SECURITIES AND EXCHANGE COMMISSION

17 CFR Parts 240 and 242

[Release No. 34–99679; File No. S7–29–22]

RIN 3235–AN22

Disclosure of Order Execution Information

AGENCY: Securities and Exchange Commission.

ACTION: Final rule.

SUMMARY: The Securities and Exchange Commission (''Commission'' or ''SEC'') is adopting amendments to a rule under the Securities Exchange Act of 1934 (''Exchange Act'') that requires disclosures for order executions in national market system (''NMS'') stocks. First, the amendments expand the scope of reporting entities subject to the preexisting rule that requires market centers to make available to the public monthly execution quality reports to encompass broker-dealers with a larger number of customers. Next, the amendments modify the definition of ''covered order'' to include certain orders submitted outside of regular trading hours and certain orders submitted with stop prices. In addition, the amendments modify the information required to be reported under the rule, including changing how orders are categorized by order size as well as how they are categorized by order type. The amendments, as part of the changes to the order size categories, modify the rule to capture execution quality information for fractional share orders, odd-lot orders, and larger-sized orders. Additionally, the amendments modify reporting requirements for non-marketable limit orders (''NMLOs'') in order to capture more relevant execution quality information for these orders by requiring statistics to be reported from the time such orders become executable. The amendments modify time-to-execution categories and require average time to execution to be measured in increments of a millisecond or finer and calculated on a share-weighted basis for all orders. The amendments require that the time of order receipt and time of order execution be measured in increments of a millisecond or finer, and that realized spread be calculated at multiple time intervals. Finally, the amendments enhance the accessibility of the reported execution quality statistics by requiring all reporting entities to make a summary report available.

DATES:

Effective date: The final rules are effective June 14, 2024.

Compliance date: See section VII, titled ''Transition Matters,'' for further information on transitioning to the final rules.

FOR FURTHER INFORMATION CONTACT: Kathleen Gross, Senior Special Counsel, Lauren Yates, Senior Special Counsel, Susie Cho, Special Counsel, Christopher Chow, Special Counsel, David Michehl, Special Counsel, or Laura Harper Powell, Special Counsel at (202) 551–5500, Division of Trading and Markets, Commission, 100 F Street NE, Washington, DC 20549.

SUPPLEMENTARY INFORMATION: The Commission is adopting amendments to 17 CFR 242.600 (''Rule 600'') to add new defined terms to and modify certain existing defined terms in Rule 600 that are used in 17 CFR 242.605 (''Rule 605'') as amended, as well as amendments to Rule 605; and to make conforming amendments to defined terms in 17 CFR 242.602, 242.611, and 242.614; and conforming amendments to defined terms in 17 CFR 240.3a51–1, 240.13h–1, 242.105, 242.201, 242.204, and 242.1000.

Table of Contents

I. Introduction and Background
A. Overview of Need for Rule Modernization
B. Overview of the Proposal and Comments Received
C. Overview of Final Rule 605
II. Modifications to Reporting Entities
A. Larger Broker-Dealers
1. Proposed Approach
2. Final Rule and Discussion
B. Qualified Auction Mechanisms
1. Proposed Approach
2. Final Rule and Discussion
C. NMS Stock ATSs and SDPs
1. Proposed Approach
2. Final Rule and Discussion
III. Modifications to Scope of Orders Covered and Required Information
A. Covered Order
1. Orders Submitted Pre-Opening/Post-Closing
2. Stop Orders
3. Non-Exempt Short Sale Orders
B. Required Information
1. Categorization by Order Size
2. Categorization by Order Type
3. Timestamp Conventions and Time-to-Execution Statistics
4. Execution Quality Statistics
IV. Summary Execution Quality Report
A. Proposed Approach
B. Final Rule and Discussion
1. Required Information
2. Required Format
3. Investor Testing and Education
V. Requirements for Making Rule 605 Reports Available to the Public
A. Proposed Approach
B. Final Rule and Discussion
1. Accessibility of Rule 605 Reports
2. Alternatives to Rule 605 Proposal
VI. Existing Commission Exemptive Relief and Staff Statements
VII. Transition Matters
VIII. Paperwork Reduction Act
A. Summary of Collection of Information
B. Proposed Use of Information
C. Respondents
D. Total PRA Burdens
IX. Economic Analysis
A. Introduction
B. Market Failure
C. Baseline
1. Regulatory Baseline
2. Use of Reports under Rule 605 Prior to Rule Amendments
3. Disclosure Requirements under Preexisting Rule 605
4. Markets for Brokerage and Trading Services for NMS Stocks under Preexisting Rule 605 Disclosure Requirements
D. Economic Effects
1. Benefits
2. Costs
3. Economic Effects on Efficiency, Competition, and Capital Formation
E. Reasonable Alternatives
1. Reasonable Alternative Modifications to Reporting Entities
2. Reasonable Alternative Modifications to Scope of Covered Orders
3. Reasonable Alternative Modifications to Required Information
4. Reasonable Alternative Modifications to Accessibility
5. Other Reasonable Alternatives
X. Regulatory Flexibility Act Certification
XI. Other Matters
Statutory Authority

I. Introduction and Background

On December 14, 2022, the Commission proposed amendments to Rule 605 under Regulation National Market System (17 CFR 242.600 through 242.614) (''Regulation NMS'') to update the disclosure of order execution quality statistics in national market system (''NMS'') stocks.[1] Rule 605, formerly known as Rule 11Ac1–5, was adopted in 2000[2] and requires market centers[3] to

[1] *See* Securities Exchange Act Release No. 96493 (Dec. 14, 2022), 88 FR 3786 (Jan. 20, 2023) (''Proposing Release'').

[2] *See* Securities Exchange Act Release No. 43590 (Nov. 17, 2000), 65 FR 75414 at 75416 (Dec. 1, 2000) (Disclosure of Order Execution and Routing Practices) (''Rule 11Ac1–5 Adopting Release''). Along with Rule 11Ac1–5, the Commission also adopted Rule 11Ac1–6 as part of the Rule 11Ac1–5 Adopting Release. *See* 17 CFR 242.606 (''Rule 606''). When the Commission later adopted Regulation NMS in 2005, Rule 11Ac1–5 was re-designated as Rule 605, and Rule 11Ac1–6 was re-designated as Rule 606. See Securities Exchange Act Release No. 51808 (June 9, 2005), 70 FR 37496 (June 29, 2005) (''Regulation NMS Adopting Release''). Rule 606 requires the public disclosure of order routing practices and was amended in 2018. *See* Securities Exchange Act Release No. 84528 (Nov. 2, 2018), 83 FR 58338 (Nov. 19, 2018) (''2018 Rule 606 Amendments Release'').

[3] Regulation NMS defines the term ''market center'' to mean any exchange market maker, over-the-counter (''OTC'') market maker, alternative

make available standardized monthly reports of statistical information concerning covered orders [4] in NMS stocks [5] that they received for execution.[6] Prior to these amendments, the Rule 605 report contained a number of execution quality metrics for covered orders.[7] The information was categorized: by (1) individual security, (2) one of five order types,[8] and (3) one of four order sizes.[9] Within each of the three categories, the Rule 605 report that was required prior to these amendments included statistics about the total number of orders submitted, and the total number of shares submitted, shares cancelled prior to execution, shares executed at the receiving market center, shares executed at another venue, shares executed within different time-to-execution buckets, and average realized spread.[10] For market and marketable limit orders specifically, the report required by Rule 605 prior to these amendments also included statistics about the (1) average effective spread; (2) number of shares executed better than the quote, at the quote, or outside the quote; (3) average time to execution when executed better than the quote, at the quote, or outside the quote; and (4) average dollar amount per share that orders were executed better than the quote or outside the quote.[11] To calculate the required statistics, the time of order execution and time of order receipt were measured to the nearest second.[12]

At the time the Commission adopted Rule 11Ac1–5, there was little publicly available information to enable investors to compare and evaluate execution quality among different market centers.[13] Rule 605, along with Rule 606 of Regulation NMS, was adopted in 2000, and together these rules required the public disclosure of execution quality and order routing practices.[14] The Commission intended Rule 11Ac1–5 to provide awareness about how broker-dealers responded to trade-offs between price and other factors, such as speed or reliability, and establish a baseline level of disclosure in order to facilitate cross-market comparisons of execution quality.[15] The Commission reasoned that once investors could evaluate execution performance provided by various broker-dealers, competitive forces could then be brought to bear on broker-dealers both with respect to the explicit trading costs associated with brokerage commissions and the implicit trading costs associated with execution quality.[16]

The information disclosed under Rule 605 has provided significant insight into execution quality at different market centers.[17] However, Rule 605 has not been substantively updated since it was adopted in 2000. In the interim, equity market conditions have changed due in part to many technological advancements that have altered the speed and nature of trading. In addition, the participation of individual investors in the equity markets has increased.[18] Accordingly, the Commission is adopting amendments to Rule 605 to update and improve the disclosure of execution quality information by

trading system (''ATS''), national securities exchange, or national securities association. *See* final 17 CFR 242.600(b)(55). ''Exchange market maker'' means any member of a national securities exchange that is registered as a specialist or market maker pursuant to the rules of such exchange. *See* final 17 CFR 242.600(b)(37). ''OTC market makerrdquo; means 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 a block size. *See* final 17 CFR 242.600(b)(75). ''Alternative trading system'' or ''ATS'' means any organization, association, person, group of persons, or system: (1) That constitutes, maintains, or provides a market place or facilities for bringing together purchasers and sellers of securities or for otherwise performing with respect to securities the functions commonly performed by a stock exchange within the meaning of 17 CFR 240.3b–16; and (2) That does not: (i) Set rules governing the conduct of subscribers other than the conduct of such subscribers' trading on such organization, association, person, group of persons, or system; or (ii) Discipline subscribers other than by exclusion from trading. *See* 17 CFR 242.300(a). *See also* final 17 CFR 242.600(b)(4) (stating that ''alternative trading system'' has the meaning provided in 17 CFR 242.300(a)). ''National securities exchange'' means any exchange registered pursuant to section 6 of the Exchange Act. *See* final 17 CFR 242.600(b)(63). ''National securities associationrdquo; means any association of brokers and dealers registered pursuant to section 15A of the Exchange Act. *See* final 17 CFR 242.600(b)(62).

[4] Prior to these amendments, a ''covered order'' was defined to include any market order or any limit order (including immediate-or-cancel orders) received by a market center during regular trading hours at a time when a national best bid and national best offer (''NBBO'') is being disseminated, and, if executed, is executed during regular trading hours, and did not include any orders for which the customer requests special handling, including, but not limited to, market on open and market on close orders, stop orders, all or none orders, and ''not held'' orders. *See* prior 17 CFR 242.600(b)(22). Generally, a ''not held'' order provides the broker-dealer with price and time discretion in handling the order, whereas a broker-dealer must attempt to execute a ''held'' order immediately. *See* 2018 Rule 606 Amendments Release, 83 FR 58338 at 58340, n.19 (Nov. 19, 2018).

[5] ''NMS stock'' is defined under Regulation NMS as any NMS security other than an option. *See* final 17 CFR 242.600(b)(65). An ''NMS security'' is defined as 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 national market system plan for reporting transactions in listed options. *See* final 17 CFR 242.600(b)(64).

[6] *See* prior 17 CFR 242.605. The procedures for market centers to make their execution quality data available to the public are set forth in the National Market System Plan Establishing Procedures Under Rule 605 of Regulation NMS (''Rule 605 NMS Plan''). *See* prior 17 CFR 242.605(a)(2) and Securities and Exchange Commission File No. 4–518 (Rule 605 NMS Plan). *See also* Securities Exchange Act Release No. 44177 (Apr. 12, 2001), 66 FR 19814 (Apr. 17, 2001) (order approving the Rule 605 NMS Plan) (''Rule 605 NMS Plan Release'').

[7] *See* prior 17 CFR 242.605(a)(1); Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75423–25 (Dec. 1, 2000).

[8] *See* prior 17 CFR 242.605(a)(1). Prior to these amendments, ''Categorized by order type'' referred to categorization by whether an order is: (1) a market order, (2) a marketable limit order, (3) an inside-the-quote limit order, (4) an at-the-quote limit order, or (5) a near-the-quote limit order. *See* prior 17 CFR 242.600(b)(14).

[9] *See* prior 17 CFR 242.605(a)(1). Prior to these amendments, the size categories were: 100 to 499 shares; 500 to 1,999 shares; 2000 to 4,999 shares; and 5,000 or greater shares. *See* prior 17 CFR 242.600(b)(13). On June 22, 2001, the Commission granted exemptive relief to any order with a size of 10,000 shares or greater (''Large Order Exemptive Relief''), reasoning that the exclusion of very large orders would help assure greater comparability of statistics in the largest size category of 5,000 or greater shares. *See* letter from Annette L. Nazareth, Director, Division of Market Regulation to Darla C. Stuckey, Assistant Secretary, NYSE Group, Inc., dated June 22, 2001 (''Large Order Exemptive Letter'').

[10] *See* prior 17 CFR 242.605(a)(1)(i).

[11] *See* prior 17 CFR 242.605(a)(1)(ii).

[12] *See* prior 17 CFR 242.600(b)(91), (92).

[13] *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75416 (Dec. 1, 2000). For clarity, when this release discusses the adoption of Rule 605, it is referring to the Rule 11Ac1–5 Adopting Release, *supra* note 2.

[14] *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75416 (Dec. 1, 2000).

[15] *See id.* at 75418. Data obtained from Rule 605 reports are used by the third parties including academics and the financial press to study a variety of topics related to execution quality, including liquidity measurement, exchange competition, zero commission trading, and broker-dealer execution quality. *See* Proposing Release, 88 FR 3786 at 3833, n.545–547 (Jan. 20, 2023) and accompanying text.

[16] *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75419 (Dec. 1, 2000). Although it is difficult to isolate the effects of Rule 605 given the evolution of the equity markets over time, one academic study examining the introduction of Rule 605 found that the routing of marketable order flow by broker-dealers became more sensitive to changes in execution quality across market centers after Rule 605 reports became available. *See* Ekkehart Boehmer et al., *Public Disclosure and Private Decisions: Equity Market Execution Quality and Order Routing,* 20 REV. FIN. STUD. 315 (2007) (''Boehmer et al.''). Another study attributed a significant decline in effective and quoted spreads following the implementation of Rule 605 to an increase in competition between market centers, who improved the execution quality that they offered in order to attract more order flow. *See* Xin Zhao & Kee H. Chung, *Information Disclosure and Market Quality: The Effect of SEC Rule 605 on Trading Costs,* 42 J. FIN. QUANTITATIVE ANALYSIS, 657 (Sept. 2007) (''Zhao & Chung'').

[17] *See* Securities Exchange Act Release No. 61358 (Jan. 14, 2010), 75 FR 3594 at 3604, n.55 (Jan. 21, 2010) (''Concept Release on Equity Market Structure'').

[18] *See* Proposing Release, 88 FR 3786 at 3787–88 (Jan. 20, 2023). As used in this release, ''individual investor'' refers to natural persons that trade relatively infrequently for their own or closely related accounts.

expanding the scope of entities subject to Rule 605, modifying the information required, and making key execution quality metrics more accessible to investors.

A. Overview of Need for Rule Modernization

The U.S. equity markets have evolved significantly in the last couple of decades. For instance, the equities markets have become increasingly fragmented, as both the market shares of individual national securities exchanges have decreased and an increased percentage of order flow has moved off-exchange. In 2000, there were nine registered national securities exchanges and one registered national securities association.[19] A large proportion of the order flow in listed equity securities was routed to a few, mostly manual, trading centers,[20] and the primary listing exchanges maintained a high percentage of the order flow for exchange-listed equities.[21]

In contrast, trading in the U.S. equity markets today is highly automated and spread even more among different types of trading centers, allowing even more choices about where orders may be routed. The types of trading centers that currently trade NMS stocks are: (1) national securities exchanges operating self-regulatory organization (''SRO'') trading facilities; [22] (2) ATSs that trade NMS stocks (''NMS Stock ATSs''); [23] (3) exchange market makers; (4) wholesalers; [24] and (5) any other broker-dealer that executes orders internally by trading as principal or crossing orders as agent.[25] Some OTC market makers, such as wholesalers, operate single-dealer platforms (''SDPs'') through which they execute institutional orders in NMS stocks against their own inventory.[26] In the first quarter of 2023, NMS stocks were traded on 16 national securities exchanges, and off-exchange at 33 NMS Stock ATSs and at over 220 other Financial Industry Regulatory Authority (''FINRA'') members.[27]Approximately 56% of NMS share volume was executed on national securities exchanges.[28] The majority of off-exchange share volume was executed by wholesalers, who executed over one quarter of total share volume (26.9%) and about 61% of off-exchange share volume.[29]

In addition, developments in trading further point toward the utility of amending Rule 605. Average stock prices have continued to increase over time,[30] and odd-lots [31] and fractional shares [32] continue to trade with increasing frequency. In addition, odd-lot quotes in higher-priced stocks continue to offer prices that are frequently better than the round lot NBBO for these stocks,[33] and this better-

[19] *See* Securities and Exchange Commission, Annual Report for fiscal year 2000, at 38 *available at https://www.sec.gov/pdf/annrep00/ar00full.pdf.*

[20] *See* Securities Exchange Act Release Nos. 78309 (July 13, 2016), 81 FR 49432 at 49436 (July 27, 2016) (''Rule 606 Amendments Proposing Release''); 42450 (Feb. 23, 2000), 65 FR 10577 at 10579–80 (Feb. 28, 2000) (''Fragmentation Release'').

[21] *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75415 (Dec. 1, 2000) (stating that in Sep. 2000, for example, the New York Stock Exchange Inc. (''NYSE'') accounted for 83.3% of the share volume in NYSE equities and that the American Stock Exchange, LLC (''Amex'') accounted for 69.9% of share volume in Amex equities). *See also* Concept Release on Equity Market Structure, 75 FR 3594 at 3595 (Jan. 21, 2010) (stating that in Jan. 2005, NYSE executed approximately 79.1% of the consolidated share volume in its listed stocks, as compared to 25.1% in Oct. 2009). In addition, NYSE-listed stocks were traded primarily on the floor of the NYSE in a manual fashion until Oct. 2006, at which time NYSE began to offer fully automated access to its displayed quotations. *See id.* at 3594–95. However, stocks traded on the NASDAQ Stock Market LLC (''NASDAQ''), which in 2000 was owned and operated by a national securities association, were already trading in a highly automated fashion at many different trading centers. *See id.* at 3595; Fragmentation Release, 65 FR 10577 at 10580 (Feb. 28, 2000). *See also* Proposing Release, 88 FR 3786 at 3791, n.76 (Jan. 20, 2023).

[22] *See final* 17 CFR 242.600(b)(100) (defining ''SRO trading facility'' as, among other things, a facility operated by a national securities exchange that executes orders in a security).

[23] An ''NMS Stock ATS'' as used in this release is an ATS that has filed an effective Form ATS–N with the Commission.

[24] The term ''wholesaler'' is not defined in Regulation NMS, but is commonly used to refer to an OTC market maker that seeks to attract orders from broker-dealers that service the accounts of a large number of individual investors. The primary business model of wholesalers is to trade internally as principal with individual investor orders. They do not publicly display or otherwise reveal the prices at which they are willing to trade internally as a means to attract individual investor orders from broker-dealers.

[25] *See* 15 U.S.C. 78c(a)(4)(A) (defining ''broker'' generally as any person engaged in the business of effecting transactions in securities for the account of others); 15 U.S.C. 78c(a)(5)(A) (defining ''dealer'' generally as any person engaged in the business of buying and selling securities for such person's own account through a broker or otherwise). The term ''broker-dealer'' is used in this release to encompass all brokers, all dealers, and firms that are both brokers and dealers. See also final 17 CFR 242.600(b)(106) (defining ''trading center''). Broker-dealers that primarily service the accounts of individual investors (referred to in this release as ''retail brokers'') often route the marketable orders of individual investors in NMS stocks to wholesalers.

[26] *See* Proposing Release, 88 FR 3786 at 3860, n.768 (Jan. 20, 2023) and accompanying text.

[27] *See infra* Table 6. See also Proposing Release, 88 FR 3786 at 3860, n.766 (Jan. 20, 2023) and accompanying text; and 3861 (Table 7).

[28] *See infra* Table 6. *See also* Proposing Release, 88 FR 3786 at 3860, n.767 (Jan. 20, 2023) and accompanying text; and 3861 (Table 7).

[29] *See infra* Table 6. *See also* Proposing Release, 88 FR 3786 at 3861 (Table 7) (Jan. 20, 2023).

[30] *See* Securities Exchange Act Release No. 90610 (Dec. 9, 2020), 86 FR 18596 at 18606–07 (Apr. 9, 2021) (''Market Data Infrastructure (''MDI'') Adopting Release'') (*citing* Securities Exchange Act Release No. 88216 (Feb. 14, 2020), 85 FR 16726 at 16739 (Mar. 24, 2020) (''MDI Proposing Release'')) (stating that ''between 2004 and 2019, the average price of a stock in the Dow Jones Industrial Average nearly quadrupled''). *See also* Proposing Release, 88 FR 3786 at 3787, n.16 (Jan. 20, 2023).

[31] *See* MDI Adopting Release, 86 FR 18596 at 18616 (Apr. 9, 2021) (describing analyses included in the MDI Adopting Release confirming observations made in the MDI Proposing Release that a significant proportion of quotation and trading activity occurs in odd-lots, particularly for frequently traded, high-priced stocks); and Proposing Release, 88 FR 3786 at 3792, n.91 (Jan. 20, 2023) (describing analysis using the NYSE Trade and Quote database (obtained via Wharton Research Data Services (''WRDS'')) (''TAQ data'' or ''NYSE TAQ data'') that found that odd-lots increased from around 15% of trades in Jan. 2014 to more than 55% of trades in Mar. 2022). An analysis of data from the SEC's Market Information Data Analytics System (''MIDAS'') analytics tool available at *https://www.sec.gov/marketstructure/datavis.html*#.YoPskqjMKUk shows that, in Q1 2023, odd-lots made up 80.5% of on-exchange trades (37.3% of volume) for stocks in the highest price decile and 18.8% of on-exchange trades (1.2% of volume) for stocks in the lowest price decile. *See* dataset ''Summary Metrics by Decile and Quartile'' *available at https://www.sec.gov/marketstructure/downloads.html. See also* Proposing Release, 88 FR 3786 at 3792, n.91 (Jan. 20, 2023).

