.* A national securities exchange shall not operate a system, other than a qualified auction, that is limited, in whole or in part, to the execution of segmented orders unless any segmented order executed through such system:

(1) Is received and executed by the national securities exchange during a time period when no open competition trading center is operating a qualified auction for the segmented order;

(2) Has a market value of at least $200,000 calculated with reference to the midpoint of the national best bid and national best offer when the segmented order is received by the national securities exchange;

(3) Is executed by the national securities exchange at a price that is equal to or more favorable for the segmented order than the midpoint of the national best bid and national best offer when the segmented order is received by the national securities exchange.

(4) Is a limit order with a limit price selected by the customer that is equal to or more favorable for the segmented order than the midpoint of the national best bid and national best offer when the segmented order is received by the national securities exchange; or

(5) Is received and executed by the national securities exchange during a time period when no open competition trading center is operating a qualified auction for the segmented order that accepts orders that are not entirely in whole shares, and is a size, selected by the customer, that is not entirely in whole shares of an NMS stock, in which case any portion of such segmented order that is less than one whole share of the NMS stock, and only such portion, may be executed through such system.

§ 242.1000 [Amended]

■ 13. Amend § 242.1000, in the definition *Plan processor,* by removing the text ''§ 242.600(b)(67)'' and adding in its place ''§ 242.600(b)(73)''.

By the Commission.

Dated: December 14, 2022.

J. Matthew DeLesDernier,

Deputy Secretary.

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