[32] Analysis using Consolidated Audit Trail (''CAT'') data for executed orders in Aug. 2023 found that an estimated 67.4 million originating orders with a fractional share component were eventually executed on- or off-exchange. Orders with a fractional share component represented approximately 4% of all executed orders and 22% of executed orders from ''individual'' accounts. Generally, accounts classified as ''individual'' in CAT are attributed to natural persons. *See also* Proposing Release, 88 FR 3786 at 3792, n.92 (Jan. 20, 2023).

[33] *See* MDI Adopting Release, 86 FR 18596 at 18729 (Apr. 9, 2021) (describing analysis using data from May 2020 and finding that approximately 45% of all trades executed on exchange and approximately 10% of all volume executed on exchange in corporate stocks and exchange-traded funds (''ETFs'') (6,926 unique symbols) occurred in odd-lot sizes (*i.e.,* less than 100 shares) and 40% of those odd-lot transactions (representing approximately 35% of all odd-lot volume) occurred at a price better than the NBBO). In addition, a recent academic working paper shows that odd-lots offer better prices than the NBBO 18% of the time for bids and 16% of the time for offers. This percentage increases monotonically in the stock price, for example, for bid prices, increasing from 5% for the group of lowest-price stocks in their sample, to 42% for the group of highest-priced stocks. *See* Robert P. Bartlett, Justin McCrary, and Maureen O'Hara, *The Market Inside the Market: Odd-Lot Quotes* (working paper Feb. 1, 2022), *available at* SSRN: *https://ssrn.com/abstract=4027099* (retrieved from SSRN Elsevier database) (''Bartlett, et al.''). *See also* Elliot Banks, BMLL Technologies, Inside the SIP and the Microstructure of Odd-Lot Quotes (observing an upward trend in odd-lot trading inside the NBBO

priced odd-lot liquidity is distributed across multiple price levels.[34] In addition, odd-lot rates [35] have increased among lower priced stocks.[36] Because Rule 605 size categories prior to these amendments excluded orders smaller than 100 shares, a significant proportion of market activity was excluded.[37] An analysis of Rule 605 data shows that Rule 605 coverage has declined in the decades since the initial adoption of Rule 605.[38] Further, because order size categories were tied to the number of shares, the categories may have grouped orders of very different notional values, which might have complicated comparisons of aggregate execution quality. Finally, the speed of trading in the market has increased exponentially since 2000,[39] rendering the 1 second timestamp conventions of preexisting Rule 605 less informative.

Moreover, since the adoption of Rule 605, the Commission and its staff have continually assessed market events and their impact on market structure, with much of this effort aimed at achieving enhanced transparency for investors.[40] In 2010, the Commission issued a Concept Release on Equity Market Structure seeking public comment on, among other things, the metrics for assessing the performance of the current market structure and the effectiveness of tools such as Rule 605 reports to protect investor interests.[41] In 2015, the Commission formed the Equity Market Structure Advisory Committee (''EMSAC''), which considered issues related to Regulation NMS and equity market structure.[42] The EMSAC recommended that the Commission amend Rule 605 to modernize it and increase the usefulness of available execution quality disclosures.[43] In addition, one broker-dealer petitioned the Commission to amend Rule 605.[44]

In 2018, the Commission modified Rule 606, which requires broker-dealers to disclose the identity of market centers to which they route orders on behalf of customers.[45] Rule 606(a)(1), which focuses on held orders,[46] requires broker-dealers to produce quarterly public reports regarding their routing of non-directed orders [47] in NMS stocks that are submitted on a held basis and these reports include the identity of regularly used venues, the percentage of orders routed to each venue, and information about the broker-dealer's relationship with each venue.[48] When adopting the 2018 Rule 606 Amendments, the Commission identified intensified competition for customer orders, the rise in the number of trading centers, and the introduction of new fee models for execution services as the main concerns with held orders for NMS stocks that it sought to address with the proposal.[49] The Commission adopted enhanced public disclosures pursuant to Rule 606(a)(1) that focused on increased transparency for the financial inducements that broker-dealers face when determining where to route held order flow.[50] The Commission also adopted Rule 606(b)(3) to require detailed, customer-specific order handling disclosures that can be requested by a customer that places, directly or indirectly, one or more orders in NMS stocks that are submitted on a not held basis.[51]

At the time of the 2018 Rule 606 Amendments, the Commission considered suggestions from the EMSAC and other commenters that the Commission include more or different execution quality statistics in the required disclosures.[52] But the Commission stated that the enhancements to Rule 606(a) that it was adopting were appropriately designed to enable customers- and retail customers in particular-to better assess their broker-dealers' order routing performance and, in particular, potential conflicts of interest that their broker-dealers face when routing customer orders and how their broker-dealers manage those potential

from Jan. 2019 to Jan. 2022). *See also* Proposing Release, 88 FR 3786 at 3792, n.93 (Jan. 20, 2023).

[34] *See* MDI Adopting Release, 86 FR 18596 at 18613 n.202 (Apr. 9, 2021) (describing analysis included in the MDI Adopting Release that examined quotation data for the week of May 22–29, 2020 for stocks priced from $250.01 to $1000.00 and found that there is odd-lot interest priced better than the new round lot NBBO 28.49% of the time, and, in 48.49% of those cases, there are better priced odd-lots at multiple price levels). *See also* Proposing Release, 88 FR 3786 at 3792, n.94 (Jan. 20, 2023).

[35] The odd-lot rate is the total number of odd-lot trades divided by the total number of all trades.

[36] For example, odd-lot rates for corporate stock price deciles 1–3 (the lowest priced corporate stocks comprising 30% of all corporate stocks) have been higher on average in 2021, 2022, and Sep. 2023 (34%, 34%, 34%) as compared to 2019 and 2020 (23%, 27%). Similarly, exchange-traded products (''ETPs'') also exhibit higher average odd-lot rates in price quartiles 1 and 2 (the lowest priced ETPs comprising 50% of all ETPs) on average in 2021, 2022, and Sep. 2023 (26%, 28%, 28%) compared to 2019 and 2020 (19%, 22%). Analysis has been updated based on MIDAS, *available at https://www.sec.gov/opa/data/market-structure/marketstructuredownloadshtml-by__decile__and__quartile. See also* Proposing Release, 88 FR 3786 at 3792, n.95 (Jan. 20, 2023).

[37] *See* Proposing Release, 88 FR 3786 at 3792, n.91–92 (Jan. 20, 2023). *See also id.* at 3840, n.619–622 and accompanying text (estimating, based on analysis of Tick Size Pilot data, coverage of current Rule 605 reporting requirements).

[38] *See id.* at 3841 (Figure 3) (describing analysis comparing one market center's volume (NYSE) to TAQ data that showed that an estimated 50% of shares executed during regular market hours were included in Rule 605 reports as of Feb. 2021, and showed that this number has been on a slightly downward trend since around mid–2012).

[39] Analysis of data from the SEC's MIDAS analytics tool shows that the percent of on-exchange NMLOs that are fully executed within 1 millisecond (as a percentage of all fully executed on-exchange NMLOs) has increased from 2.1% in Q1 2012 to 11.7% in Q1 2023 for small cap stocks, and from 5.9% in Q1 2012 to 14.0% in Q1 2023 for large cap stocks. Further, in Q1 2023 nearly half (48.0%) of NMLOs executed in less than 1 second in large market capitalization stocks. See dataset ''Conditional Cancel and Trade Distribution,'' *available at https://www.sec.gov/marketstructure/downloads.html. See also infra* notes 1216–1217 and accompanying text. *See also* Proposing Release, 88 FR 3786 at 3792, n.98 (Jan. 20, 2023).

[40] For example, since the adoption of Rule 605 in 2000, the Commission has periodically revised certain of its NMS rules, including the adoption of Regulation NMS in 2005. *See, e.g.,* Regulation NMS Adopting Release, 70 FR 37496 (June 29, 2005); and MDI Adopting Release, 86 FR 18596 (Apr. 9, 2021).

[41] *See* Concept Release on Equity Market Structure, 75 FR 3594 at 3605 (Jan. 21, 2010).

[42] The archives of these meetings are available at *https://www.sec.gov/spotlight/emsac/emsac-archives.htm.*

[43] *See* Transcript from EMSAC Meeting (Aug. 2, 2016), *available at https://www.sec.gov/spotlight/emsac/emsac-080216-transcript.txt* (''EMSAC I''); Transcript from EMSAC Meeting (Nov. 29, 2016), *available at https://www.sec.gov/spotlight/equity-market-structure/emsac-transcript-112916.txt* (''EMSAC II''); EMSAC Recommendations Regarding Modifying Rule 605 and Rule 606 (''EMSAC III''), Nov. 29, 2016, *available at https://www.sec.gov/spotlight/emsac/emsac-recommendations-rules-605-606.pdf.*

[44] *See* Letter from Virtu Financial re Petition for Rulemaking to Amend SEC Rule 605 (Sept. 20, 2021) (''Virtu Petition''), *available at https://www.sec.gov/rules/petitions/2021/petn4-775.pdf.*

[45] The amendments to Rule 606 in 2018 (''2018 Rule 606 Amendments'') also modified Rule 605 to require that the public order execution quality reports be kept publicly available for a period of three years. *See* 2018 Rule 606 Amendments Release, 83 FR 58338 (Nov. 19, 2018).

[46] *See supra* note 4 (discussing held and not held orders).

[47] A ''non-directed order'' means any order from a customer other than a directed order. *See* final 17 CFR 242.600(b)(66). A ''directed order'' means an order from a customer that the customer specifically instructed the broker or dealer to route to a particular venue for execution. See final 17 CFR 242.600(b)(32).

[48] *See* 17 CFR 242.606(a)(1). Held orders are typically used by individual investors. *See, e.g.,* 2018 Rule 606 Amendments Release, 83 FR 58338 at 58372 (Nov. 19, 2018) (stating that retail investors' orders are typically submitted on a held basis and are typically smaller in size).

[49] *See* 2018 Rule 606 Amendments Release, 83 FR 58338 at 58372 (Nov. 19, 2018).

[50] *See id.* at 58373.

[51] *See* 17 CFR 242.606(b)(3); 2018 Rule 606 Amendments Release, 83 FR 58338 at 58345 (Nov. 19, 2018) (stating that by using the not held order distinction, Rule 606(b)(3) as adopted will likely result in more Rule 606(b)(3) disclosures for order flow that is typically characteristic of institutional customers—not retail customers—and will likely cover all or nearly all of the institutional order flow).

[52] *See* 2018 Rule 606 Amendments Release, 83 FR 58338 at 58379 (Nov. 19, 2018). *See also* Proposing Release, 88 FR 3786 at 3790, n.66 (Jan. 20, 2023) and accompanying text.

conflicts.[53] The Commission further stated the limited modifications being adopted at that time were reasonably designed to further the goal of enhancing transparency regarding broker-dealers' order routing practices and customers' ability to assess the quality of those practices, and that the suggested execution quality statistics were not necessary to achieve that goal.[54] However, the Commission stated that its determination not to adopt the additional specific disclosures was not an indication that the Commission had formed a decision on the validity or usefulness of the suggested execution quality statistics.[55]

Separately, each broker-dealer has a legal duty to seek to obtain best execution of customer orders.[56] The duty of best execution requires broker-dealers to execute customers' trades at the most favorable terms reasonably available under the circumstances.[57] When adopting Rules 605 and 606, the Commission stated that these rules do not address and therefore do not change the existing legal standards that govern a broker-dealer's duty of best execution.[58] The Commission recognized that the information contained in the Rule 605 reports (and Rule 606 reports) will not, by itself, be sufficient to support conclusions regarding a broker-dealer's compliance with its legal responsibility to obtain the best execution of customer orders.[59] As the Commission stated, any such conclusions would require a more in-depth analysis of the broker-dealer's order routing practices than will be available from the disclosures required by the rules.[60]

B. Overview of the Proposal and Comments Received

In acknowledgment of the myriad changes to the securities markets since the adoption of Rule 605 more than two decades ago, the proposed amendments to Rule 605 sought to ensure the continued transparency and utility of the execution quality statistics required by Rule 605. The Commission proposed to amend Rule 605 by expanding the scope of reporting entities to include broker-dealers with a larger number of customers (''larger broker-dealers'').[61] The Commission also proposed to modify the set of required data to capture execution quality information for more order types and sizes, require time-based execution statistics to be at a more granular level, and enhance the utility of the statistics.[62] The Commission further proposed to require that reporting entities provide a report of summary execution quality statistics, in addition to the more detailed reports.[63]

The Commission received numerous comment letters in response to the Proposing Release, a large portion of which were from individual investors.[64] Many commenters supported updating the disclosures required by Rule 605.[65] Several commenters, including industry groups, broker-dealers, financial services firms,[66] and investor advocacy groups, suggested clarifications or changes to the scope of reporting entities and to certain proposed metrics included in the detailed report or summary report.[67] Other commenters broadly supported the more detailed recommendations of other commenters.[68]

One industry group recommended that the Commission reissue the proposed rule after incorporating comments from it and other market participants ''to ensure that the final rule achieves the Commission's intended purpose and allow market participants to identify additional enhancements.'' [69] A broker-dealer

[53] *See* 2018 Rule 606 Amendments Release, 83 FR 58338 at 58379 (Nov. 19, 2018).

[54] *See id.* The Commission further stated that the amendments to Rule 606 provide an appropriate level of insight into the widespread financial arrangements between broker-dealers and execution venues that may affect broker-dealers' order routing decisions. *See id.*

[55] *See id.*

[56] *See, e.g.,* Regulation NMS Adopting Release, 70 FR 37496 at 37537 (June 29, 2005); *Newton* v. *Merrill, Lynch, Pierce, Fenner & Smith, Inc.,* 135 F.3d 266, 269–70, 274 (3d Cir.), *cert. denied,* 525 U.S. 811 (1998); *Certain Market Making Activities on Nasdaq,* Securities Exchange Act Release No. 40900, 53 SEC 1150, 1162 (1999) (settled case) (*citing Sinclair* v. *SEC*, 444 F.2d 399 (2d Cir. 1971); *Arleen Hughes*, 27 SEC 629, 636 (1948), *aff'd sub nom. Hughes* v. *SEC*, 174 F.2d 969 (D.C. Cir. 1949)). In addition, the Commission has separately proposed a rule concerning broker-dealers' duty of best execution. *See* Securities Exchange Act Release No. 96496 (Dec. 14, 2022), 88 FR 5440 (Jan. 27, 2023) (''Regulation Best Execution Proposing Release''). *See also* Proposing Release, 88 FR 3786 at 3790, n.69 (Jan. 20, 2023).

[57] *See* Regulation NMS Adopting Release, 70 FR 37496 at 37538 (June 29, 2005) (referring to the best reasonably available price and citing *Newton*, 135 F.3d at 266, 269–70, 274). *Newton* also specified certain other factors relevant to best execution—order size, trading characteristics of the security, speed of execution, clearing costs, and the cost and difficulty of executing an order in a particular market. *See Newton*, 135 F.3d at 270, n.2. *See also* Proposing Release, 88 FR 3786 at 3791, n.70 (Jan. 20, 2023).

[58] *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75420 (Dec. 1, 2000).

[59] *See id.*

[60] *See id.* For example, the execution quality statistics included in Rule 605 do not encompass every factor that may be relevant in determining whether a broker-dealer has obtained best execution, and the statistics in a market center's reports typically will reflect orders received from a number of different routing broker-dealers. *See id. See also infra* notes 1097–1098 and accompanying text for discussion of an investment adviser's fiduciary duty, including the duty to seek best execution of a client's transactions where the investment adviser has the responsibility to select broker-dealers to execute client trades. *See also* Proposing Release, 88 FR 3786 at 3791 (Jan. 20, 2023).

[61] *See* Proposing Release, 88 FR 3786 at 3796–3801 (Jan. 20, 2023). Throughout the release, the term ''larger broker-dealer'' refers to a broker-dealer that meets or exceeds the ''customer account threshold,'' as defined in final Rule 605(a)(7). *See also infra* section II.A.

[62] *See* Proposing Release, 88 FR 3786 at 3804–22 (Jan. 20, 2023).

[63] *See id.* at 3823–25.

[64] The Commission received comments from a wide range of market participants, including individual investors, broker-dealers, academics, securities industry groups, national securities exchanges, and investor advocacy groups. Comments received on the Proposing Release are available on the Commission's website, *available at https://www.sec.gov/comments/s7-29-22/s72922.htm.*

[65] *See, e.g.,* letters from: Ellen Greene, Managing Director, Equity Options Market Structure, SIFMA (Mar. 31, 2023) (''SIFMA Letter II'') at 2; Stephen John Berger, Managing Director, Global Head of Government and Regulatory Policy, Citadel Securities (Mar. 31, 2023) (''Rule 605 Citadel Letter'') at 1; Stephen W. Hall, Legal Director and Securities Specialist, Better Markets, Inc. (Mar. 31, 2023) (''Better Markets Letter'') at 1–2.

[66] As used in this release, ''financial services firm'' refers to an entity that includes multiple types of affiliated entities providing financial services, including broker-dealers, investment advisers, or banks.

[67] *See, e.g.,* SIFMA Letter II at 27–28; and letters from: Howard Meyerson, Managing Director, Financial Information Forum (Mar. 31, 2023) (''FIF Letter'') at 2–5; Tyler Gellasch, President and CEO, Healthy Markets Association (Mar. 31, 2023) (''Healthy Markets Letter'') at 16–18; Douglas A. Cifu, Chief Executive Officer, Virtu Financial, Inc. (Mar. 30, 2023) (''Virtu Letter II'') at 10–12. These and other comment letters discussing the scope of reporting entities and proposed metrics included in the detailed report or summary report are described infra throughout this release.

[68] *See, e.g.,* Rule 605 Citadel Letter at 5; and letters from: Ryan Kwiatkowski, Chairman of the Board, and James Toes, President & CEO, Security Traders Association (Apr. 3, 2023) (''STA Letter'') at 4–5; Derrick Chan, Head of Equities, Fidelity Capital Markets (Mar. 31, 2023) (''Fidelity Letter'') at 2, 8; Naureen Hassan, President, UBS Americas, Robert Karofsky, President, UBS Investment Bank, and Suni Harford, President, UBS Asset Management, UBS (Mar. 31, 2023) (''UBS Letter'') at 2; Tim Gately, Managing Director, Head of Equities Sales, Americas, Citigroup Global Markets Inc. (Mar. 31, 2023) (''CGMI Letter'') at 1–2, 3; Jason Clague, Managing Director, Head of Operations, The Charles Schwab Corporation (Mar. 31, 2023) (''Schwab Letter II'') at 2, 30, 33. These and other comment letters discussing the recommendations of other commenters are described infra throughout this release. Several individual investors stated that in Dec. 2022, FINRA and the Commission sent out risk alerts regarding a lack of compliance with reports pursuant to Rule 606 of Regulation NMS and that ''one would suspect that brokers will be as non-compliant with the new 605 reports.'' Letter Type D; Letter Type E; and Letter Type H at *https://www.sec.gov/comments/s7-29-22/s72922.htm.* The Commission will monitor the implementation of the amendments to Rule 605.

[69] Letter from Howard Meyerson, Managing Director, Financial Information Forum (June 22, 2023) (''FIF Letter II'') at 11. *See also* letter from Howard Meyerson, Managing Director, Financial

stated that the Commission should provide market participants the opportunity to review and comment on such a revised proposal prior to finalization.[70] The Commission does not agree with these commenters. Delaying the adoption of a final rule, and thereby delaying the benefits of Rule 605, is not warranted. The Commission has reviewed and carefully considered the extensive comment file,[71] which included input from a broad array of market participants, and as discussed below, has made certain changes in response to these comments.[72] For these reasons, re-proposal of the Rule 605 amendments is not necessary.

Contemporaneously with the proposal to modify Rule 605, the Commission issued three other proposals related to separate aspects of equity market structure and Regulation NMS.[73] A number of commenters provided comments on all four proposals jointly.[74] Some commenters requested that the Commission publicly release anonymized subsets of CAT data used in connection with the tables and figures in the proposals' economic analyses.[75]

The Commission is not releasing anonymized subsets of CAT data used in connection with the proposals, including CAT data used in connection with data and figures in the Proposing Release. The CAT database contains highly sensitive and granular market information.[76] The Commission fully described in the Proposing Release and this Release the CAT data used, the methodology for analysis, and the results of its analyses. This provides notice of the Commission's use and analysis of CAT data in support of this rulemaking.[77]

Market participants, such as broker-dealers, may analyze their own order and transaction information as well as commercially available data and use this analysis to provide meaningful comment on the Proposing Release from their own perspectives.[78] The level of aggregation that would be required to protect market and proprietary information so that it cannot be used, either itself, or with other commercially or publicly available information, to reverse engineer or otherwise reveal market participants' identities, market

Information Forum (Feb. 14, 2024) (''FIF Letter III'') at 2, 5.

[70] *See* letter from Stephen John Berger, Managing Director, Global Head of Government & Regulatory Policy, Citadel Securities (Dec. 5, 2023) (''Equity Market Structure Citadel Letter II'') at 3.

[71] The Commission voted to issue the Proposing Release on Dec. 14, 2022. The release was posted on the Commission's website that day, and comment letters were received beginning the same day. The comment period closed on Mar. 31, 2023. The Commission has considered comments received since Dec. 14, 2022.

[72] In addition, as discussed above, the EMSAC and commenters responding to the Commission's Concept Release on Equity Market Structure and to the 2018 Rule 606 Amendments recommended that the Commission update Rule 605 and one broker-dealer petitioned the Commission to amend the Rule. *See supra* notes 40–44, 52, and accompanying text. The Commission considered these suggestions when proposing amendments to Rule 605. *See* Proposing Release, 88 FR 3786 at 3792–95 (Jan. 20, 2022).

[73] *See* Regulation Best Execution Proposing Release, 88 FR 5440 (Jan. 27, 2023) (proposing rule that would establish Commission rule-based best execution standards); and Securities Exchange Release Nos. 96494 (Dec. 14, 2022), 87 FR 80266 (Dec. 29, 2022) (''Minimum Pricing Increments Proposing Release'') (proposing amendments to Regulation NMS to reduce minimum pricing increments, add a minimum trading increment, reduce access fee caps, improve transparency of exchange fees and rebates, and enhance the transparency of market data infrastructure); 96495 (Dec. 14, 2022), 88 FR 128 (Jan. 3, 2023) (''Order Competition Rule Proposing Release'') (proposing rule that would enhance competition for the execution of marketable orders of individual investors).

[74] *See, e.g.,* SIFMA Letter II (Mar. 31, 2023); Equity Market Structure Citadel Letter II (Dec. 5, 2023); and letters from: Michael Blaugrund, Chief Operating Officer, NYSE Group, Inc., Jason Clague, Managing Director, Head of Operations, Charles Schwab & Co., and Joseph Mecane, Head of Execution Services, Citadel Securities (Mar. 6, 2023) (''NYSE, Schwab, and Citadel Letter''); Christopher A. Iacovella, President & Chief Executive Officer, American Securities Association (Mar. 31, 2023) (''American Securities Association Letter II''); Hope Jarkowski, General Counsel, NYSE Group, Inc. (Mar. 31, 2023) (''NYSE Letter''); Stephen John Berger, Managing Director, Global Head of Government & Regulatory Policy, Citadel Securities (Mar. 31, 2023) (''Equity Market Structure Citadel Letter''); Jason Clague, Managing Director, Head of Operations, The Charles Schwab Corporation (Mar. 22, 2023) (''Schwab Letter''); Kirsten Wegner, Chief Executive Officer, Modern Markets Initiative (Mar. 24, 2023) (''Modern Markets Initiative Letter''); Joanna Mallers, Secretary, FIA Principal Traders Group (Mar. 31, 2023) (''FIA PTG Letter II''); Peter D. Stutsman, Global Head of Equity Trading, and Timothy J. Stark, Head of Equity Markets and Transaction Research, The Capital Group Companies, Inc. (Mar. 31, 2023) (''Capital Group Letter''); Andrew Hartnett, NASAA President and Deputy Commissioner, Iowa Insurance Division, North American Securities Administrators Association, Inc. (Mar. 31, 2023) (''NASAA Letter''); David Howson, Executive Vice President, Global President, Cboe Global Markets, Nathaniel N. Evarts, Managing Director, Head of Trading, Americas, State Street Global Advisors, Kimberly Russell, Market Structure Specialist, Global SPDR Business, State Street Global Advisors, Mehmet Kinak, Global Head of Equity Trading, T. Rowe Price, Todd Lopez, Americas Head of Execution Services, UBS Securities LLC, and Douglas A. Cifu, Chief Executive Officer, Virtu Financial, Inc. (Mar. 24, 2023) (''Cboe, State Street, et al., Letter''); John A. Zecca, Executive Vice President, Global Chief Legal, Risk & Regulatory Officer, Nasdaq, Inc. (Mar. 30, 2023) (''Nasdaq Letter''); Jennifer W. Han, Executive Vice President, Chief Counsel & Head of Global Regulatory Affairs, Managed Funds Association (Mar. 30, 2023) (''Managed Funds Association Letter''); Jonathan Kanter, Assistant Attorney General, Antitrust Division, U.S. Department of Justice (Apr. 11, 2023) (''DOJ Letter''); Nathanial N. Evarts, Managing Director, Head of Trading, Americas, and Kimberly Russell, Market Structure Specialist, Global SPDR Business, State Street Global Advisors (Mar. 30, 2023) (''State Street Global Advisors Letter''); Michael Markunas, Deputy General Counsel, Chief Compliance Officer, B. Riley Securities, Inc. (Mar. 31, 2023) (''B. Riley Letter'').

[75] *See, e.g.,* Virtu Letter at 1; Equity Market Structure Citadel Letter at 16–17; Schwab Letter II at 3–4 (''there is a distinct absence of economic data to support many aspects of the Proposals and to support the Commission's analysis of costs versus benefits . . . CAT data is not publicly available and thus public commenters . . . do not have access to the very data on which the Commission relies''); and letters from: Ellen Greene, Managing Director, Equity & Options Market Structure, SIFMA (Feb. 8, 2023) (''SIFMA Letter'') at 3–4; Kristen Malinconico, Director, Center for Capital Markets Competitiveness, U.S. Chamber of Commerce (Mar. 31, 2023) (''Chamber of Commerce Letter'') at 2–3. Some of these commenters also requested that the Commission identify the specific broker-dealers whose Rule 605 and Rule 606 reports, which are publicly available, were used in the proposals. *See, e.g.,* SIFMA Letter at 2; Virtu Letter at 1–2.

[76] *See, e.g.,* Securities Exchange Act Release No. 67457 (July 18, 2012), 77 FR 45722 at 56978 (Aug. 1, 2012) (stating that maintaining the confidentiality of customer and other information reported to CAT ''is essential'' and that ''[w]ithout adequate protections, market participants would risk the exposure of highly-confidential information about their trading strategies and positions''); Securities Exchange Act Release No. 84696 (Nov. 15, 2016), 81 FR 84696 (Nov. 23, 2016) (stating that a security breach involving CAT data could, among other things, ''leak highly-confidential information about trading strategies or positions, which could be deleterious for market participants' trading profits and client relationships'' or ''expose proprietary information about the existence of a significant business relationship with either a counterparty or a client, which could reduce business profits'').

[77] In addition, the Commission declines to provide the identities of the specific broker-dealers whose Rule 606 reports were used in connection with the Proposing Release. *See supra* note 75. The reports themselves are publicly available and interested parties can analyze these reports using their own selection of broker-dealers. As with the CAT data, the Commission has fully described in the Proposing Release the Rule 606 data used, the methodology for analysis, and the results of its analyses. This information provides notice of the Commission's use and analysis of Rule 606 data used in support of this rulemaking.

[78] For example, the SEC's MIDAS analytics tool collects and processes data from the consolidated tapes as well as from the separate proprietary feeds made individually available by each equity exchange. *See MIDAS: Market Information Data Analytics System,* SEC, *available at https://www.sec.gov/marketstructure/midas-system. See also* letter from John Ramsay, Chief Market Policy Officer, Investors Exchange LLC (''IEX'') (Oct. 13, 2023) (''IEX Letter'') at 3 (stating that there are ''myriad sources of information that . . . market participants draw on to consider how orders are handled and how markets compete with and compare to each other,'' including NYSE TAQ data, other exchange proprietary and consolidated market data, and FINRA's reports on off-exchange trading). *See also, e.g., infra* note 330 (FIF Letter) and accompanying text; notes 113–114 (Professor Christopher Schwarz, University of California Irvine, Professor Brad Barber, University of California, Davis, Professor Xing Huang, Washington University in St. Louis, Professor Philippe Jorion, University of California, Irvine, Professor Terrance Odean, University of California, Berkeley (Feb. 7, 2023) (''Professor Schwarz et al. Letter'')) and accompanying text.

positions, or trading strategies would also mean that the dataset would be substantially dissimilar from the actual data used in the Commission's analysis.

In addition, several commenters suggested a sequencing of the equity market structure proposals, such that the Commission would implement the amendments to Rule 605 and evaluate the execution quality data from the updated reports, before undertaking further action on the remaining equity market structure proposals.[79] One group of members of Congress recommended that no equity market structure rule ''should be finalized or implemented'' until the Commission ''[c]onduct[s] a comprehensive cost-benefit analysis of the aggregate impact of [these rules] and seek[s] public comment on this analysis[,]'' and proposes ''a reasonable, workable, and staggered schedule for public comment on the adoption and implementation of the proposals, considering their overlapping nature, significant compliance and operational burdens, and if they may be insurmountable for smaller or emerging firms.'' [80] As discussed below in the economic analysis, the Commission uses as a baseline the world as it exists today, including adopted rules but not proposed rules.[81] Comments on how the adoption of the Rule 605 amendments should affect the timing or sequence of the other equity market structure proposals will be considered if and when those rules are acted on. Similarly, because the effects of the final rule are measured against the existing regulatory baseline, which does not include rules that have not been adopted, the Commission does not agree that an additional analysis of the aggregate impact of the several equity market structure rules is necessary before the adoption of the Rule 605 amendments.[82]

The proposed amendments to Rule 605, as well as the costs and benefits of the proposed amendments, were detailed in the Proposing Release and received substantial public comment. The proposed amendments to Rule 605 received broad support from many commenters. The Commission has considered the comments received, updated its data analysis where needed, and, in some instances, has modified the proposal in response to comments received.

C. Overview of Final Rule 605

After reviewing the comments received and considering the recommendations from commenters,[83] the Commission has determined to adopt the proposal with several modifications. In some cases, final amendments to Rule 605 add new data elements that provide additional context and information for both the detailed and summary execution quality reports. In adopting the final amendments to Rule 605, the Commission aims to provide individual investors, institutional customers, and broker-dealers with information that they can use to choose market centers or broker-dealers that align with their investment and execution objectives. Further, as with Rule 605 reports prior to these amendments,[84] the Commission anticipates that third parties, such as academics and journalists, will also utilize the reported execution quality data for comparison purposes and analysis of market conditions.

As discussed in section II (Modifications to Reporting Entities) below, the Commission is adopting the amendments to the scope of reporting entities largely as proposed, with a few modifications. The Commission is retaining in the adopted amendments to Rule 605 the proposed requirements that brokers and dealers introducing or carrying 100,000 or more customer accounts prepare Rule 605 reports and that separate reports be prepared for a firm's broker-dealer activity and its market center activity. The Commission is also providing additional explanation of these requirements. The Commission has determined not to require market centers that operate a proposed qualified auction to prepare a separate report for covered orders received for execution in the qualified auction. The Commission is specifying that ATSs must prepare Rule 605 reports separately from their broker-dealer operators as proposed and is also retaining the proposed requirement that a broker-dealer that operates an SDP prepare a separate report for activity specific to the SDP, but with a modified description of what constitutes an SDP.

In addition, as discussed in section III (Modifications to Scope of Orders Covered and Required Information) below, the Commission is adopting amendments to the information required to be reported in the detailed report required by Rule 605(a)(1) with modifications from the proposal. The Commission is adopting amendments to

[79] *See, e.g.,* SIFMA Letter II at 2 (''[o]nce an amended Rule 605 is implemented, the Commission will have the data it needs to fully assess market quality and consider whether additional rulemaking is needed and how any such rulemaking should be designed''); Equity Market Structure Citadel Letter II at 1–3; NYSE, Schwab and Citadel Letter at 1–2; STA Letter at 4; Modern Markets Initiative Letter at 2; Cboe, State Street, et al. Letter dated Mar. 24, 2023 at 1–2; Managed Funds Association Letter at 2; T. Rowe Letter at 3; UBS Letter at 1–2; Virtu Letter II at 2; SIFMA Letter II at 11; Professor Schwarz et al. Letter at 5; and letters from Bill Foster, French Hill, Henry Cuellar, Bill Huizenga, Wiley Nickel, Andy Barr, Ritchie Torres, Ann Wagner, Brittany Pettersen, Dan Meuser, Josh Gottheimer, Mike Flood, Vicente Gonzalez, Byron Donalds, Mike Quigley, Michael V. Lawler, David Scott, Andrew R. Garbarino, Gregory W. Meeks, Monica De La Cruz, Sean Casten, Scott Fitzgerald, Bradley S. Schneider, Erin Houchin, Jim Himes, Young Kim, Steven Horsford, Ralph Norman, Gwen Moore, Tom Emmer, Marc Veasey, and Zach Nunn, United States House of Representatives (Sep. 26, 2023) at 2; Michelle Bryan Oroschakoff, Managing Director and Chief Legal Officer, LPL Financial (Mar. 31, 2023) (''LPL Financial Letter'') at 3–4; Chester Spatt, Pamela R. and Kenneth B. Dunn Professor of Finance, Tepper School, Carnegie Mellon University and former Chief Economist, U.S. Securities and Exchange Commission (2004–2007), Thomas Ernst, Assistant Professor of Finance, Smith School of Business, University of Maryland, Andrey Malenko, Professor of Finance, Carroll School of Management, Boston College, Jian Sun, Assistant Professor of Finance, Le Kong Chian School of Business, Singapore Management University (Nov. 29, 2023) (''Professor Spatt et al. Letter'') at 5; *see also* letter from Patrick McHenry, French Hill, Frank Lucas, Pete Sessions, Bill Posey, Blaine Luetkemeyer, Bill Huizenga, Ann Wagner, Andy Barr, Roger Williams, Tom Emmer, Barry Loudermilk, Alexander X. Mooney, Warren Davidson, John Rose, Bryan Steil, William Timmons, Ralph Norman, Dan Meuser, Scott Fitzgerald, Andrew R. Garbarino, Young Kim, Byron Donalds, Mike Flood, Michael V. Lawler, Zach Nunn, Monica De La Cruz, Erin Houchin, and Andy Ogles, United States House of Representatives (Sept. 26, 2023) (''McHenry et al. Letter'') at 2. *But see* IEX Letter at 5 (''the premise that Rule 605 updates must be a precondition to any other changes looks more like a calculated stall than an argument for careful, reasoned decision making''); letter from Stephen W. Hall, Legal Director and Securities Specialist, Better Markets, Inc. (Oct. 31, 2023) (''Better Markets Letter II'') at 5 (''argument that the Commission should first get more information is a delaying tactic designed to forestall meaningful reforms that are already clearly necessary and appropriate'').

[80] *See* McHenry et al. Letter at 2. As discussed further below, Rule 605 as amended imposes reporting requirements only on market centers and larger broker-dealers that meet the customer account threshold (i.e., introduce or carry at least 100,000 customer accounts) and thus does not bring smaller or emerging firms within scope on the basis of their customer-facing broker-dealer business. The Commission addresses the impact of its rulemaking on smaller or emerging firms in its releases, including this release. *See infra* section IX.D.1.d)(1). Further, the Regulatory Flexibility Act (''RFA'') (5 U.S.C. 601 *et seq.*) requires Federal agencies, in promulgating rules, to consider the impact of those rules on small entities. *See infra* section X for further discussion of the Commission's consideration of the impact of the amendments on small entities.

[81] *See infra* note 981.

[82] *See id.* The Order Competition Rule Proposing Release, the Regulation Best Execution Proposing Release, and the Minimum Pricing Increments Proposing Release mentioned by commenters remain at the proposal stage. To the extent that the Commission takes final action on any or all of those proposals, the baseline in each of those subsequent rulemakings will reflect the regulatory landscape that is current at that time. *See also infra* section IX.C.1.d).

[83] *See, e.g.,* FIF Letter, SIFMA Letter II.

[84] *See, e.g., supra* note 16 (discussing studies by Boehmer et al. and Zhao & Chung).

the scope of covered orders largely as proposed, with changes to the coverage of orders with stop prices. The Commission is also revising the categorization by order size from the proposal to incorporate notional size buckets and whether an order is for less than a share, is an odd-lot, or is a round lot. With respect to the categorization by order type, the Commission is adopting the categorization of executable NMLOs as proposed, but is modifying the categorization of NMLOs priced at or better than the midpoint and adding more categories of immediate-or-cancel orders and more categories related to orders submitted with stop prices. The Commission is also adopting a timestamp convention of at least a millisecond as proposed, but eliminating the proposed statistics for median and 99th percentile time to execution in favor of utilizing more granular time-to-execution buckets. Further, the Commission is adopting the other required statistics for inclusion in the detailed report with several changes from the proposal, including: (1) adding realized spread statistics for more time intervals; (2) calculating effective spread and effective spread divided by quoted spread for marketable order types and NMLOs priced more aggressively than the midpoint only; (3) utilizing spread-based weighting to calculate effective spread divided by quoted spread; (4) adding statistics for average quoted spread, average midpoint, and cumulative notional size; (5) measuring size improvement at time of order receipt rather than time of execution, adding an additional size improvement statistic focused on orders that can receive size improvement, and calculating these size improvement statistics for marketable order types and NMLOs priced more aggressively than the midpoint only; and (6) adding a relative fill rate statistic for NMLOs based on order executions occurring on national securities exchanges.

Further, as discussed in section IV (Summary Execution Quality Report) below, the Commission is adopting a requirement for a summary report pursuant to Rule 605(a)(2), with several changes from the proposal. The Commission is changing the weighting of certain statistics and grouping orders into notional size buckets. The Commission is modifying the required statistics related to average order size in shares; share-weighted average percentage price improvement; and effective spread divided by quoted spread. The Commission is including additional metrics in the summary report for share-weighted average midpoint; share-weighted average notional size; average percentage quoted spread; and average percentage realized spread as calculated at two time horizons. The Commission also is requiring that the summary report be provided in an alternative format.

Finally, as discussed in section V (Requirements for Making Rule 605 Reports Available to the Public) below, the Commission is adopting procedures for making the Rule 605 reports publicly available as proposed.

The Commission endeavors to ensure that investors are provided with timely and accurate information needed to make informed investment decisions, and the final amendments to Rule 605 reflect the Commission's ongoing commitment to enhance transparency for investors. Facilitating the ability of the public to compare and evaluate execution quality among different market centers, brokers, and dealers, is an effective means of reconciling the need to promote both vigorous price competition and fair competition among market centers and broker-dealers, to the benefit of individual investors. Section 11A of the Exchange Act [85] grants the Commission the authority to promulgate rules necessary or appropriate to assure the fairness and usefulness of information on securities transactions [86] and to assure that broker-dealers transmit and direct orders for the purchase or sale of qualified securities in a manner consistent with the establishment and operation of a national market system.[87] By requiring the uniform public disclosure of useful and accessible statistics, amended Rule 605 will better promote competition among market centers and broker-dealers on the basis of execution quality and ultimately improve the efficiency of securities transactions, consistent with the objectives of our national market system.[88]

II. Modifications to Reporting Entities

A. Larger Broker-Dealers

1. Proposed Approach

Prior to the adopted amendments, Rule 605 of Regulation NMS required only market centers, such as national securities exchanges, OTC market makers, and ATSs, to produce publicly available, monthly execution quality reports. The Commission proposed to expand the scope of entities that must prepare Rule 605 reports to include larger broker-dealers that introduce or carry at least 100,000 customer [89] accounts. The Commission reasoned that the proposed expansion would ''improve the usefulness of execution quality statistics, promote fair competition, and enhance transparency by providing investors with information that they could use to compare the execution quality provided by customer-facing broker-dealers.'' [90] As discussed further below, the proposed minimum reporting threshold of 100,000 customers was intended to balance the benefits of having broker-dealers produce execution quality statistics with the costs of implementation and continued reporting.[91]

To implement this proposed expansion, the Commission proposed to insert references to ''brokers'' and ''dealers'' where prior Rule 605 referred to ''market centers.'' [92] In addition, the Commission proposed to revise the definition of ''covered order'' in prior Rule 600(b)(22), which referred to any market order or any limit order (including immediate-or-cancel orders) ''received by a market center,'' [93] to refer to orders ''received by a market center, broker, or dealer.'' [94]

Proposed Rule 605(a)(7) stated that a broker or dealer that is not a market center shall not be subject to the requirements of Rule 605 unless that broker or dealer introduces or carries 100,000 or more customer accounts through which transactions are effected for the purchase or sale of NMS stocks (the ''customer account threshold'').[95] As explained in the Proposing Release, the Commission analyzed available data to determine the proposed customer account threshold given the additional costs that broad expansion of the rule to

[85] 15 U.S.C. 78k–1.

[86] 15 U.S.C. 78k–1(c)(1)(B).

[87] 15 U.S.C. 78k–1(c)(1)(E).

[88] The national market system objectives of section 11A of the Exchange Act include the economically efficient executions of securities transactions; fair competition among brokers and dealers, among exchange markets, and between exchange markets and markets other than exchange markets; the availability of information on securities quotations and transactions; and the practicability of brokers executing investor orders in the best market. *See* 15 U.S.C. 78k–1(a)(1)(C).

[89] ''Customer'' means any person that is not a broker or dealer. *See* final 17 CFR 242.600(b)(28).

[90] Proposing Release, 88 FR 3786 at 3795 (Jan. 20, 2023).

[91] *See id.* at 3797.

[92] *See id.* at 3796 (discussing amendments to Rule 605 in proposed Rule 605 introductory text, (a) heading, (a)(1) introductory text, (a)(1)(i)(D), and (a)(3), (4), (5), and (6)).

[93] Prior 17 CFR 242.600(b)(22).

[94] *See* Proposing Release, 88 FR 3786 at 3796 (Jan. 20, 2023); proposed Rule 605(b)(30). The Commission also proposed to require all market centers and broker-dealers that would be subject to Rule 605's reporting requirements to produce summary reports with aggregated execution quality information. *See infra* section IV for further discussion of the summary report.

[95] *See* Proposing Release, 88 FR 3786 at 3797 (Jan. 20, 2023).

broker-dealers would entail.[96] Utilizing a 100,000 customer account threshold as proposed would allow the Rule 605 reporting requirements to capture those broker-dealers that introduce or carry the vast majority of customer accounts, while subjecting only a relatively small percentage of broker-dealers that accept customer orders for execution to the reporting obligation and excluding those broker-dealers that introduce or carry fewer customer accounts.[97]

The proposed customer account threshold also required brokers-dealers to include in their calculations the public customer accounts that they introduce, as well as the customer accounts that they carry.[98] Because an introducing broker-dealer may use an omnibus clearing arrangement and not disclose certain information about its underlying customer accounts to the clearing firm, the Commission proposed that, for purposes of Rule 605, a broker or dealer that utilizes an omnibus clearing arrangement for any of its underlying customer accounts would be considered to carry such underlying customer accounts when calculating the number of customer accounts that it introduces or carries.[99]

Proposed Rule 605(a)(7) stated that any broker or dealer that meets or exceeds the customer account threshold and is also a market center shall produce separate reports pertaining to each function.[100] Further, as proposed a broker-dealer is excluded from Rule 605's reporting requirements only with respect to its customer-facing broker-dealer function (as opposed to its market center function, if applicable) if the number of customer accounts that it introduces or carries is less than the customer account threshold.[101] However, under the proposal, a broker-dealer that meets or exceeds the customer account threshold for the first time has a grace period of three calendar months before being required to comply with Rule 605's reporting requirements.[102]

Prior to the amendments, Rule 605 required that reporting entities calculate certain statistics based on the time of order receipt.[103] Moreover, Regulation NMS defined ''time of order receipt'' based on the time an order was received by a market center for execution.[104] In conjunction with the proposed expansion of Rule 605 to cover larger broker-dealers, the Commission proposed to modify the definition of ''time of order receipt'' to specify that, in the case of a broker or dealer that is not acting as a market center, the time of order receipt is the time that the order was received by the broker or dealer for execution.[105]

[96] *See id.* at 3797, 3886–87.

[97] *See id.* (discussing analysis of the estimated number of broker-dealers that would be subject to Rule 605 reporting requirements according to different definitions of the customer account threshold). *See infra* note 146 and accompanying text for a discussion of an updated analysis.

[98] *See* Proposing Release, 88 FR 3786 at 3797 (Jan. 20, 2023). An introducing broker-dealer is a broker-dealer that has a contractual arrangement with another firm, known as the carrying or clearing firm, under which the clearing/carrying firm agrees to perform certain services for the introducing firm. Usually, the introducing firm transmits its customer accounts and customer orders to the clearing/carrying firm, which executes the orders and carries the account. *See* Securities Exchange Act Release No. 31511 (Nov. 24, 1992), 57 FR 56973 at 56978 (Dec. 2, 1992) (Net Capital Rule). Alternatively, some broker-dealers utilize an ''omnibus clearing arrangement,'' where the clearing firm maintains one account for all customer transactions of the introducing firm, rather than a ''fully disclosed introducing relationship.'' In an omnibus arrangement, the clearing firm does not know the identity of the customers of the introducing firm, whereas in a fully disclosed arrangement, the clearing/carrying firm knows the names, addresses, securities positions, and other relevant data as to each customer. *See id.* at 56978, n.16.

[99] *See* Proposing Release, 88 FR 3786 at 3797–98 (Jan. 20, 2023); proposed Rule 605(a)(7).

[100] *See* Proposing Release, 88 FR 3786 at 3798 (Jan. 20, 2023).

[101] *See id.* at 3798–99. Proposed Rule 605(a)(7) stated that a broker or dealer that meets or exceeds the customer account threshold shall be required to produce reports pursuant to this section for at least three calendar months (''Reporting Period''). *See id.* at 3799. As proposed, the Reporting Period shall begin the first calendar day of the next calendar month after the broker or dealer met or exceeded the customer account threshold, unless it is the first time the broker-dealer had met or exceeded the customer account threshold. *See id.* Any time after a broker or dealer has been required to produce reports pursuant to this proposed section for at least a Reporting Period, if a broker or dealer falls below the customer account threshold, the broker or dealer shall not be required to produce a report pursuant to this paragraph for the next calendar month. *See id.*

[102] *See id.* at 3799. The Commission also proposed that after the three-calendar month grace period, the Reporting Period shall begin on the first calendar day of the fourth calendar month after the broker or dealer has met or exceeded the customer account threshold. *See id.* As proposed, a broker-dealer that crosses the customer account threshold for the first time is required to comply with the reporting requirements of Rule 605 for at least a Reporting Period, even if that broker-dealer falls below the customer account threshold during the grace period. *See id.*

[103] *See, e.g.,* prior 17 CFR 242.605(a)(1)(ii)(D) (measuring, for shares executed with price improvement, the share-weighted average period from the time of order receipt to the time of order execution).

[104] *See* prior 17 CFR 242.600(b)(92). *See also* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75423 (Dec. 1, 2000) (''The definition [of 'time of order receipt'] is intended to identify the time that an order reaches the control of the market center that is expected, at least initially, to execute the order.'').

[105] *See* Proposing Release, 88 FR 3786 at 3799–800 (Jan. 20, 2023); proposed Rule 600(b)(109). The time that the order is received by the market center for execution should be the same as the time that the order is received by the broker-dealer for execution when the broker-dealer also acts as a market center for that order.

2. Final Rule and Discussion

The Commission is adopting amendments to Rule 605 to include larger broker-dealers as proposed and addresses certain commenters' questions below. These amendments will provide enhanced transparency to investors, allowing them to compare and evaluate execution quality among different customer-facing larger broker-dealers and promoting competition among these broker-dealers. As discussed in section II.A.2.a), the Commission is adopting the customer account threshold as proposed. In addition, as discussed in section II.A.2.b), the Commission is adopting as proposed the requirement that larger broker-dealers that are also market centers produce separate reports pertaining to each function. Finally, as discussed in section II.A.2.c), the Commission is adopting as proposed the requirement that all reporting entities, including larger broker-dealers, measure certain statistics from the time of order receipt.

The Commission received comments from a variety of market participants on the proposed expansion to require larger broker-dealers to provide Rule 605 reports. Certain individual investors supported the proposed expansion of publicly available Rule 605 reports to include broker-dealers because this expansion would increase transparency and encourage competition among broker-dealers.[106] One such commenter stated that the proposal would: (1) require broker-dealers to provide more detailed information about the execution quality of their trades, including data on execution speeds, price improvements, and order routing practices, which would help retail investors ''make more informed decisions about where to route our orders and which broker-dealers to work with''; (2) provide more data on execution quality that would ''help level the playing field between individual investors and large institutional players who currently have an information advantage''; and (3) ''encourage broker-dealers to compete on the quality of their executions, which would ultimately benefit all investors.'' [107] Two other individual investors supported the inclusion of broker-dealers and the proposed rule overall, stating that it would ''provide a more detailed and

[106] *See, e.g.,* letters from: Dylan Hodges (Dec. 27, 2022); Edward Murray (Dec. 26, 2022); Dr. Paul Pritchard (Dec. 27, 2022); Cody Welch (Mar. 7, 2023) (''Welch Letter''); Abanes (Mar. 3, 2023) (''Abanes Letter''); Ryan Macarthur (Feb. 24, 2023) (''Macarthur Letter''); David Genco, Jr. (Feb. 24, 2023) (''Genco Letter'').

[107] Letter from Caleb C. (Mar. 18, 2023).

comprehensive standard for broker-dealers to follow, resulting in consistently robust best execution practices.'' [108] In addition, an academic and an individual investor suggested expanding the Rule 605 reporting requirement to include all broker-dealers, rather than just larger broker-dealers.[109]

For reasons similar to those offered by individual investors, financial services firms, industry groups, and a group of academics supported the proposed expansion of Rule 605 reporting requirements to larger broker-dealers.[110] One financial services firm stated that the proposed expansion would ''fill a gap in coverage that currently obscures the order handling practices of many broker-dealers'' because many customer-facing broker-dealers do not meet the definition of a market center and thus do not produce Rule 605 reports.[111] This commenter stated that the customers of these broker-dealers are left without any ''reliable way to evaluate and compare broker-dealer performance.'' [112] A group of academics that authored an academic working paper concerning the execution quality of market orders received from various broker-dealers [113] also submitted a comment letter supporting the proposed expansion and cited the need for improved public transparency based on their research.[114] These commenters stated that, even if retail investors do not pay attention to broker-level disclosures about execution quality if the dollar cost to retail investors is low, such disclosures are likely to be scrutinized by brokers, leading to greater competition and ultimately better execution for retail investors.[115] A broker-dealer supported the proposed expansion to retail brokers, stating that it will make order execution quality, and the marketplace generally, more transparent to retail investors.[116] This commenter also stated that, given the ''highly competitive state of the current retail brokerage market,'' it is not certain that the proposed enhancements to Rule 605 would improve execution quality for individual investors because outcomes for such investors could be ''asymmetric.'' [117] However, this commenter stated that to the extent that there are opportunities to optimize execution quality for individual investors, ''empowering investors to compare execution quality across retail brokers (and consequently to switch brokers based on this information) would be the most efficient and effective way to address these concerns.'' [118]

Some broker-dealers and financial services firms opposed the proposed expansion to include larger broker-dealers, citing costs and the risk of confusion, especially for individual investors.[119] One such broker-dealer stated that retail customers are not asking for or seeking information at the level of granularity required by the proposed rule, stating that the potential risk of investor confusion seems disproportionate to the defined transparency benefits it may provide.[120] Another commenter opposed the proposed expansion because the 605 reports are ''overly complicated for the average investor'' and may give a ''false

[108] Letters from Justin West (Mar. 19, 2023); Ankit (Mar. 19, 2023).

[109] *See* letter from Aswin Joy (Mar. 7, 2023) (''Joy Letter''); letter from James J. Angel, Georgetown University (Mar. 31, 2023) (''Angel Letter'') at 2–3. *See infra* section II.A.2.a) for additional discussion about the scope of the broker-dealer reporting requirement.

[110] *See* Fidelity Letter at 9 (stating that expanding Rule 605 reporting requirements to new entities will provide greater transparency into execution quality differences and increase the ability to measure retail order outcomes in a competitive environment); letter from Gregory Davis, Managing Director and Chief Investment Officer, and Matthew Benchener, Managing Director, Personal Investor, The Vanguard Group, Inc. (Mar. 31, 2023) (''Vanguard Letter'') at 3 (stating that the proposal will increase transparency by empowering investors to compare execution quality across broker-dealers and make more informed decisions about their choice of broker-dealer); Healthy Markets Letter at 16 (stating that Rule 605 reports should cover large brokers that route orders for investors); Better Markets Letter at 5 (stating that the proposed expansion of entities subject to Rule 605 disclosures will help the public compare and evaluate execution quality among different market centers and broker-dealers, and thereby increase transparency of order execution quality, increase information available to both retail and institutional investors, and help promote competition among market centers and broker-dealers); Professor Schwarz et al. Letter at 2; and letter from John L. Thornton, Co-Chair, Hal S. Scott, President, and R. Glenn Hubbard, Co-Chair, Committee on Capital Markets Regulation (Mar. 31, 2023) (''CCMR Letter'') at 14 (stating that the proposed expansion ''will allow retail investors to determine the execution quality of their orders'' and ''would likely enhance competition among retail broker-dealers based on price improvement and overall execution quality'').

[111] *See* Vanguard Letter at 3.

[112] *Id.* at 3–4 (stating that requiring larger broker-dealers to make Rule 605 disclosures would address this coverage gap and give their customers a ''direct line of sight into broker-dealer performance''). *See also* NASAA Letter at 5–6 (stating that the proposed expansion of reporting entities would ''provide the public with a more comprehensive view of order execution quality across the national market system'' and ''allow brokerage customers to compare execution quality among different broker-dealers'').

[113] *See* Proposing Release, 88 FR 3786 at 3832, n.529 (Jan. 20, 2023) and accompanying text (*citing* Christopher Schwarz et al., *The 'Actual Retail Price' of Equity Trades* (Aug. 28, 2022)).

[114] *See* Professor Schwarz et al. Letter at 1–2 (strongly supporting the inclusion of large broker-dealers given their research study finding that shows economically and statistically significant price execution variation across brokers; the level of such differences was previously unknown to retail traders and a large portion of the financial industry). A group consisting of some of these academics submitted another comment letter in which they cited a more recent academic working paper regarding competition among wholesalers and stated that their results ''emphasize the need for further price execution disclosure at the broker level.'' Letter from Xing Huang, Philippe Jorion, and Christopher Schwarz (Dec. 12, 2023) (''Huang et al. Letter'') at 1 (attaching Xing Huang, Philippe Jorion, Jeongmin Lee & Christopher Schwarz, *Who Is Minding the Store? Order Routing and Competition in Retail Trade Execution* (Nov. 19, 2023)).

[115] *See* Professor Schwarz et al. Letter at 3. *See also* Better Markets Letter at 9–10 (stating that even though some retail investors may not read Rule 605 reports, these investors will benefit indirectly by virtue of enhanced disclosure that will ''promote competition, improve regulatory oversight, and facilitate use by third-party researchers and academics'' to expose problematic order routing and execution practices).

[116] *See* Virtu Letter II at 3.

[117] *See id.* at 9. This commenter stated that the proposal ''may lead to changes in the equilibrium mix of customer types at each broker'' because investors would migrate towards brokers that have better execution quality statistics. *See id.* at 9, n.24. This commenter explained that ''order execution quality tends to be inversely related to the aggregate cost to provide liquidity to that broker's customers' orders because market makers are willing to provide more price improvement to orders that are less expensive to service.'' *Id.* This commenter also stated that if the proposal ''induces retail investors with more costly to service orders to move to brokers that previously had less costly to service orders, it could cause execution quality to worsen at the broker with previously less costly to service orders.'' *Id.*

[118] *Id.* at 9.

[119] *See* Robinhood Letter at 41–42 (stating that adding the proposed expansion to include larger broker-dealers is not realistically going to get usable execution quality information in the hands of individual investors because the voluminous data are in a format proven not to be particularly useful for them and that the Commission underestimates the costs for a type of report not generally prepared by broker-dealers that are not also market centers); letter from Seth A. Miller, President Advocacy & Administration, Cambridge Investment Research, Inc. (Mar. 31, 2023) (''Cambridge Letter'') at 7 (stating in its capacity as a broker-dealer and investment adviser that the broad scope of the proposed inclusion of larger retail broker-dealers will impose significant costs and is ''likely to lead to misaligned, misleading comparisons between totally different entities''); Schwab Letter II at 35 (stating that differences in certain execution statistics such as E/Q may be attributable to different business models across firms rather than actual differences in E/Q among comparable business models, and thus would create investor confusion rather than provide useful information); Tastytrade Letter at 4–5 (observing that the proposal will significantly increase the number of reported data points per ticker on approximately 10,000 NMS traded products, and expressing concern about the ability of customers to digest the additional ''confusing and complicated'' data points in Rule 605 reports).

[120] *See* Tastytrade Letter at 4 (''While we agree in general that greater transparency results in a level playing field for retail customers, it seems counterproductive to do so in a manner that risks confusion.'').

sense of comfort'' about order execution practices and quality.[121]

After considering the comments, the Commission is adopting the requirement for broker-dealers that meet the 100,000 customer account threshold to produce Rule 605 reports, as proposed. To implement this requirement, the Commission also is adopting the related amendments to Rules 600 and 605.[122] The Commission agrees with commenters who recognized the need for Rule 605 data pertaining to customer-facing larger broker-dealers. Larger broker-dealer reporting will be useful in increasing the transparency of larger broker-dealers' order execution quality so that investors have information available to compare and evaluate order execution quality and order routing practices among market centers and larger broker-dealers. As discussed further in section II.A.2.a) below, by limiting Rule 605 reporting requirements to larger-broker dealers that meet the customer account threshold only, Rule 605 will balance the benefits of broker-dealer reporting with the costs.

The Commission disagrees with commenters' concerns that larger broker-dealer reporting will be too confusing or misleading to investors, or will create a ''false sense of comfort'' about order execution practices and quality.[123] Individual investor commenters expressed interest in receiving access to execution quality statistics pertaining to larger broker-dealers because this increased transparency would allow individual investors to make more informed decisions and encourage competition among larger broker-dealers.[124] Due to the expansion of Rule 605 reporting requirements to larger broker-dealers, customers of these broker-dealers, including individual investors, and other market participants will no longer need to make inferences about these broker-dealers' execution quality based on a combination of broker-dealers' routing information contained in reports required by Rule 606 and market centers' Rule 605 reports. Instead, customers will be able to use execution quality information contained in larger broker-dealers' Rule 605 reports to make comparisons across these broker-dealers and select those broker-dealers that offer better execution quality. The availability of information about larger broker-dealers' execution quality also is expected to increase the extent to which these broker-dealers compete on the basis of execution quality when making their order routing decisions. Further, to the extent that broker-dealers increase the extent to which they route orders to the market centers offering better execution quality, increased liquidity at those venues may further improve execution quality, as a result of promoting the flow of orders to market centers that offer better execution quality.

The stock-by-stock order execution information that will be provided in the detailed report will allow market participants, including individual investors familiar with data analysis, to make their own determinations about how to group stocks or orders when comparing execution quality information across broker-dealers. However, the Commission is mindful that the detailed report will contain a larger volume of statistical data and many market participants, including individual investors, may not have the means to directly analyze the detailed report. As discussed further below, the Commission is adopting a requirement that every market center, broker, or dealer produce a summary execution quality report in addition to the more detailed report required by Rule 605(a)(1).[125] These summary reports will make available to market participants and other interested parties readily accessible, aggregated data that will allow them to compare some of the more significant aspects of the execution quality provided by specific market centers and larger broker-dealers. These summary reports will provide human-readable information that any investor, including individual investors, can assess without needing technical expertise or relying on an intermediary.[126] Moreover, even individual investors that do not read Rule 605 reports from larger broker-dealers will benefit from independent analysts, consultants, broker-dealers, the financial press, or market centers analyzing and producing more digestible information using Rule 605 data.[127]

One industry group stated that it remains unclear whether broker-dealers' Rule 605 reports would increase competition.[128] This commenter stated its concern that producing Rule 605 statistics without accounting for different broker-dealer business models could lead investors to make incorrect decisions regarding broker-dealer selection.[129] This commenter further stated that differences in execution quality could be the result of a myriad of factors, including ''the customers . . . different brokers serve and the equities the customers trade.'' [130] In response to this commenter, the Commission agrees that, as a result of different business models, a particular broker-dealer's order flow may be made up of a different mixture of securities, order types, and order sizes, which may impact or constrain that broker-dealer's overall execution quality level.[131]

---

[121] *See* letter from Kelvin To, Founder and President, Data Boiler Technologies, LLC (Mar. 31, 2023) (''Data Boiler Letter'') at 27–28.

[122] *See* final 17 CFR 242.605(a)(7) (establishing the customer account threshold for larger broker-dealer reporting requirements, production of separate reports, and applicable Reporting Period). *See also* final 17 CFR 242.605 (inserting references to ''brokers'' and ''dealers'' in introductory text, heading for (a), (a)(1) introductory text, (a)(1)(i)(E), and (a)(3), (4), (5), and (6)). *See also* final 17 CFR 242.600(b)(27) (inserting references to orders received by a ''broker'' or ''dealer'' in definition of ''covered order'') and final 17 CFR 242.600(b)(103) (specifying that the definition of ''time of order receipt,'' in the case of a broker or dealer that is not acting as a market center, is the time (at a minimum to the millisecond) that an order was received by the broker or dealer for execution). For further discussion of these amendments, *see* Proposing Release, 88 FR 3786 at 3796, 3798–99 (Jan. 20, 2023).

[123] *See supra* notes 119–121 and accompanying text.

[124] *See supra* notes 106–108 and accompanying text.

[125] *See infra* section IV.B.

[126] *See infra* section IV.B.2. For a discussion of comments regarding investor education or testing related to the summary reports, *see infra* section IV.B.3. As the new Rule 605 requirements, including the expansion of scope to include larger broker-dealers, are implemented, the Commission will consider whether there is a need for additional educational resources to assist investors.

[127] *See infra* notes 1075–1077 and accompanying text (discussing ways in which third parties have used Rule 605 reports to produce information that is meant for public consumption).

[128] *See* SIFMA Letter II at 29.

[129] *See id.* at 30. This commenter also stated it does not understand on what basis the Commission believes that differences in business models are well-known by market participants, and particularly retail investors, for purposes of evaluating execution quality statistics. *See id.* (discussing Proposing Release, 88 FR 3786 at 3800 (Jan. 20, 2023)). However, the Commission's statement in the Proposing Release was made in specific reference to market participants' use of Rule 605 reports to compare a market center and a broker-dealer, rather than use of Rule 605 reports to compare broker-dealers with one another. The Commission agrees with the commenter that differences between broker-dealer business models may not be ex ante well-known to market participants. However, market participants, including individual investors, will be able to use the information in Rule 605 detailed reports and the Rule 605 summary reports to account for differences in broker-dealer order flow, and broker-dealers are not precluded from separately providing their customers with information that can be used to contextualize the information in the Rule 605 reports.

[130] *See id.* at 30 (stating that when pointing to potential shifts in order flow from one broker-dealer to another, the Commission does not account for any potential effects on execution quality caused by the shifting of the order flow itself or the potential for order flow to consolidate among a smaller number of firms, thereby reducing competition and ultimately hurting execution quality).

[131] *See* Proposing Release, 88 FR 3786 at 3831 (Jan. 20, 2023). *See also infra* note 984 for an

However, under these amendments, larger broker-dealers will be required to categorize the execution quality information required by Rule 605 by individual security, different types of orders, and different order sizes. Giving market participants access to this information in Rule 605 reports will help ensure that they are able to control for these differences in order flow characteristics and make apples-to-apples comparisons when assessing and comparing execution quality information across broker-dealers.[132]

An industry group suggested that the Commission allow firms an opportunity to provide a statement in their Rule 605 reports explaining how to contextualize the report based on the nature of the firm's order flow.[133] In addition, a broker-dealer suggested that the Commission permit retail brokers to provide background and contextual information to explain how their obligations are different from those of wholesalers or other market centers that currently report under Rule 605.[134] The Commission is not adopting the suggestion to include a descriptive statement within the Rule 605 reports because it would be inconsistent with the structure of these reports, which are designed to be structured, standardized, machine-readable, quantitative disclosures.[135] As the Commission stated in the original adopting release for Rule 605, Rule 605 is intended to establish a baseline level of disclosure and facilitate cross-market comparisons of execution quality.[136] Similarly, the adopted amendments to Rule 605 provide a baseline level of disclosure that all market centers and larger broker-dealers must meet. Rule 605 does not preclude larger broker-dealers from disclosing additional information concerning their order execution practices that they believe would provide useful context concerning the quality of their services on their websites or through other means of communication.[137]

A broker-dealer recommended that rather than expanding Rule 605 to include larger broker-dealers, the Commission should update Rule 606, which already applies to nonmarket center broker-dealers, to require additional information regarding execution quality.[138] In response to the commenter's suggestion, the Commission considers the inclusion of larger broker-dealers in Rule 605 as adopted to be the preferable option. Although providing Rule 605 data within an expanded version of the existing Rule 606 reports could result in lower compliance costs as a result of broker-dealers' existing experience with preparing and filing Rule 606 reports, many of the costs associated with the initial reporting of execution quality statistics would still be incurred by broker-dealers and therefore broker-dealers would not benefit from a significant reduction in compliance costs overall. Moreover, the format and frequency of the Rule 606 reports differs because the data are more aggregated and the reports are issued quarterly.[139] In contrast, Rule 605 reports are monthly and provide detailed, symbol-by-symbol data that will allow market participants and other users of the report to analyze the data and consider the execution quality that a broker-dealer provides for orders with specific characteristics. Further, while Rule 606 covers all brokers or dealers, subject to a *de minimis* exception, as described below, the customer account threshold will focus the Rule 605 reporting requirement on those larger broker-dealers for which the provision of Rule 605 data will include data for most of the customer accounts handled by broker-dealers and, therefore, will balance the benefits of broker-dealer reporting with the costs of reporting.[140]

(a) Customer Account Threshold

An investor advocacy group and a national securities exchange specifically supported the proposed customer account threshold that would include in scope a broker or dealer that introduces or carries 100,000 or more customer accounts.[141] An academic and an individual investor suggested that all broker-dealers should be required to submit Rule 605 reports.[142] In contrast, a broker-dealer stated that it is not clear why it is necessary to include such a broad scope of larger broker-dealers.[143] According to this commenter, the proposal would require larger retail broker-dealers to produce execution quality reporting and metrics that are identical to those required of securities exchanges and market makers, even if those broker-dealers do not direct client orders.[144]

After considering the comments, the Commission is adopting the 100,000 customer account threshold, as proposed. The Commission's analysis of available data on the number of broker-dealers that will meet the minimum reporting threshold of 100,000 customers confirmed that such threshold will balance the benefits of having broker-dealers produce execution quality statistics with the costs of implementation and continued reporting,[145] given the smaller amount

example of how differences in order flow characteristics may impact inferences about execution quality. For further discussion, *see infra* section IX.C.1.a).

[132] That some of the information contained in the summary execution quality report will be useful for controlling for differences across differences in order flow characteristics of broker-dealer was supported by comment. *See, e.g.,* comments in support of including average notional order size and average realized spreads in the summary reports, discussed in *infra* section IV.B.1.b).

[133] *See* SIFMA Letter II at 31.

[134] *See* Virtu Letter II at 3–4.

[135] *See* Rule 605 NMS Plan at 2 (providing that the detailed report must be in standard, pipe-delimited ASCII format); final 17 CFR 242.605(a)(2) (providing that the summary report must be made available using the most recent version of the schema for CSV format and the associated PDF renderer).

[136] *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75419 (Dec. 1, 2000).

[137] Any such statements will be subject to applicable securities laws and regulations.

[138] *See* Robinhood Letter at 42 (''Instead of unnecessarily imposing additional costs on the industry to create new Rule 605 reports that may not have the desired result of empowering investors to analyze broker-dealers' execution quality, the SEC should require broker-dealers that already publish Rule 606 reports . . . to add execution quality statistics to their Rule 606 reports.'').

[139] *See supra* notes 45–51 and accompanying text (discussing Rule 606(a)(1) reports that provide quarterly information about order routing and payment arrangements).

[140] *See infra* section II.A.2.a) (discussing the Commission's analysis to support the adoption of the customer account threshold, which indicates that approximately 85 broker-dealers introduce or carry more than 100,000 customer accounts and these broker-dealers together handle over 98% of customer accounts). *See also infra* section IX.E.5.b) (discussing a reasonable alternative to expand Rule 606 reporting requirements).

[141] *See* Healthy Markets Letter at 16, n.38; Nasdaq Letter at 43 (stating that the proposed customer account threshold ''appears to balance the associated implementation costs on those broker-dealers that may provide the execution quality statistics with the greatest benefit'').

[142] *See* Joy Letter; Angel Letter at 2–3 (stating that all broker-dealers should be required to show execution quality information, and that CAT could easily produce Rule 605 reports at low incremental cost). *See also* Robinhood Letter at 44–45 (recommending that, if the Commission decides to proceed with the proposed rule, it should require all broker-dealers to report under Rule 605, because the number of large broker-dealers is relatively small (6.7% of all broker-dealers); the limited application of the rule would create an information gap about execution quality for investors that use smaller broker-dealers and new retail broker entrants). With respect to the commenter's suggestion that CAT data could be used to produce Rule 605 reports, *see infra* section V.B.2.b) for a discussion of the potential alternative to generate order execution quality reports using CAT data.

[143] *See* Cambridge Letter at 7 (''such breadth cannot be justified in light of the likely significant costs to be imposed on certain participants'').

[144] *See id.*

[145] *See infra* section IX.D.2.a)(1) for a discussion of the costs related to expanding the scope of Rule 605 reporting entities. As discussed further below, broker-dealers that were not previously required to publish Rule 605 reports will incur initial costs to prepare and post Rule 605 reports for the first time, which may include developing any policies and procedures that may be needed to do so, and all

Continued

of benefits relative to costs that there would be if the Rule 605 reporting requirements extended to broker-dealers that introduce or carry a smaller number of customer accounts. Specifically, this analysis indicates that approximately 85 broker-dealers introduce or carry more than 100,000 customer accounts and these broker-dealers together handle over 98% of customer accounts.[146] The Commission is not subjecting all broker-dealers to Rule 605 reporting requirements, as suggested by certain commenters, because of the lower benefits relative to costs for broker-dealers with a smaller number of customer accounts.[147] Conversely, the Commission disagrees with the commenter that states that the scope of larger broker-dealers that will be required to provide Rule 605 reports is overbroad.[148] The relative market-wide benefit of having a broker-dealer prepare Rule 605 reports increases when the broker-dealer has more customers.[149] The Commission's updated analysis indicates that utilizing a lower customer account threshold, such as 10,000 customer accounts, would nearly triple both initial and ongoing costs for non-market center broker-dealers (which are not otherwise subject to Rule 605's reporting requirements) and yet would result in capturing only modestly more customer accounts than the 100,000 customer account threshold.[150] The Commission's updated analysis also indicates that utilizing a higher customer account threshold, such as 250,000 customer accounts, would lower costs but also decrease coverage of customer accounts and customer order originations.[151] Thus, utilizing 100,000 customer accounts as the adopted minimum reporting threshold will better balance the benefits of having broker-dealers produce execution quality statistics with the costs of implementation and reporting.

The customer account threshold will require brokers-dealers to include in their calculations the customer accounts that they introduce, as well as the customer accounts that they carry. Rule 605 reports that reflect orders received from customer accounts that a broker-dealer introduces or carries will provide useful information to market participants because both introducing and carrying broker-dealers make decisions about where to route those orders and it will be helpful for customers to be able to evaluate the execution quality received as a result of those decisions.

One industry group requested an exception from the Rule 605 reporting requirement for an introducing firm that routes all of its customer orders to its clearing firm, on a non-directed basis, where the clearing firm makes all routing decisions and the introducing firm does not receive payment for order flow (''PFOF'').[152] This commenter explained that its request would reduce the reporting burden for smaller introducing firms.[153] This commenter stated that, given its suggested conditions for the exception from reporting requirements that an introducing broker would be required to examine the clearing firm's Rule 605 report and not have reason to believe the clearing firm's report materially misrepresents the introducing broker's order flow, the quality of the disclosure should not be impacted.[154] A second industry group made a similar request for an exception from reporting for certain introducing broker-dealers, stating that when introducing broker-dealers send customer orders to a clearing broker that makes the routing decisions, the introducing broker may not be in the best position to generate Rule 605 reports.[155]

The Commission considered these commenters' suggestion that Rule 605 provide an exception for certain introducing broker-dealers, but is not adopting the suggested exception for the following reasons: (1) Rule 605 reports prepared by larger broker-dealers will provide market participants and other interested parties with information relevant to evaluating how relationships among broker-dealers may affect execution quality, and the payment of PFOF is not the only circumstance that leads to conflicted relationships between an introducing broker-dealer and its customers; [156] (2) an introducing firm would not be able to determine whether or not its clearing firm's Rule 605 report materially misrepresents the introducing firm's order flow without independently calculating its own execution quality statistics, and if the introducing firm needed to make these calculations to do this assessment, then any additional burden due to the requirement to prepare Rule 605 reports will be minimal; (3) different firms

broker-dealers will face ongoing costs to continue to prepare the reports each month. *See also infra* section IX.E.1.a) for a discussion about the estimated costs of utilizing a different number of customer accounts as the minimum reporting threshold.

[146] Analysis from the Proposing Release was repeated regarding the estimated number of broker-dealers that will be subject to Rule 605 reporting requirements according to different definitions of the customer account threshold. *See* Proposing Release, 88 FR 3786 at 3886–87 (Jan. 20, 2023). For a description of how this analysis differs from the analysis in the Proposing Release, *see infra* note 1747. This updated analysis indicates that approximately 85 broker-dealers (or approximately 6.7% of customer-carrying broker-dealers) introduce or carry more than 100,000 customer accounts and these broker-dealers together handle over 98% of customer accounts. *See infra* Table 13 for a cost-benefit analysis of different customer account thresholds that could be used to define ''larger broker-dealer'' and accompanying text for methodology. For example, approximately 244 broker-dealers introduce or carry more than 10,000 customer accounts and these broker-dealers together handle over 99% of customer accounts. Further, approximately 1,245 broker-dealers introduce or carry at least 1 customer account.

[147] *See infra* section IX.E.1.a) (reducing the customer account threshold from 100,000 to 10,000 would almost triple both initial and ongoing costs); *see also infra* section IX.E.1.b) (discussing the alternative of requiring all broker-dealers to prepare Rule 605 reports).

[148] *See supra* notes 143–144 and accompanying text. It is unclear, and the commenter does not explain, why any of the required execution quality metrics will not be appropriate for reporting by a larger broker-dealer and the commenter does not suggest any alternative metrics. It is also unclear, and the commenter does not explain, how a Rule 605 report prepared by a retail broker will be less useful if the retail broker did not direct client orders. Even though the same underlying order may be reflected on multiple Rule 605 reports, the aggregated statistics within each report will provide different views of execution quality specific to the group of orders received by each reporting entity. Thus, a Rule 605 report prepared by a retail broker will allow that retail broker's customers, as well as other market participants, to view the execution quality specific to those orders received by the specific retail broker.

[149] *See* Proposing Release, 88 FR 3786 at 3797, n.167 (Jan. 20, 2023) and accompanying text (discussing potential initial and ongoing costs that broker-dealers would incur as a result of the proposed amendments to Rule 605).

[150] *See infra* section IX.E.1.a) and Table 13 (demonstrating that, for example, reducing the customer account threshold from 100,000 to 10,000 would increase estimated initial and ongoing compliance costs from about $3.4 million and $4.4 million, respectively, to about $9.8 million and $12.6 million, respectively, while increasing the coverage of customer accounts by 1.4% and the coverage of customer order originations by 21%). *See also infra* notes 1749–1751 (discussing why lowering the customer account threshold to include these customers might not be particularly beneficial).

[151] *See* Table 13 (demonstrating that raising the customer account threshold to 250,000 would lower estimated initial and ongoing compliance costs to about $2.4 million and $3.1 million, respectively, while decreasing the coverage of customer accounts by 1.1% and the coverage of customer order originations by 55.7%).

[152] *See* FIF Letter at 6.

[153] *See* FIF Letter II at 2.

[154] *See id.*

[155] *See* letter from William C. Thum, Managing Director and Assistant General Counsel, SIFMA AMG (Mar. 31, 2023) (''SIFMA AMG Letter'') at 6.

[156] For instance, retail brokers potentially face conflicts of interest when making order routing decisions, including whether to route to a particular wholesaler. *See infra* section IX.C.4.a)(2). As an example, broker-dealers face conflicts of interest when making routing decisions due to their own affiliation with market centers (*e.g.,* if the broker-dealer operates its own ATS), from the presence of liquidity fees and rebates on some market centers, or from payments that some retail brokers receive from wholesalers to attract the order flow of their individual investor customers (*i.e.,* PFOF). *See infra* notes 1300–1304 and accompanying text.

could have differing interpretations of how much variation there could be in execution quality statistics between an introducing firm and its clearing firm before the clearing firm's Rule 605 report would ''materially misrepresent'' the introducing firm's order flow; and (4) even if an introducing firm determined that it has no reason to believe that its clearing firm's Rule 605 report materially misrepresents the introducing firm's order flow, the introducing firm's customers could consider certain differences between the execution quality statistics of the introducing firm and its clearing firm to be meaningful.[157]

An industry group asked for clarification regarding how firms would calculate their number of customer accounts for purposes of the customer account threshold.[158] In response, the Commission is providing the following guidance. First, the introducing broker-dealer generally should only count the institutional top-level account when an introducing broker-dealer that is not a clearing broker-dealer establishes a top-level account for an institutional asset manager.[159] The Commission recognizes that in such instances the introducing broker-dealer often utilizes an omnibus clearing arrangement and thus does not have specific knowledge of how many underlying accounts a top-level account may represent.[160] Second, broker-dealers generally should count and only count the accounts for all of their customers that are authorized by their broker-dealers to trade NMS stocks, including non-U.S. customers. A focus on customers that are authorized to trade NMS stocks generally should align with the scope of Rule 605 reports because these reports relate to covered orders in NMS stocks.[161] Third, broker-dealers that provide routing services for other broker-dealers could have customer accounts for that portion of their business and the routing broker-dealer generally should consider whether a top-level account pertains to customer orders and count only those top-level accounts that the routing broker-dealer introduces or carries that are associated with customer orders. Fourth, broker-dealers generally should count only active customer accounts. Broker-dealers generally should consider customer accounts as active in the same manner as defined and reported in their Financial and Operational Combined Uniform Single (''FOCUS'') Reports on Form X–17A–5.[162] Consistent with their FOCUS reports, larger broker-dealers reporting under Rule 605 generally should count only active accounts that have a non-zero cash or securities balance at the end of the reporting period. Leveraging an existing classification of active accounts in these FOCUS reports generally should facilitate the identification of inactive accounts.

(b) Production of Separate Reports

Two investor advocacy groups expressed their support for the proposed requirement that larger broker-dealers that are also market centers produce separate reports for each activity.[163]

After considering the comments, the Commission is adopting the requirement that larger broker-dealers that are also market centers produce separate reports pertaining to each function, as proposed. As explained in the Proposing Release, requiring a firm to produce separate reports pertaining to its market center function and its broker-dealer function will allow market participants and other interested parties to view the firm's execution quality from the perspective of how it operates in each of these separate roles.[164]

An industry group stated that the proposed distinction between broker-dealer activity and market center activity in Rule 605 reports requires clarification and asked specific questions to clarify this distinction for purposes of grouping orders to prepare the separate reports.[165] In response, the Commission provides the following clarifications. First, a firm that is an OTC market maker and introduces or carries over 100,000 customer accounts (*i.e.,* meets the customer account threshold for larger broker-dealers) generally should include in its Rule 605 report pertaining to its broker-dealer function all covered orders in NMS stocks that the firm's broker-dealer received for execution as part of its customer-facing line of business. The firm generally should include in its Rule 605 report pertaining to its market center function all covered orders in NMS stock that the firm received for execution that are the type of order for which the firm serves as an OTC market maker. The set of orders pertaining to a firm's broker-dealer function may overlap with the set of orders pertaining to its market center function. The firm generally should include an order in both of its Rule 605 reports if its broker-dealer received the order from a customer and the firm also acts as a market center for that type of order.

Second, a firm that engages in a mixed capacity trade (*i.e.,* a trade involving both a portion executed as agent and a portion executed as principal) generally should include in its Rule 605 report pertaining to its broker-dealer function the entire covered order that it received for execution as part of its customer-facing line of business and subsequently executed in a mixed capacity. Based on

[157] In some instances, the same underlying order may be reflected on the Rule 605 reports provided by both an introducing firm and its clearing firm, but the separate reports will provide different views of execution quality specific to the group of orders handled by each broker-dealer. *See also* Proposing Release, 98 FR 3786 at 3798 (Jan. 20, 2023).

[158] *See* FIF Letter at 5–6 (requesting clarifications on how a firm would calculate its number of accounts to determine whether it meets the customer account threshold in the following circumstances: (1) an introducing firm that is not a clearing firm, where the introducing firm establishes a top-level trading account for an institutional asset manager and the asset manager allocates trade executions to sub-accounts; (2) a firm that has accounts for non-U.S. customers; (3) a firm that provides routing services for other broker-dealers; and (4) a firm that has authorized an account to trade NMS stocks but that account has never traded an NMS stock or has not traded an NMS stock for an extended period of time).

[159] In this scenario as presented by the commenter, the asset manager submits orders using this top-level account and separately establishes multiple underlying accounts with the clearing broker-dealer to allocate trades post-execution. *See id.* at 5–6.

[160] *See supra* note 98 and accompanying text (discussing omnibus clearing arrangements in which the clearing firm does not know the identity of the customers of the introducing firm). Having an introducing broker-dealer count the top-level account through which trading occurs is consistent with the approach for reporting transactions to the CAT. *See* FINRA CAT FAQ M4, *available at https://catnmsplan.com/faq* (stating that in scenarios involving managed accounts where an order may be placed in a master account with subaccount allocations made at a later time, the identifier representing the master/top account should be reported to CAT for transaction events requiring such identifier).

[161] *See* final 17 CFR 242.605(a)(1); final 17 CFR 242.605(a)(7).

[162] *See* Instructions to FOCUS Report—Form X–17A–5 at 2.

[163] *See* Healthy Markets Letter at 16 (''[B]rokers that are also market centers (including as OTC market makers) should be required to separately report their market center functions for all covered orders (*e.g.,* ATS or SDP operations).''); Better Markets Letter at 5, n.12.

[164] *See* Proposing Release, 88 FR 3786 at 3798 (Jan. 20, 2023).

[165] *See* SIFMA Letter II at 28 (asking the following questions as to how a firm should group different transactions for Rule 605 separate reports: (1) ''If a firm is an OTC market maker and introduces or carries 100,000+ customer accounts, how should the firm determine which orders to report as broker-dealer trades versus those executed as a market center?''; (2) ''If a firm engages in a mixed capacity trade involving both a portion executed as agent and a portion executed as principal, would this order need to be bifurcated between the two reports?''; (3) ''If a firm trades in a riskless principal capacity, but the transaction was part of its internal broker-dealer business and not its OTC market making business, should the firm nonetheless attribute the riskless principal trade to its market center Rule 605 report? The Commission only discusses a market center engaging in riskless principal transactions, but it seems possible that a non-market center might transact on a riskless principal basis as well.'').

the firm's execution of a portion of the order as principal, as a general matter, the firm acts as an OTC market maker for that type of order and, because an OTC market maker falls within the definition of a ''market center,'' [166] that portion of the order generally should be included in its report pertaining to its market center function. The firm's execution of a portion of the order as agent generally should not be determinative of whether the firm acts as an OTC market maker for that type of order. The firm also generally should include in its Rule 605 report pertaining to its market center function the portion of the covered order that it executed as agent if it received the order for execution as an OTC market maker.[167] Whether the firm received the entire covered order in its capacity as an OTC market maker (and thus as market center) or only a portion of the order in its capacity as an OTC market maker generally will depend on the types of orders for which it acts as an OTC market maker.[168]

Third, a firm that trades in a riskless principal capacity with respect to a transaction handled by its non-market center, internal broker-dealer business rather than its OTC market making business generally should not need to include the transaction in its Rule 605 report pertaining to its market center function because this division of business lines suggests that the firm is acting in its capacity as a broker-dealer only. However, the firm generally should evaluate whether or not it acts as an OTC market maker in connection with its internal broker-dealer business, in which case that portion of the business may be a market center and thus be required to be reported as such.

A financial services firm requested clarification of whether a broker-dealer that principally facilitates the trading of fractional shares must publish a separate Rule 605 report as a market center.[169] In response, the Commission clarifies that under the adopted amendments to Rule 605 a reporting entity must produce a separate Rule 605 report as a market center if it meets the definition of an ''OTC market maker'' and receives ''covered orders'' for execution in such capacity.[170] As stated in the Proposing Release, as a general matter, a broker-dealer generally should categorize a customer's submitted order for an NMS stock, whether it be for a fractional share, whole shares, or whole shares with a fractional share component, as a ''held'' order (and thus a covered order) if the customer reasonably expects its broker-dealer to attempt to execute such order immediately.[171]

One group of academics suggested that the Commission require separate disclosures for each account type at each broker-dealer to reflect the observation that execution quality differs across platforms with different commission and PFOF structures.[172] A group consisting of some of these academics also suggested that the Commission require separate disclosures of specific ''broker-wholesaler pairs'' consisting of a broker-dealer and each wholesaler to which the broker-dealer routes orders from retail investors.[173] A broker-dealer stated that execution quality metrics, including the proposed summary reports, would be more informative if Rule 605 reports differentiated between retail investors and professional customers because the nature of order flow and resulting execution quality may be quite different.[174] Another broker-dealer stated that ''each firm's order flow is unique'' and suggested that the Commission ''consider the balance of this additional transparency of order flow'' both: (1) ''in the context of reporting fragmentation for trading venues that have built in segmentation (*i.e.,* ATS with multiple pools or an exchange that has a continuous order book and a retail price improvement order book)''; and (2) ''in the context of retail brokers where experience may be materially different within a broker-dealer (*i.e.,* a retail broker chooses to offer retail customers different experiences within the same broker-dealer).''

The Commission is not adopting these commenters' suggestions that larger broker-dealers be required to produce multiple reports that differentiate between account types, business segments, or routing destinations. Requiring larger broker-dealers to split their orders amongst multiple Rule 605 reports pertaining to their broker-dealer function would create additional implementation costs and potentially undercut the goal of having standardized reports that are comparable across entities. For instance, differences among how firms structure different business lines would pose challenges in ensuring that each firm is capturing order flow with similar characteristics in the same way, which could impede the comparability of reports.

(c) Time of Order Receipt

One investor advocacy group stated that broker-dealers should be required to calculate time of order receipt based on when that broker-dealer received the

[166] *See* final 17 CFR 242.600(b)(55).

[167] When a market center, broker, or dealer receives a covered order for execution, it may execute in part at the receiving market center, broker, or dealer and in part at an away venue, but the entire covered order will be included in the firm's Rule 605 report. *See* final 17 CFR 242.605(a)(1)(i)(E) (requiring a market center, broker, or dealer to report the cumulative number of shares of covered orders executed at the receiving market center, broker, or dealer, excluding shares executed on a riskless principal basis) and final 17 CFR 242.605(a)(1)(i)(F) (requiring a market center, broker, or dealer to report the cumulative number of shares of covered orders executed at any other venue).

[168] The Commission agrees with the previous guidance provided by the staff that the Rule 605 reporting requirement for market centers generally should apply to broker-dealers insofar as they act as a market center with respect to orders received from other persons. *See* Proposing Release, 88 FR 3786 at 3798, n.180 (Jan. 20, 2023) (*citing* Division of Market Regulation: Staff Legal Bulletin No. 12R (Revised), Question 4 (June 22, 2001), *available at https://www.sec.gov/interps/legal/slbim12a.htm*). The Commission provides the following example to illustrate. Assume that Firm A generally acts as an OTC market maker for XYZ stock. If Firm A receives an order for 100 shares of XYZ stock, it may choose to execute as principal 50 shares of XYZ stock that it holds in inventory and execute as agent the 50 shares of XYZ stock necessary to fill the entire order. Firm A generally would have received the entire 100-share order in its capacity as an OTC market maker, notwithstanding its execution of a portion of the order as agent. In contrast, Firm B acts as an OTC market maker for XYZ stock but not ABC stock. If Firm B receives an order for 50 shares of XYZ stock and an order for 50 shares of ABC stock, Firm B generally would have received the order for 50 shares of XYZ stock in its capacity as an OTC market maker, regardless of whether it executed those shares as principal or as agent. In this scenario, Firm B generally would not have received the order for 50 shares of ABC stock in its capacity as an OTC market maker and therefore generally would have received this order in connection with its broker-dealer function only.

[169] *See* Fidelity Letter at 9–10.

[170] *See supra* note 3 for the definition of ''OTC market maker.'' The term ''covered order'' is defined in final 17 CFR 242.600(b)(27). As discussed above, a firm may act as an OTC market maker for certain types of orders only. For example, Firm C acts as an OTC market maker for fractional shares only. If Firm C receives an order for 51.25 shares of XYZ stock, it may execute as principal 0.25 shares of XYZ stock and execute as agent 51 shares of XYZ stock. Firm B generally would have received only the fractional share component of the order (*i.e.,* 0.25 shares) in its capacity as an OTC market maker and therefore only the fractional share component generally should be included in Firm C's Rule 605 report pertaining to its market center function.

[171] *See* Proposing Release, 88 FR 3786 at 3789, n.36 (Jan. 20, 2023).

[172] *See* Professor Schwarz et al. Letter at 5. *See also* Better Markets Letter at 5, n.14 (agreeing with this recommendation).

[173] *See* Huang et al. Letter at 1 (''[O]ur results suggest that disclosures for each broker-wholesaler pair should provide additional helpful information to monitor broker and wholesaler performance. This would allow within-broker comparisons of execution quality that are more meaningful than comparisons solely across brokers.'').

[174] *See* Rule 605 Citadel Letter at 8 (recommending that the Commission engage with market participants to appropriately define a retail order, such as by reference to an order or trade threshold and stating that forty trades per day would be inappropriately high).

order because, in the commenter's view, the use of the time the order was received would show if there are order-delays and thereby provide a useful metric for anyone examining order-routing latency across brokers.[175] An industry group and a financial services firm suggested instead of the proposed rule text that broker-dealers should be required to calculate time of order receipt based on the time that the broker-dealer first routes the order.[176] The industry group questioned whether execution metrics should be measured before or after the broker-dealer has applied risk controls and decided whether to reject the order.[177] This commenter stated that current order management systems may not generate a timestamp for when risk controls have been applied and it would be costly to generate such markers.[178] For this reason, this commenter suggested permitting a routing firm to use the time of its first route as the time of order receipt and stated that the time of first route would be consistent with the Staff frequently asked questions (FAQs) regarding Rule 606.[179] The financial services firm stated that Rule 605 reports for a non-market center should use the time of order routing, not the time of order receipt, because broker-dealers perform necessary review activities following receipt of the order but prior to routing the order.[180]

After consideration of comments, the Commission is adopting the requirement that larger broker-dealers calculate time of order receipt based on the time that they received the initial order, as proposed.[181] Time of order receipt, rather than order route time, is more relevant to customers of a broker-dealer because it will show how the broker-dealer handled the order from the time of receipt by the broker-dealer. Time of order receipt will show any delays in executing the order, and any resulting consequences on the execution quality the broker-dealer obtained for that order, because the execution quality statistics will be measured based on the prevailing market prices at the time the order was received. In addition, counting time of order receipt from the time that a broker-dealer initially receives the order will allow broker-dealers to assign a time of order receipt in a prompt and uniform manner and thus help to ensure that the time of order receipt is assigned in a non-manipulatory manner.[182]

A financial services firm that suggested the use of order route time stated that larger share orders are more likely to be sent to a review queue and could have a ''disproportionate negative impact'' on average execution speed.[183] This commenter further stated that, ''[c]onsequently, using order receipt time could create a perverse incentive for firms to diminish time spent on necessary reviews in an effort to improve execution speed statistics.'' [184] The Commission disagrees that broker-dealers will be incentivized to circumvent their risk controls because time-to-execution statistics take into account the period during which a broker-dealer is performing various reviews and before the broker-dealer routes an order. Broker-dealers have multiple reasons to implement risk controls upon the receipt of customer orders. For example, broker-dealers are subject to other regulatory requirements, including the Commission's market access rule, that will continue to apply.[185] The existence of such requirements means that broker-dealers will continue to utilize risk controls necessary to comply with these requirements, including risk controls implemented to comply with the market access rule, because the potential consequences of failing to comply with these requirements likely would counterbalance any perceived benefits of being able to report faster execution times. Broker-dealers also have reputational and business concerns that serve as additional incentives to continue to apply risk controls. Further, to the extent that larger orders received by broker-dealers may result in slower execution times due to the application of risk controls, measuring time to execution at the time of order receipt may motivate broker-dealers to make their risk controls more efficient. Moreover, time-to-execution statistics are only one aspect of execution quality statistics and price-based execution quality statistics will provide a different dimension of the reporting firms' execution quality.

An industry group requested confirmation that orders rejected based on the application of risk and compliance controls would not count as having been received for purposes of Rule 605 reporting.[186] In response, the Commission confirms that a broker-dealer generally should not include orders rejected based on the application of risk and compliance controls within its Rule 605 reports. Including these rejected orders in Rule 605 reports would not provide data useful to understanding the execution quality provided by the reporting broker-dealer because these orders would not have been received by the firm in a form where execution was possible. Thus, these rejected orders generally should not be treated as ''received'' by the broker-dealer for Rule 605 reporting purposes.

B. Qualified Auction Mechanisms

1. Proposed Approach

In today's equity markets, retail brokers often identify and route the marketable orders of individual investors in NMS stocks to wholesalers and the wholesalers often internalize these orders.[187] At the same time that the Commission proposed the amendments to Rule 605 discussed herein, the Commission separately proposed rules that 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.[188] The proposal focused on the treatment of segmented orders, which the Commission proposed to define as an order for an NMS stock that

[175] *See* Healthy Markets at 16–17.

[176] *See* FIF Letter at 18–19; Schwab Letter II at 33; letter from Jason Clague, Managing Director, Head of Operations, The Charles Schwab Corporation (Sep. 28, 2023) (''Schwab Letter III'') at 5.

[177] *See* FIF Letter at 19.

[178] *See id.*

[179] *See id.* (*citing* Rule 606 Staff FAQs, FAQ 11.01). Rule 606 Staff FAQs are available at: *https://www.sec.gov/tm/faq-rule-606-regulation-nms.* Staff reports, Investor Bulletins, and other staff documents (included those cited herein) represent the views of Commission staff and are not a rule, regulation, or statement of the Commission. The Commission has neither approved nor disapproved the content of these staff documents and, like all staff documents, they have no legal force or effect, do not alter or amend the applicable law, and create no new or additional obligations for any person.

[180] *See* Schwab Letter II at 33; Schwab Letter III at 5 (''The use of order receipt time rather than route time would result in some execution quality statistics like execution speed not being fairly represented in the reports due to outliers caused by market access review activities.'').

[181] *See* final 17 CFR 242.600(b)(103).

[182] *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75423 (Dec. 1, 2000) (discussing a commenter's concern that a market center might attempt to manipulate the time of receipt for its order flow by, for example, monitoring market movements before and/or after receipt of any order and assigning the NBBO that is most favorable to them during that brief option period).

[183] *See* Schwab Letter II at 33; Schwab Letter III at 5.

[184] Schwab Letter II at 33; Schwab Letter III at 5.

[185] *See* 17 CFR 240.15c3–5.

[186] *See* FIF Letter at 19.

[187] This practice of separately identifying and routing the marketable orders of individual investors to wholesalers is a form of ''segmentation.''

[188] For a full description and discussion of the order competition rule proposal, *see* Order Competition Rule Proposing Release, 88 FR 128 (Jan. 3, 2023); proposed 17 CFR 242.615 (''Rule 615'').

is for an account that is: (1) of a natural person or an account held in legal form on behalf of a natural person or group of related family members; and (2) in which the average daily number of trades executed in NMS stocks was less than 40 in each of the six preceding calendar months.[189] The intent of the proposed definition was to encompass the marketable orders of individual investors that retail brokers currently route to wholesalers for handling and execution.[190] Under those proposed rules, a ''restricted competition trading center'' would not be allowed to 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 met certain requirements and was operated by an ''open competition trading center.'' [191]

If the Commission adopts the order competition rule proposal, a national securities exchange or NMS Stock ATS that serves as an open competition trading center and is required to prepare execution quality reports under Rule 605 would be required to include covered orders that it received for execution in a qualified auction within its blended execution quality statistics. Because of concerns that differences in execution quality for orders executed within proposed qualified auctions as compared to orders executed outside of these qualified auctions would not be apparent in blended execution quality statistics, the Commission proposed to amend Rule 605(a)(1) to state that market centers that operate a qualified auction must prepare a separate report under Rule 605 pertaining only to covered orders that the market center receives for execution in a qualified auction.[192]

2. Final Rule and Discussion

In this release, the Commission is not acting on the proposal to require separate Rule 605 reports for orders that a market center receives for execution from a qualified auction. The Commission received generally supportive comments from a variety of market participants, including individual investors, on this proposed amendment.[193] Some industry commenters suggested that Rule 605 reports should distinguish between segmented and non-segmented orders, as described in the Order Competition Rule Proposing Release.[194]

The Commission is still considering the order competition rule proposal and the proposal to require separate Rule 605 reports for orders that a market center receives for execution in a qualified auction. Therefore, the qualified auctions contemplated by the Order Competition Rule Proposing Release do not exist as a place of execution at this time. Accordingly, in this release, the Commission is not acting on the proposed separate Rule 605 reporting requirement for orders a market center receives for execution in a qualified auction.

C. NMS Stock ATSs and SDPs

1. Proposed Approach

Under Rule 605 prior to the amendments, firms that operate two separate markets must prepare separate Rule 605 reports for each market center.[195] This requirement allows market participants to assess the execution quality of each market individually and prevents differences in the nature of each market from obscuring information about execution quality. The Commission proposed to specify in Rule 605(a)(1) that an NMS Stock ATS (as defined in Regulation ATS) [196] shall prepare reports separately from their broker-dealer operators to the extent such entities are required to prepare reports.[197] The Commission also proposed to require in Rule 605(a)(1) that any market center that provides a separate routing destination that allows persons to enter orders for execution against the bids and offers of a single dealer shall produce a separate report pertaining only to covered orders submitted to such routing destination.[198] This provision would have covered an SDP operated by a broker-dealer and required a separate report pertaining to those orders submitted to the SDP, allowing customers and other market participants to distinguish SDP activity from more traditional dealer activity.[199]

2. Final Rule and Discussion

The Commission is specifying that NMS Stock ATSs must report separately from their broker-dealer operators, as proposed, and adopting a separate reporting requirement for SDPs largely as proposed. In each instance, separate reporting under Rule 605 will bring transparency to these segments of the OTC equity market.

The Commission received generally supportive comments from a variety of market participants regarding having firms produce separate Rule 605 reports for NMS Stock ATSs and for SDPs.[200] After considering the comments, and for the reasons discussed in the Proposing Release, the Commission is specifying

[189] *See* Order Competition Rule Proposing Release, 88 FR 128 at 149 (Jan. 3, 2023); proposed Rule 600(b)(91) (defining ''segmented order'').

[190] *See* Order Competition Rule Proposing Release, 88 FR 128 at 149 (Jan. 3, 2023).

[191] *See id.* at 243; proposed Rule 600(b)(87) (defining ''restricted competition trading center''); proposed Rule 615(a) (describing the order competition requirement). An ''open competition trading center'' would be a national securities exchange or NMS Stock ATS that meets certain requirements, including being transparent and having a substantial trading volume in NMS stocks independent of qualified auctions. *See* Order Competition Rule Proposing Release, 88 FR 128 at 243 (Jan. 3, 2023); proposed Rule 600(b)(64) (defining ''open competition trading center''). A ''qualified auction'' would be an auction operated by an open competition trading center pursuant to specified requirements that are designed to achieve competition. *See* Order Competition Rule Proposing Release, 88 FR 128 at 243 (Jan. 3, 2023); proposed Rule 600(b)(81) (defining ''qualified auction''); proposed Rule 615(c) (setting forth requirements for operation of a qualified auction).

[192] *See* Proposing Release, 88 FR 3786 at 3802 (Jan. 20, 2023).

[193] *See, e.g.,* Joy Letter; Pritchard Letter; and letters from Julio Cesar (Feb. 24, 2023) (''Cesar Letter''); Nevin Varghese (Dec. 26, 2022) (''Varghese Letter'').

[194] *See* FIF Letter at 13 (stating that segmented orders would likely need to be separate from non-segmented orders); Fidelity Letter at 9 (recommending that the Commission distinguish Rule 605 data by segmented and non-segmented order flow and display such orders separately in detailed reports and summary reports); SIFMA Letter II at 29 (stating that it is unclear why retail broker-dealers should have to report on segmented orders because execution quality will depend on the qualified auction rather than actions by the originating broker, and suggesting instead a single Rule 605 report that evaluates all qualified auctions).

[195] *See* prior 17 CFR 242.605(a)(1) (requiring ''every'' market center to produce a report). *See also* Rule 605 NMS Plan at n.1 (''An entity that acts as a market maker in different trading venues (*e.g.,* as a specialist on an exchange and as an OTC market maker) would be considered as a separate market center under the Rule for each of these trading venues. Consequently, the entity should arrange for a Designated Participant for each market center/trading venue (*e.g.,* an exchange for its specialist trading and an association for its OTC trading).'') For a description of ''Designated Participant'' as defined in the Rule 605 NMS Plan, *see infra* note 869.

[196] 17 CFR 242.300(k). ''Regulation ATS'' consists of 17 CFR 242.300 through 242.304 (Rules 300 through 304 under the Exchange Act).

[197] *See* Proposing Release, 88 FR 3786 at 3803 (Jan. 20, 2023).

[198] *See id.* To the extent that a reporting firm produces more than one Rule 605 report, the firm could label each report with the type of business reflected on the report.

[199] *See id.*

[200] *See, e.g.,* Healthy Markets Letter at 16 (''[B]rokers that are also market centers (including as OTC market makers) should be required to separately report their market center functions for all covered orders (*e.g.,* ATS or SDP operations).''); Better Markets Letter at 5, n.10 (''[R]equiring SDPs and ATSs to produce Rule 605 reports independently from their broker-dealers operations would increase transparency by allowing market participants to distinguish such activity from more traditional broker-dealer activity.''); Varghese Letter (''Expanding the scope of entities subject to Rule 605 to include . . . single dealer platforms will ensure that a wider range of market participants are held to the same standards of transparency and accountability.'').

the separate reporting requirement for NMS Stock ATSs as proposed.

Two commenters requested clarification and confirmation that order and execution management systems (''OEMSs'') will not need to register as ATSs under the Commission's proposal to amend the definition of ''exchange'' under 17 CFR 240.3b–16 (''Rule 3b–16'') [201] and thus need not comply with Rule 605's separate reporting requirement for NMS Stock ATSs.[202] The Commission is still considering whether to adopt the proposed changes to the definition of ''exchange'' discussed in the 2022 Regulation ATS/Definition of Exchange Proposing Release and 2023 Regulation ATS/Definition of Exchange Reopening Release. Any need to comply with Rule 605's separate reporting requirement under any future rulemaking is outside the scope of this rulemaking.

An industry group and a broker-dealer requested additional clarity around what constitutes an SDP.[203] The broker-dealer suggested that the Commission avoid an over-inclusive definition of SDPs by focusing on the order types used by non-retail investors to interact with SDPs, such as immediate-or-cancel (''IOC'') orders and fill-or-kill orders (''FOKs''), while also capturing substantially similar trading activities to ensure a level playing field.[204] This commenter stated that ''the Commission should consider whether certain Rule 605 metrics may be unduly impacted by differences in SDP business models, rather than execution quality'' (*e.g.,* ''a SDP that sends indications of interest (''IOIs'') to customers may have materially higher fill rates than a SDP that solely receives blind IOCs'').[205] This commenter further suggested that the Commission ''conduct a more holistic review of the Rule 605 reports already produced by ATSs in order to determine whether any additional revisions are warranted in order to accurately report execution quality for non-retail orders'' (*e.g.,* ''the definition of a 'covered order' may need to be amended in order to ensure that the Rule 605 reports are sufficiently comprehensive for non-retail orders'').[206] Another broker-dealer opposed the separate reporting requirement for SDPs, stating that it is ''unnecessary to report these execution quality statistics separately, as users of SDPs are all sophisticated entities capable of carrying out their own execution quality measurements,'' and thus the requirement ''imposes an additional cost on SDPs without any clear benefit.'' [207]

After considering the comments, the Commission is adopting separate reporting for SDPs largely as proposed. The Commission acknowledges that SDPs have different business models and that SDPs that receive blind IOCs throughout the trading day (so-called ''blind pinging'') would likely have execution quality statistics that differ significantly from the statistics of SDPs that send out IOIs. Although a commenter raised concerns about potential differential impacts on Rule 605 metrics for SDPs with different business models,[208] in the Commission's experience SDPs largely receive institutional orders and therefore those market participants that send orders to SDPs generally are or represent sophisticated market participants that would likely be aware of and understand these differences in business models; thus these market participants can contextualize the Rule 605 reports appropriately. To the extent that OTC market makers operating SDPs think that additional context would help market participants understand their Rule 605 reports, these firms generally should consider whether to provide additional explanation on their websites about the nature of their order flow and how it affects the particular SDP's execution quality statistics.

In response to one commenter's statement that imposing a separate reporting requirement on SDPs lacks any clear benefit to justify the additional cost,[209] these order flow differences highlight the transparency benefits that justify the costs of requiring OTC market makers operating SDPs to produce Rule 605 reports separate from their other trading activity.[210] Otherwise, commingling SDP activity with other market center activity in Rule 605 reports may obscure differences in execution quality or distort the general execution quality metrics for the market center. Moreover, Rule 605's description of what constitutes SDP activity for purposes of the separate reporting requirement will help ensure that the SDP-specific Rule 605 reports reflect comparable activity.

In response to one commenter's suggestion that the Commission consider revisions to Rule 605 ''in order to accurately report execution quality for non-retail orders,'' [211] no further changes to Rule 605 are necessary to accommodate reporting by SDPs. Prior to the amendments, market centers included non-retail orders in their Rule 605 reports, to the extent that such orders were held orders, and therefore the reporting requirement for SDPs will not represent the first time that market centers were required to report execution quality for non-retail orders. It is more appropriate in the context of Rule 605 to require the same metrics for all reporting entities. As discussed above, market participants that utilize SDPs generally understand nuances of different market centers. Further, the Commission is adopting a requirement that SDPs prepare Rule 605 reports separate from the Rule 605 reports of their associated broker-dealers so that their customers and market participants will be able to distinguish SDP activity from more traditional dealer activity and separately evaluate reporting firms' execution quality with respect to each type of activity. It is not necessary for the achievement of this goal to make adjustments to the scope of Rule 605 to

[201] Securities Exchange Act Release No. 94062 (Jan. 26, 2022), 87 FR 15496 (Mar. 18, 2022) (''2022 Regulation ATS/Definition of Exchange Proposing Release''). The comment period was reopened on May 9, 2022, and ended on June 13, 2022: Securities Exchange Act Release No. 94868 (May 9, 2022), 87 FR 29059 (May 12, 2022). The Commission reopened the comment period for the 2022 Regulation ATS/Definition of Exchange Proposing Release again in the 2023. *See* Securities Exchange Act Release No. 97309 (Apr. 14, 2023), 88 FR 29448 (May 5, 2023) (''2023 Regulation ATS/Definition of Exchange Reopening Release''). The 2023 Regulation ATS/Definition of Exchange Reopening Release provided supplemental information and economic analysis regarding trading systems that trade crypto asset securities that would be newly included in the definition of ''exchange'' under the proposed rules. *See id.*

[202] *See* letter from Hubert De Jesus, Managing Director, Global Head of Market Structure and Electronic Trading, Samantha DeZur, Managing Director, Global Public Policy Group, BlackRock, Inc. (Mar. 31, 2023) (''BlackRock Letter'') at 4–5 (''Unlike market centers, OEMSs only route orders based on explicit order handling direction provided by a user. . . . OEMSs would not have the necessary data—and are not structured in a manner—that would allow them to file Rule 605 reports.''); Managed Funds Association Letter at 5–6 (''[I]t would be inappropriate for [OEMSs] to fall within the communication protocol systems definition. . . . [OEMSs], which are essentially software systems that help to facilitate and manage trade executions, do not have (and should not be required to develop) the operational capabilities to gather and disseminate information required by Rule 605 reports . . . due to [their] limited role.'').

[203] *See* SIFMA Letter II at 28 (noting that the Commission provides no formal SDP definition); Rule 605 Citadel Letter at 7 (stating its views about the importance of clearly defining what constitutes an SDP).

[204] *See* Rule 605 Citadel Letter at 7 (recommending that the Commission review FINRA Regulatory Notice 18–28, and the comments submitted in response, to define ''SDP'' more precisely).

[205] *Id.* at 7.

[206] *Id.* at 8.

[207] Virtu Letter II at 12–13.

[208] *See* Virtu Letter at 12.

[209] *See supra* note 207 and accompanying text.

[210] *See* section IX.D.2.a)(1) for a discussion of compliance costs related to expanding the scope of Rule 605 reporting entities. *See also* section IX.D.1.a)(2) for a discussion of the benefits of requiring separate Rule 605 reports for SDPs.

[211] *See supra* note 206 and accompanying text.

include more non-retail orders because the amendments to Rule 605 address this separation of SDPs' execution quality statistics.

The Commission also agrees with the two commenters regarding the need for additional clarity around the scope of entities that are SDPs for purposes of Rule 605. After considering commenter suggestions,[212] the Commission is replacing the proposed description of what type of broker-dealer activity constitutes SDP activity for purposes of the separate SDP reporting obligation. In its place, the Commission is adopting a modified description of SDP activity that states: ''Any OTC market maker that provides a trading system for only a single dealer [213] to solely buy and sell securities against all other persons entering orders in that system shall produce a separate report pertaining only to covered orders entered in such trading system.'' [214] Specifically, the Commission's modified SDP description contains two substantive changes to the proposed SDP description. First, the Commission is replacing the term ''market center'' with the term ''OTC market maker'' because the term ''market center'' would have been overbroad. ''Market center'' includes an ATS, national securities exchange, or national securities association, none of which can be a single dealer.[215] Second, the Commission is replacing ''separate routing destination'' with ''trading system'' to focus on the activity that occurs on SDPs and adding ''only'' before ''a single dealer'' to clarify that the trading system offered will not be for multiple dealers and instead will be limited to one dealer.[216]

A broker-dealer recommended that the Commission clarify: (i) the circumstances in which an SDP can be considered to be embedded within an ATS (*e.g.,* by constituting a separate tier within an ATS that can be specifically targeted by IOC or FOK orders), and (ii) whether SDP activity includes orders received from both the client (whether a broker-dealer or not) and from internal smart order routers.[217] First, executions that occur on or through an NMS Stock ATS are attributable to that NMS Stock ATS and covered orders received for execution on or through an ATS must be included in the Rule 605 report pertaining to the ATS rather than on a separate Rule 605 report.[218] Therefore Rule 605 reporting requirements are not dependent on whether ''an SDP [could] be considered to be embedded within an ATS.'' The Commission understands that certain NMS Stock ATSs offer counterparty selection and segmentation procedures that may allow the orders of a particular participant to interact with the orders of only a subset of participants, and in this respect trading activity that occurs on certain NMS Stock ATSs may resemble trading activity that occurs on SDPs.[219] Providing separate Rule 605 reports for SDP-like activity on ATSs would not be practicable given the lack of uniformity among NMS Stock ATSs' operations, particularly their counterparty and segmentation procedures. Another factor that could decrease comparability across reports if they were divided, as suggested by the commenter, is that trading activity on an NMS Stock ATS occurs within the context of regulatory requirements specific to NMS Stock ATSs.[220] In contrast, SDPs (as defined for purposes of Rule 605) operate as broker-dealer trading systems that are not ATSs and thus that are not subject to ATS regulatory requirements. Given the differences in operations and regulatory requirements between the types of trading systems, which affect order interaction and execution, the execution quality statistics for SDP-like trading activity occurring on ATSs could significantly vary in a manner that differs from the variation in execution quality statistics among SDPs, thereby reducing the utility of comparing execution quality statistics for trading activity occurring on SDPs. Second, SDP activity includes orders received from both a client (whether or not a broker-dealer) and internal smart order routers. Orders received from internal smart order routers are included in Rule 605 reports specific to SDPs because the determination that a trading system is an SDP for purposes of Rule 605 reporting requirements depends on the type of trading system that receives the orders and the single dealer counterparty that interacts with the orders that the system receives.[221]

An industry group asked specific questions about how to distinguish between OTC market making and SDP activities in Rule 605 reports.[222] The

[212] In response to the commenter's suggestion that the Commission consider FINRA Regulatory Notice 18–28 to define ''SDP'' more precisely (*see supra* note 204), the Commission observes that FINRA requested comment on a definition of SDP but did not propose or adopt a definition. *See* FINRA Regulatory Notice 18–28.

[213] A dealer is defined in Exchange Act section 3(a)(5), 15 U.S.C. 78c(a)(5).

[214] Final 17 CFR 242.605(a)(1). *Compare* final 17 CFR 242.605(a)(1) *with* proposed Rule 605(a)(1) (''Any market center that provides a separate routing destination that allows persons to enter orders for execution against the bids and offers of a single dealer shall produce a separate report pertaining only to covered orders submitted to such routing destination.''). SDPs are a type of market center as defined in Regulation NMS Rule 600(b)(55) because the description of an SDP in the adopted amendments to Rule 605 includes the term ''OTC market maker'' and the definition of ''market center'' lists OTC market maker as one of the included entities. *See* final 17 CFR 242.600(b)(55). Therefore, as a general matter, SDPs are a type of market center and, as such, are within the scope of Rule 605 reporting entities without reference to the 100,000 customer account threshold.

[215] *See* final 17 CFR 242.600(b)(55) (defining ''market center'' to mean any exchange market maker, OTC market maker, ATS, national securities exchange, or national securities association). *Compare* final 17 CFR 242.600(b)(75) (defining ''OTC market maker'' to mean 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 and continuous basis otherwise than on a national securities exchange in amounts of less than a block size).

[216] Unlike an ATS, on an SDP the broker-dealer operator is the only counterparty to any trade that occurs on the SDP. *See, e.g., Where Do Stocks Trade?, FINRA.org* (Sep. 28, 2023), *available at https://www.finra.org/investors/insights/where-do-stocks-trade#::text=The%20most%20familiar%20type%20of,in%20popularity%20in%20recent%20years.* In contrast, an ATS meets the criteria of 17 CFR 240.3b–16(a) and ''brings together the orders for securities of multiple buyers and sellers.''

[217] *See* Rule 605 Citadel Letter at 7.

[218] *See* final 17 CFR 242.605(a)(1).

[219] NMS Stock ATSs may offer counterparty selection or certain segmentation profiles that allow a single participant to interact with one or certain counterparties. Form ATS–N requires public disclosures about these aspects of an NMS Stock ATS. *See* Form ATS–N, Part III, Items 13 and 14. An NMS Stock ATS that permits a subscriber to use its counterparty selection or segmentation procedures to trade with only one subscriber or a certain subset of subscribers can be required, depending on its operations and arrangement with the subscriber, to disclose additional information in response to other requirements of the Form ATS–N. These disclosures can include, among others, Part II, Item 2 (Affiliates Trading Activities on ATS), Part II, Item 4 (Arrangements with Trading Centers), Part III, Item 7 (Order Types and Attributes), Part III, Item 11 (Trading Services, Facilities, and Rules), and Part III, Item 18 (Fees).

[220] *See, e.g.,* 17 CFR 242.301(b)(3) (containing requirements for ATSs pertaining to order display and execution access); 17 CFR 242.301(b)(5) (containing requirements for ATSs that have a significant percentage of overall trading volume in a security or category of securities during a certain period of time to comply with fair access requirements, which include, among other things, that the ATS establish written standards for granting access to trading on the ATS and not unreasonably prohibit or limit access by applying those access standards in an unfair or discriminatory manner).

[221] *See* final 17 CFR 242.605(a)(1) (defining an SDP as a trading system for only a single dealer to solely buy and sell securities against ''all other persons entering orders in that system'').

[222] *See* SIFMA Letter II at 28 (posing the following interpretive questions to distinguish between OTC market makers and SDPs: (1) ''Is the Commission suggesting that an SDP is a type of OTC market maker and therefore a market center?''; (2) ''Would an SDP be considered an OTC market maker for purposes of any other rule?''; (3) ''Is the Commission assuming that an SDP only accepts IOC orders?''; (4) ''Under what circumstances can an SDP be considered to be embedded within an ATS (such as when an SDP can be specifically targeted within an ATS by IOC or FOK orders)?''; (5) ''Would SDP activity include orders received from both a client (whether or not a broker-dealer) and from internal smart order routers?'').

Commission provides the following responses. First, Rule 605(a), as adopted, defines the separate Rule 605 reporting obligation as applying to any OTC market maker that provides a separate trading system that meets specified criteria; therefore, as it pertains to Rule 605 reporting, any SDP required to prepare Rule 605 reports will be a type of OTC market maker and therefore a market center.[223] Second, the Commission is not changing the definition of ''OTC market maker'' in Rule 600. Thus, any other rule that refers to an ''OTC market maker'' will utilize the same definition in Rule 600. Third, the Commission is not assuming that an SDP accepts only IOC orders. As such, an SDP is not limited to accepting or receiving a particular type of covered order for execution. Fourth, as described above, although a subscriber's activity on an NMS Stock ATS may resemble SDP activity, the trading activity occurs on the ATS and thus is attributable to the ATS for purposes of Rule 605 reporting requirements. Fifth, as described above, SDP activity includes orders received from both a client (whether or not a broker-dealer) and from internal smart order routers.

III. Modifications to Scope of Orders Covered and Required Information

The reports required by Rule 605(a)(1) prior to these amendments grouped orders by both order size and order type and included certain standardized execution quality metrics for all types of orders, as well as additional metrics for market orders and marketable limit orders. For all reporting entities, including larger broker-dealers, the Commission proposed to: (1) modify the order size and order type groupings; and (2) make changes to the required information for all types of orders, market and marketable limit order types, and non-marketable order types. The Commission is adopting the proposed changes to Rule 605 largely as proposed, with certain modifications discussed below. Section III.A. describes the ways in which the Commission is modifying its proposed definition of ''covered order'' in the adopted amendments. Section III.B. describes the modifications that the Commission is making to the information contained in the detailed execution quality reports required by Rule 605(a)(1), including how orders are categorized by size and type, the timestamp conventions, and which execution quality statistics are included.

A. Covered Order

The scope of Rule 605's reporting requirements is limited to covered orders.[224] The Commission proposed expanding the definition of ''covered order'' to include: (1) certain orders received outside of regular trading hours; and (2) orders submitted with stop prices. The Commission also addressed whether non-exempt short sale orders would be covered orders when a price test restriction is in effect for the security.

1. Orders Submitted Pre-Opening/Post-Closing

(a) Proposed Approach

Prior to these amendments, Rule 605 reports were required to include only orders received during regular trading hours[225] at a time when an NBBO is being disseminated. When the Commission adopted Rule 11Ac1–5, the Commission excluded orders submitted during the pre-opening or after the close, among other order types, from the scope of reporting because nearly all of Rule 605's statistical measures required the availability of the NBBO at the time of order receipt as a benchmark.[226] Similarly, orders for which customers requested special handling, including orders to be executed at a market opening price, were excluded from Rule 605 reports because of a concern that their inclusion would skew the general statistics.[227]

In the Proposing Release, the Commission proposed to: (1) expand the scope of Rule 605 reporting to include certain NMLOs submitted outside of regular trading hours if they become executable after the opening or reopening of trading during regular trading hours; [228] (2) amend the definition of ''marketable limit order'' to specify that the marketability of an order received when the NBBO is not being disseminated would be determined using the NBBO that is first disseminated after the time of order receipt; [229] and (3) exclude from Rule 605 reports market or limit orders received during regular trading hours at a time when an NBBO is being disseminated but prior to the dissemination of the primary listing market's first firm, uncrossed quotations for a trading day (''Opening Exemption''),[230] thereby incorporating previously granted exemptive relief into the proposed definition of ''covered order.'' [231] The Commission's proposed definition of ''covered order'' would have excluded market orders and marketable limit orders submitted prior to open or during a trading halt; therefore, any limit order received outside of regular trading hours or during a trading halt that is marketable based on the first disseminated NBBO during regular trading hours after the time of order receipt would not have been a covered order for purposes of Rule 605.[232] Additionally, the Commission proposed amending Rule 605(a)(1) to require a market center, broker, or dealer to include in its monthly report, in addition to the covered orders in NMS stocks that it received for execution from any person, those covered orders in NMS stocks that it received for execution in a prior calendar month but which remained open.[233]

[223] *See supra* note 214.

[224] *See* prior 17 CFR 242.605(a)(1); final 17 CFR 242.605(a)(1). *See supra* note 4.

[225] ''Regular trading hours'' is defined as the time between 9:30 a.m. and 4 p.m. Eastern Time, or such other time as is set forth in the procedures established pursuant to 17 CFR 242.605(a)(3). *See* final 17 CFR 242.600(b)(88).

[226] *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75421 (Dec. 1, 2000).

[227] *See id.*

[228] *See* Proposing Release, 88 FR 3786 at 3804 (Jan. 20, 2023). The Commission proposed to revise the definition of ''categorized by order type'' to include executable NMLOs and executable orders submitted with stop prices. *See id.* at 3804, n. 227; proposed Rule 600(b)(20). The Commission also proposed to expand the definition of ''covered order'' to cover NMLOs received by a market center or broker-dealer outside of regular trading hours or when an NBBO is not being disseminated and, if executed, executed during regular trading hours. *See* Proposing Release, 88 FR 3786 at 3804 (Jan. 20, 2023); proposed Rule 600(b)(30).

[229] *See* Proposing Release, 88 FR 3786 at 3804 (Jan. 20, 2023). Specifically, the Commission proposed that an order received at a time when a national best bid and national best offer is not being disseminated would be a marketable limit order if it is a buy order with a limit price equal to or greater than the national best offer at the time that the national best offer is first disseminated during regular trading hours after the time of order receipt, or if it is a sell order with a limit price equal to or less than the national best bid time at the time that the national best bid is first disseminated during regular trading hours after the time of order receipt. *See id.*; proposed Rule 600(b)(57).

[230] *See* Proposing Release, 88 FR 3786 at 3804–05 (Jan. 20, 2023); proposed Rule 600(b)(30). The Commission stated that, pursuant to the proposed amendments to Rule 605, NMLOs (including orders submitted with stop prices) received outside of regular trading hours or at a time when an NBBO is not being disseminated would have been considered covered orders, provided the NMLOs were not executed outside of regular trading hours. *See* Proposing Release, 88 FR 3786 at 3805 (Jan. 20, 2023).

[231] *See* letter from Annette L. Nazareth, Director, Division of Market Regulation to Theodore Karn, President, Market Systems, Inc., dated June 22, 2001 (''Market Systems Exemptive Letter'') at 2. The Commission proposed to rescind the Opening Exemption. *See* Proposing Release, 88 FR 3786 at 3805 (Jan. 20, 2023).

[232] *See* Proposing Release, 88 FR 3786 at 3804 (Jan. 20, 2023).

[233] *See id.* at 3805.

(b) Final Rule and Discussion

The Commission is adopting as proposed an expansion to the scope of Rule 605 reporting to include NMLOs submitted outside of regular trading hours that become executable after the opening or reopening of trading during regular trading hours.[234] The Commission is adopting the definition of ''covered order'' as it relates to orders submitted outside of regular trading hours largely as proposed, but with a modification to accept a commenter's recommendation as discussed below. The Commission is similarly modifying the proposed definitions of ''executable,'' ''marketable limit order,'' and ''beyond-the-midpoint limit order'' [235] to accommodate this modification. Further, the Commission is adopting as proposed the requirement for a market center, broker, or dealer to include in its monthly report those covered orders in NMS stocks that it received for execution in a prior calendar month but which remained open.[236]

Generally, individual investors supported including certain orders submitted outside of regular trading hours within the scope of covered orders.[237] One individual investor who supported the proposed change stated that after-market and pre-market trades play a greater role today than ever before, with many of the price changes occurring during these times rather than during market hours.[238]

A broker-dealer supported the inclusion of pre-market orders in Rule 605 reports, stating these orders (along with other included order types) would provide investors with a more complete picture of order execution quality across the marketplace.[239] Another commenter stated that NMLOs entered outside of ''normal hours'' should not be included because ''these will likely skew the statistics.'' [240] Specifically, this commenter stated that frequently the first quote after opening is wide and not representative of the quote when the primary exchange opens, and many orders deemed NMLOs by this benchmark would likely fill as soon as the primary exchange opens. Therefore, according to this commenter, ''including these orders will skew the NMLO stats and lead to difficult comparisons between brokers.'' [241]

A national securities exchange supported inclusion of certain orders submitted outside of regular trading hours within the definition of ''covered order.'' [242] An investor advocacy group recommended that Rule 605 run from primary market open to primary market close (*e.g.,* 9:30 a.m. to 4 p.m. eastern standard time).[243]

An industry group stated that the proposed definition of ''covered order,'' in the context of NMLOs, does not address orders received during regular trading hours but prior to the primary listing market disseminating its first firm, uncrossed quotations in a security (referred to herein as the ''interim opening period'').[244] This commenter recommended that the demarcation point for whether an order should be treated as a pre-open (or post-close) order or an order received during regular trading hours should be the point at which the primary listing market disseminates its first firm, uncrossed quotations for the applicable security.[245] To address orders received during the interim opening period, this commenter recommended that the Commission change each of the references to the ''time when a national best bid and national best offer is being disseminated'' in the proposed definitions of ''marketable limit order'' and ''beyond-the-midpoint limit order'' to reflect not only that a national best bid and national best offer has been disseminated but also that the primary market has disseminated its first firm, uncrossed quotations for the security.[246]

After a review of the comments, for the reasons discussed in the Proposing Release and discussed below, the Commission is adopting the definition of ''covered order,'' along with other changes addressing the expansion of the scope of Rule 605 to include certain orders received outside of regular trading hours, largely as proposed.[247] However, in response to comments, the Commission is making several modifications that address the treatment of orders received during the interim opening period. As discussed below, these changes help address the concerns of one of the commenters that the inclusion of NMLOs entered outside of normal hours in Rule 605 reports would skew the reported execution quality statistics.[248]

When proposing to incorporate the exemptive relief contained in the Opening Exemption [249] into the definition of ''covered order'' with respect to market or limit orders received during regular trading hours at a time when an NBBO is being disseminated, the Commission recognized that quotations disseminated prior to a primary listing market disseminating its first quotations in a security often reflect spreads that vary significantly from the norm and intended that the proposed changes to the definition would prevent such quotations from skewing execution quality statistics.[250] In proposing to expand the scope of Rule 605 reporting requirements to include certain NMLOs submitted outside of regular trading hours if they become executable during the opening or reopening of trading during regular trading hours, the Commission intended to provide increased visibility into the execution quality for individual investor orders.[251] The Commission agrees with the commenter who recommended additional changes to the definition of ''covered order'' (along with related changes to the definitions of ''marketable limit order'' and ''beyond-the-midpoint limit order'') and stated that treating orders received during the interim opening period in the same manner as orders received outside of

[234] *See* final 17 CFR 242.600(b)(19) (defining ''categorized by order type'').

[235] As discussed further below, the Commission is making additional modifications to this order type category and renaming the associated definition as ''midpoint-or-better limit order.'' *See infra* section III.B.2.b).

[236] *See* final 17 CFR 242.605(a)(1).

[237] *See, e.g.,* Pritchard Letter; letter from Dan Liefwalker (Mar. 7, 2023); Macarthur Letter; Genco Letter; Varghese Letter; letter from Jeremy B. Beddo (Mar. 30, 2023) (''Beddo Letter'').

[238] *See* Joy Letter. However, an individual investor who opposed the proposal stated that including as covered orders certain orders submitted outside of regular trading hours (as well as certain orders submitted with stop prices) ''could make it difficult for retail investors to place orders at the best possible price'' and ''[t]his could lead to retail investors being left with less favorable prices and missing out on potential gains in the dark markets.'' Letter from Jacob Gillmore (Feb. 24, 2023) (''Gillmore Letter''). It is not clear—and the commenter does not explain—how including orders submitted outside of regular trading hours in Rule 605 reports could make it difficult for retail investors to place orders at the best possible price.

[239] *See* Virtu Letter II at 3.

[240] Schwab Letter II at 32.

[241] *Id.*

[242] *See* Nasdaq Letter at 43, text accompanying n.121.

[243] *See* Healthy Markets Letter at 17. This commenter's suggestion of when Rule 605 should be in effect is consistent with the definition of ''regular trading hours.'' *See* final 17 CFR 242.600(b)(88) (''Regular trading hours means the time between 9:30 a.m. and 4 p.m. Eastern Time, or such other time as is set forth in the procedures established pursuant to § 242.605(a)(3).'') This commenter did not address whether to include certain orders submitted outside of regular trading hours but executed during regular trading hours within the scope of Rule 605's reporting requirements as proposed.

[244] *See* FIF Letter at 8.

[245] *See id.* at 7.

[246] *See id.* at 8.

[247] As discussed below, the Commission also is rescinding a portion of the Market Systems Exemptive Letter and updating a related staff FAQ. *See infra* section VI.

[248] *See supra* note 240 and accompanying text.

[249] *See supra* note 230 and accompanying text.

[250] *See* Proposing Release, 88 FR 3786 at 3804–05 (Jan. 20, 2023).

[251] *See id.* at 3804.

regular trading hours will be consistent with the Commission's stated objectives.[252]

Accordingly, the Commission is adopting a definition of ''covered order'' that scopes in any NMLO (including an order submitted with a stop price) that is received by a market center, broker, or dealer at a time before the primary listing market has disseminated its first firm, uncrossed quotations in the security and that, if executed, is executed during regular trading hours.[253] The ''covered order'' definition, as proposed and as the Commission is adopting, does not include within its scope those market orders and marketable order types received outside of regular trading hours. Keeping market and marketable limit orders received during the interim opening period outside the scope of covered orders is consistent with how these orders are treated when received outside of regular trading hours. The changes to the definition of ''covered order,'' together with the modifications to the definition of ''executable'' and ''marketable limit order'' discussed below, will help ensure that an order received or executed during the interim opening period will be treated in the same manner as any other order received or executed pre-open or post-close.

The Commission is also adopting a modified version of the proposed definition of ''executable'' that specifies that whether an NMLO is executable will be determined based on the order's limit price during regular trading hours and after the primary listing market has disseminated its first firm, uncrossed quotations in the security.[254] Under the definition of ''executable'' as proposed, an NMLO (including an order submitted with a stop price) received during the interim opening period would have had the possibility of becoming executable before the primary listing market has disseminated its first firm uncrossed quotations in the security. During this interim opening period, quotations and execution prices may be less representative of the value of the security than during the rest of regular trading hours because, as stated above, quotations disseminated prior to a primary listing market disseminating its first quotations in a security often reflect spreads that vary significantly from the norm during regular trading hours. Therefore, a scenario in which an NMLO becomes executable (as defined in the proposal) during the interim opening period led to two potential ways in which including these orders could skew execution quality statistics. First, if the NMLO executed during the interim period (including at the opening of the primary listing market), that order would have been included in reports required pursuant to proposed Rule 605(a)(1) as an NMLO that became executable and executed during regular trading hours. Second, the benchmark that would have been used for those statistics to measure from the time that an order becomes executable[255] would have been a quotation price from the interim opening period. The modification to the proposed definition of ''executable'' that the Commission is adopting addresses both concerns. Pursuant to the adopted rule, an NMLO (including an order submitted with a stop price) received during regular trading hours will not have the possibility of being considered executable until after the primary listing market has disseminated its first firm, uncrossed quotations in the security.[256] Further, the benchmark used for those statistics that are measured from the time that an order becomes executable will be measured from a point in time that is after the primary listing market has disseminated its first firm, uncrossed quotations in the security. These changes to the final rule will help to prevent the potential skewing of execution quality statistics caused by reliance on quotations from the interim opening period, and thereby increase the comparability of Rule 605 reports.

In addition, the Commission is revising the proposed definition of ''marketable limit order'' so that, with respect to an order received at a time when the NBBO is being disseminated but before the primary listing market has disseminated its first firm, uncrossed quotations in the security (*i.e.,* during the interim opening period), whether the order is a marketable limit order will be determined from the time that the primary listing market disseminates its first firm, uncrossed quotations in the security.[257] This change will move the determination of whether an order is a marketable limit order or a NMLO to a time when the NBBO is more representative of the security's price than may be the case during the interim opening period. The Commission is also modifying the definition of ''midpoint-or-better limit order'' from the proposed definition[258] in a similar manner so that the price used to determine whether an order is a midpoint-or-better limit order will be more representative of the security's price. The definition that the Commission is adopting specifies that, for orders received when an NBBO is being disseminated and the primary listing market has disseminated its first firm, uncrossed quotations in the security (*i.e.,* after the interim opening period), whether the order is a midpoint or better limit order will be determined based on the time of order receipt.[259] The adopted definition also specifies that, for orders received at a time when the NBBO is being disseminated but before the primary listing market has disseminated its first firm, uncrossed quotations in the security (*i.e.,* during the interim opening period), whether the order is a midpoint-or-better limit order will be determined from the time that the primary listing market disseminates its first firm, uncrossed quotations in the security.[260] These changes also will help to prevent skewing of execution quality statistics and thereby increase the comparability of Rule 605 reports.

2. Stop Orders

(a) Proposed Approach

Orders submitted with stop prices were not included in Rule 605 reports prior to these amendments because the definition of ''covered order'' excluded orders with special handling instructions, including orders submitted with stop prices.[261] The Commission

[252] *See* FIF Letter at 7–8.

[253] *See* final 17 CFR 242.600(b)(27).

[254] *See* final 17 CFR 242.600(b)(39).

[255] The Commission proposed to measure the time to execution for non-marketable orders from the time such orders become executable. *See infra* section III.B.3.

[256] An NMLO (including orders submitted with stop prices) that executes during the interim opening period (including an NMLO that executes at the opening of the primary listing market) will not have the opportunity to meet the definition of executable; therefore, such an order will not be included in a Rule 605 report because the reports required by Rule 605(a)(1) include only NMLOs that are executable. *See* final 17 CFR 242.600(b)(39). This treatment of an NMLO that executes during the interim opening period will be similar to the treatment of an NMLO that executes outside of regular trading hours and will similarly prevent order executions where quotations may vary significantly from the norm from skewing execution quality statistics. *See* section III.A.2.b) *infra* for additional discussion of orders submitted with stop prices and section III.B.2.a)(2) *infra* for additional discussion of the defined term ''executable.''

[257] *See* final 17 CFR 242.600(b)(56).

[258] As discussed further below, the Commission is making additional modifications to this order type category and renaming the proposed term ''beyond-the-midpoint limit order'' to be ''midpoint-or-better limit order.'' See infra section III.B.2.b).

[259] *See* final 17 CFR 242.600(b)(57).

[260] *See id.*

[261] *See* prior 17 CFR 242.600(b)(22). Generally, an order submitted with a stop price may become either a market order or a limit order when the offer (bid) reaches the stop price for a buy (or sell) order or the security trades at or above (or below) the stop price for a buy (or sell) order.

proposed to remove this exclusion and measure the execution quality of orders submitted with stop prices from the time such orders become executable.[262] As part of the proposed definition of ''executable,'' the Commission specified that executable means, for any buy order submitted with a stop price, that the stop price is equal to or greater than the national best bid during regular trading hours, and, for any sell order submitted with a stop price, that the stop price is equal to or less than the national best offer during regular trading hours.[263] In addition, the Commission proposed to modify the definition of ''categorized by order type'' to add executable orders submitted with stop prices as a separate order type category.[264]

(b) Final Rule and Discussion

The Commission is adopting the definition of ''covered order'' as proposed to include orders submitted with stop prices within the scope of Rule 605. However, the Commission is modifying the proposed definition of ''executable'' as it pertains to orders submitted with stop prices in response to recommendations from commenters. Additionally, the Commission is modifying the proposed definition of ''categorized by order type'' to include separate categories for executable market orders submitted with stop prices, executable marketable limit orders submitted with stop prices (''executable stop marketable limit orders''), and executable non-marketable limit orders submitted with stop prices (''executable stop non-marketable limit orders'' or ''executable stop NMLOs''), in response to comments. As part of adding these separate stop order categories, the Commission is also adding new definitions of ''executable stop marketable limit order'' and ''executable stop non-marketable limit order.''

Individual investors generally supported including certain orders submitted with stop prices within the definition of ''covered order.'' [265] A national securities exchange supported inclusion of orders submitted with stop prices within the definition of ''covered order.'' [266] One broker-dealer supported the inclusion of executable stop orders as an order type.[267]

Another broker-dealer supported including stop orders, but stated that there are many different types of stop orders. This commenter stated that, ''rather than attempting to define what constitutes a trigger and its corresponding reference market for purposes of determining whether and how a stop order is included within Rule 605, it would be preferable to simply require that all stop orders that are triggered be included in Rule 605 reports to the extent that the resulting market or limit order is a covered order.'' [268] Another commenter stated that the definition of executable stop order ''runs counter to how stop orders actually become executable.'' [269] According to this commenter, while FINRA Rule 5350 defines a stop order as ''an order to buy (or sell) that becomes a market order to buy (or sell) when a transaction occurs at or above (below) the stop price,'' broker-dealers may elect to trigger a stop order in a different fashion but are prevented from calling it a ''stop order.'' [270]

An industry group suggested that the Commission and FINRA adopt consistent usage of the term ''stop order'' and other relevant terms because the proposed definition is inconsistent with the terminology in FINRA Rule 5350 in a number of respects.[271] The commenter stated that stop orders should be reported separately from other types of orders, but suggested that the Commission modify the criteria for when to include stop orders in Rule 605(a)(1) reports and expand the order type categories related to stop orders.[272] This commenter recommended that stop orders become reportable if the order is ''triggered'' or ''activated'' and that an alternate term along these lines be used instead of ''executable.'' [273] According to this commenter, requiring reporting pursuant to Rule 605 ''with respect to any time period prior to the triggering of a stop order would provide no value to market participants and would provide misleading information to the market'' because there is no action that a firm can take to execute a stop order prior to the point when the order is triggered.[274]

After review of the comments, the Commission is adopting a modified definition of ''executable'' as it pertains to orders submitted with stop prices. As adopted, ''executable,'' with respect to orders submitted with stop prices, means that the stop price has been triggered during regular trading hours and after the primary listing market has disseminated its first firm, uncrossed quotations in the security.[275] As stated by commenters, orders may be submitted with stop prices that trigger or activate based on different conditions, such as a last sale price or a change in the NBBO.[276] The definition of ''executable'' that the Commission is adopting will more broadly encompass the different conditions that may convert an order with a stop price into an order that may execute.[277] Additionally, this change addresses a commenter's suggestion by preventing stop orders from being executable before they have been triggered.[278]

---

[262] *See* Proposing Release, 88 FR 3786 at 3805 (Jan. 20, 2023); proposed Rule 600(b)(30).

[263] *See* Proposing Release, 88 FR 3786 at 3805, 3810, n.302 (Jan. 20, 2023); proposed Rule 600(b)(42).

[264] *See* Proposing Release, 88 FR 3786 at 3805, n.241 (Jan. 20, 2023); proposed Rule 600(b)(20).

[265] *See* Macarthur Letter; Cesar Letter; Genco Letter; Varghese Letter. *See also supra* note 238 (discussing Gillmore Letter, which relates to whether to include as covered orders certain orders submitted outside of regular trading hours and orders submitted with stop prices).

[266] *See* Nasdaq Letter at 44.

[267] *See* Virtu Letter II at 3.

[268] Rule 605 Citadel Letter at 12.

[269] Schwab Letter III at 5–6.

[270] *Id.* at 6. According to this commenter, the most common other trigger condition on a sell stop is the bid, but very rarely do equity sell stop orders trigger off the ask. *See id.*

[271] *See* FIF Letter at 9, 12. This commenter stated that it was using the term ''stop order'' in a manner consistent with the Commission's usage of the term in the Proposing Release. *See id.* at 9. This commenter stated that it used ''stop order'' to include stop orders and stop limit orders, as those terms are defined in FINRA Rule 5350, but also included orders that are triggered upon the stop price matching (or passing) a quoted price, in addition to those orders triggered upon the stop price matching (or passing) a trade price, and trailing stop orders. *See id.*

[272] *See id.* at 9–11.

[273] *See id.* at 10, 11–12. This commenter stated that the terms ''triggered'' and ''activated'' are used interchangeably in FINRA Rule 5350, Supplementary Material .01 and .02 and that the commenter considers these terms to have the same meaning as applied to stop orders. *See id.* at 10 & n.25. This commenter also stated that its members do not believe that it would be necessary for the Commission to define ''triggering'' or ''activation'' because this concept for a stop order is well-understood by industry members and regulators. *See id.* at 11. *See also* FIF Letter II at 2. Further, this commenter stated that a material percentage of stop orders are triggered based on a change in the NBBO (in most cases, but not always, the opposite-side quote) and a material percentage of stop orders are triggered based on a change in the last sale price. *See id.*

[274] *See* FIF Letter at 10.

[275] *See* final 17 CFR 242.600(b)(39). The addition of the reference to the interim opening period is discussed in section III.A.1.b) *supra.*

[276] The Commission's analysis of stop order volume demonstrates that most stop orders are triggered by the last sale price, but there is also nontrivial order flow associated with other trigger events, including changes to the quotation. *See infra* text accompanying note 1167; Table 3.

[277] Although the Commission is not adopting a commenter's suggestion to use the term ''triggered'' or ''activated'' instead of ''executable'' when used in connection with stop orders (*see supra* note 273 and accompanying text), redefining ''executable'' to mean that an order's stop price has been triggered during regular trading hours will have the same substantive effect.

[278] *See supra* note 274 and accompanying text. In addition, revising the definition of ''executable'' to focus on when a stop order has been triggered is consistent with the Commission's goal of helping investors compare the performance of market centers and broker-dealers from a point in time

A commenter suggested that Rule 605 reports should exclude stop orders to ''avoid confusion'' and allow firms to disclose the relevant details to their clients in a manner consistent with the clients' trading experience.[279] However, such disclosures would not be an adequate substitute because they would not be required, might not be provided in a uniform format, and might not be available to market participants that are not clients of a particular firm, all of which would impede market participants' ability to compare statistics across firms.

An industry group recommended that: (1) once a stop order without a limit price has been triggered, the order should be reported as a stop market order; and (2) once a stop limit order has been triggered, the order should be reported in one of several new order type categories based on the status of the order at the time the order is triggered.[280] This commenter further suggested that, for purposes of representing all of these order type categories, the Commission should add a column to Rule 605(a)(1) reports to indicate whether the applicable row pertains to stop orders.[281] A commenter that recommended excluding stop orders from Rule 605 reports stated that ''stop orders can have at least three distinct behaviors after they are triggered—market order, marketable limit order, and nonmarketable limit order'' and suggested that a ''more transparent way to include these orders would be to create three separate categories of stop orders reflecting these triggers.'' [282]

In consideration of these comments, the Commission is modifying Rule 605's treatment of stop orders from the proposal to split executable stop orders into three categories—executable market orders submitted with stop prices, executable stop marketable limit orders, and executable stop NMLOs—based on the stop orders' status at the time that they are triggered. Separating executable stop orders into these three categories will group orders with similar execution profiles.[283] To implement these changes to the treatment of stop orders, the Commission is: (1) modifying the proposed definition of ''categorized by order type'' to replace the category for executable orders submitted with stop prices with categories for executable market orders submitted with stop prices, executable stop marketable limit orders, and executable stop non-marketable limit orders; [284] (2) adding new defined terms of ''executable stop marketable limit order'' and ''executable stop non-marketable limit order;'' [285] and (3) modifying the execution quality statistics required for stop orders to align the three categories of stop orders with the type of order they most resemble once triggered.[286]

In response to comments received, the Commission conducted a supplemental analysis of the distribution of stop orders that fell into six existing order type categories once triggered using a sample of CAT data for 400 stocks for March 2023. The results are presented in Table 1 and show that the majority of orders submitted with a stop price that trigger are market orders when triggered (almost 86%). However, a significant percentage of orders submitted with a stop price that trigger are limit orders.[287]

---

when such orders could reasonably be expected to execute. *See* Proposing Release, 88 FR 3786 at 3805 (Jan. 20, 2023).

[279] *See* Schwab Letter III at 5–6. This commenter raised, but did not recommend, an alternative approach. *See infra* note 282 and accompanying text.

[280] *See* FIF Letter at 10–11. Specifically, this commenter suggested the following new order type categories for limit orders with a stop price: (a) stop marketable limit order for an order that is a marketable limit order at the trigger time; (b) stop beyond-the-midpoint limit order for an order that is a beyond-the-midpoint limit order at the trigger time; and (c) stop executable NMLO for an order that is an NMLO at the trigger time. *See id.* This commenter also stated that a material percentage of stop orders have a limit price and a material percentage of stop orders do not have a limit price. *See* FIF Letter II at 2.

[281] *See* FIF Letter at 9; FIF Letter III at 4.

[282] Schwab Letter III at 6. This commenter did not recommend this approach because, according to the commenter, it would ''create increased complexity with little benefit for the individual investor.'' Id. The Commission disagrees. The Commission continues to believe that including stop orders within the scope of the Rule will benefit market participants by allowing them to analyze variations in execution quality. *See* Proposing Release, 88 FR 3786 at 3805 (Jan. 20, 2023). Moreover, stop orders make up a nontrivial percentage of orders from individual investors. *See infra* Table 3.

[283] *See infra* note 1387 and accompanying text.

[284] *See* final 17 CFR 242.600(b)(19).

[285] *See* final 17 CFR 242.600(b)(40) and (41).

[286] *See* final 17 CFR 242.605(a)(1)(i), (ii), and (iii).

[287] In addition, the Commission's analysis of stop order volume shows that there is a significant volume of stop orders with and without limit prices. *See infra* Table 3 (showing that stop orders placed by institutional investors are 36.1% market orders and 63.9% limit orders, and stop orders placed by individual investors are 89.0% market orders and 11.0% limit orders). These results are consistent with the commenter who stated that a material percentage of stop orders have a limit price and a material percentage of stop orders do not have a limit price. *See* FIF Letter II at 2.

Table 1: Number of Triggered Stop Orders (Mar. 2023)

Order Type	Number of Stop Orders	Percentage of Stop Orders
Market	190,027	85.99%
Marketable Limit	26,097	11.81%
Beyond-the-Midpoint	1,770	0.80%
At-the-Midpoint	686	0.31%
Below-the-Midpoint	1,118	0.51%
At-the-Quote	1,282	0.58%

This table presents the distribution of stop orders across different order types (market, marketable limit, beyond-the-midpoint, at-the-midpoint, below-the-midpoint, and at-the-quote), using a sample of CAT data for 400 stocks for Mar. 2023. See infra note 1261 for a description of this dataset. The data includes all stop orders that were triggered during Mar. 2023 from orders that originated during Mar. 2023. Stop limit orders are identified as marketable, beyond-the-midpoint, at-the-midpoint, below-the-midpoint, or at-the-quote based on the NBBO at the time the stop order triggered. NMLOs categories are defined as follows. "Beyond-the-midpoint" NMLOs consist of, for sell orders, NMLOs with limit prices lower than the midpoint but higher than the national best bid ("NBB"), and, for buy orders, NMLOs with limit prices higher than the midpoint but lower than the national best offer ("NBO"). "At-the-midpoint" NMLOs consist of NMLOs with limit prices equal to the NBBO midpoint. "Below-the-midpoint" NMLOs consist of, for sell orders, NMLOs with limit prices higher than the midpoint but less than the NBO and, for buy orders, NMLOs with limit prices lower than the midpoint but higher than the NBB. "At-the-quote" NMLOs consist of, for sell orders, NMLOs with limit prices equal to the NBO and, for buy orders, NMLOs with limit prices equal to the NBB. "Near-the-quote" NMLOs consist of, for sell orders, NMLOs with limit prices worse (i.e., higher) than the NBO by no more than $0.10 and, for buy orders, NMLOs with limit prices worse (i.e., lower) than the NBB by no more than $0.10. "Away-from-the-quote" NMLOs consist of, for sell orders, NMLOs with limit prices worse (i.e., higher) than the NBO by more than $0.10 and, for buy orders, NMLOs with limit prices worse (i.e., lower) than the NBB by more than $0.10.

The Commission is adopting definitions for ''executable stop marketable limit order'' and ''executable stop non-marketable limit order'' to provide that the determination of which of these two categories a limit order submitted with a stop price falls into is made using the point in time that the order submitted with a stop price is triggered.[288] Utilizing this determination point in time will help align the sub-grouping of limit orders submitted with stop prices with the characteristics of these orders once the stop price is triggered. Under the adopted definitions, an ''executable stop marketable limit order'' will be an order whose limit price is equal to or greater than the best offer (for a buy order) or equal to or less than the national best bid (for a sell order) at the time the stop price is triggered, *i.e.,* when the limit order submitted with a stop price becomes executable.[289] Similarly, an ''executable stop non-marketable limit order'' will be an order whose limit price is less than the best offer (for a buy order) or greater than the national best bid (for a sell order) at the time the order becomes executable.[290]

As proposed, Rule 605 would have required that the execution quality statistics provided for executable orders submitted with stop prices include those execution quality statistics required for non-marketable order types.[291] However, executable market orders submitted with stop prices and executable stop marketable limit orders (together, ''marketable stop order types'') will behave like market and marketable limit orders once triggered rather than NMLOs. Therefore, the Commission is modifying the proposed execution quality statistics for marketable stop order types to provide that the same statistics required of other marketable order types (*e.g.,* price improvement statistics) be calculated for these types of stop orders.[292] However, because executable stop NMLO orders will behave like other NMLOs once triggered, the Commission is requiring that the same statistics required of other non-marketable order types (*e.g.,* relative fill rate) be calculated for these stop orders.[293]

[288] *See* final 17 CFR 242.600(b)(40) and (41). Measurement of the execution quality of an executable stop marketable limit order and an executable stop non-marketable limit order begins when the stop price is triggered because that is the point in time at which customers generally expect such orders to be eligible to execute. While the determination of whether a limit order is a marketable limit order is calculated differently, *i.e.,* based on the time of order receipt, *see* final 17 CFR 242.600(b)(56), the time of order receipt will similarly allow customers to compare execution quality from a point in time when such orders could reasonably be expected to execute.

[289] *See* final 17 CFR 242.600(b)(40).

[290] *See* final 17 CFR 242.600(b)(41).

[291] *See* Proposing Release, 88 FR 3786 at 3805, 3821 (Jan. 20, 2023); proposed Rule 605(a)(1)(i) and (iii).

[292] *See* final 17 CFR 242.605(a)(1)(ii).

[293] *See* final 17 CFR 242.605(a)(1)(iii).

The Commission is not adopting the commenter's recommendation to add an additional column to the Rule 605(a)(1) detailed report to denote whether a particular row pertains to stop orders.[294] The additional order type categories in amended Rule 605 for executable market orders submitted with a stop price, executable stop marketable limit orders, and executable stop NMLOs partially align Rule 605 with this recommendation substantively because they will require firms to provide execution quality statistics for these types of stop orders that are grouped according to the characteristics of the orders once triggered. However, the commenter's recommendation would in effect have created a separate order type category for stop orders with characteristics of each of the other order types (*e.g.,* executable midpoint-or-better limit order with a stop condition, executable marketable IOC with a stop condition). The Commission does not believe the execution profiles for an order type category or categories for executable midpoint-or-better order types with a stop condition would vary significantly enough from other executable stop NMLOs to warrant additional order type categories. A significant portion of midpoint-or-better limit orders may have the expectation of executing immediately, for example, against hidden or odd-lot liquidity inside of the spread.[295] Because these orders are likely to have different execution profiles than other types of NMLOs,[296] the Commission is requiring separate order type categories for midpoint-or-better limit orders.[297] In contrast, an order submitter placing a stop limit order likely does not have an expectation of executing immediately and does not know ex ante what the market conditions will be when the stop price is triggered, *i.e.,* how aggressive the limit price will be when the order is converted into a limit order. Therefore, because executable midpoint-or-better order types with a stop condition are not likely to have significantly different execution profiles than other executable stop NMLOs, the Commission is not requiring the use of order type categories that would further sub-divide executable stop NMLOs. In addition, it is not likely that orders will have both an IOC instruction (which indicates an expectation of immediacy) and a stop condition (which indicates an intention to wait until market conditions change and trigger the stop condition). Even if such orders are utilized, they are not likely to have significantly different execution profiles than other stop orders that fall within the same order type categories. Thus, the Commission is not requiring the use of order type categories that would further sub-divide the categories for orders submitted with stop prices.

3. Non-Exempt Short Sale Orders

(a) Proposed Approach

Commission staff has taken the position that staff would view all short sale orders that are not marked ''short exempt'' (''non-exempt short sale orders'') as special handling orders and, in the staff's view, these orders may be excluded from the definition of ''covered order.'' [298] Non-exempt short sale orders are subject to a price test under 17 CFR 242.201 (''Rule 201'' of Regulation SHO (17 CFR 242.200 through 242.204)) that sets forth a short sale circuit breaker that is triggered in certain circumstances, after which time a price restriction will apply to short sale orders in that security for that day and the following day.[299] The Commission proposed that non-exempt short sale orders would not be considered special handling orders unless a price test restriction is in effect for the security. As proposed, non-exempt short sale orders would fall within the definition of ''covered order'' and thus be subject to Rule 605 reporting, unless another exclusion applies. Conversely, during a short sale price test, a short sale order not marked ''exempt'' would continue to be subject to special handling and would be excluded from the definition of ''covered order'' and thus from Rule 605 reporting.[300]

(b) Final Rule and Discussion

The Commission is adopting as proposed its position that non-exempt short sales orders will not be considered special handling orders unless a price test restriction is in effect for the security. The Commission received several comments on this aspect of the proposal. One national securities exchange supported the proposed treatment of non-exempt short sale orders.[301] Another national securities exchange suggested that the Commission provide more detailed instructions relating to any order types that would be excluded from the definition of ''covered order,'' *e.g.,* order types that are considered ''special handling,'' ''to ensure that such orders are treated uniformly by respondents in their data disclosures.'' [302] Two broker-dealers supported the proposal,[303] as did an individual investor who stated that non-exempt short sale orders are ''a core component of the current market.'' [304] An industry association also supported this aspect of the proposal, but asked how the Commission intends to document the change, which is not reflected in any change to the definition of ''covered order.'' [305]

After consideration of the comments, the Commission is adopting the position that non-exempt short sale orders will not be considered special handling orders unless a price test restriction is in effect for the security, as proposed. As discussed in the Proposing Release, when a non-exempt short sale order is subject to a price test restriction under Rule 201 of Regulation SHO, a trade may only take place at least one tick above the national bid or offer; however, non-exempt securities are infrequently subject to such a price test restriction.[306] The inclusion of non-exempt short sale orders within the scope of Rule 605 when a short sale price test is not in effect will not skew execution quality statistics because non-exempt short sale orders are not tick-sensitive during this period. However, when a price test restriction under Rule 201 of Regulation SHO is in effect, any non-exempt short sale order (*i.e.,* an order that is tick-sensitive) will be an ''order to be executed only on a particular type of tick or bid'' which is one of the types of special handling orders specified as being excluded from the definition of ''covered order.'' [307] Such orders will

[294] *See supra* note 281 and accompanying text.

[295] *See infra* section IX.D.1.b)(2)(a)(ii).

[296] *See infra* section IX.C.3.c)(3).

[297] *See infra* section III.B.2.b)(2).

[298] *See* prior 17 CFR 242.600(b)(22); ''Responses to Frequently Asked Questions Concerning Rule 605 of Regulation NMS'' (Feb. 22, 2013) (''2013 FAQs'').

[299] Rule 201 generally requires trading centers to establish, maintain, and enforce written policies and procedures that are reasonably designed to prevent the execution or display of a short sale at an impermissible price when a stock has triggered a circuit breaker by experiencing a price decline of at least 10% in one day. Once the circuit breaker in Rule 201 has been triggered, the price test restriction will apply to short sale orders in that security for the remainder of the day and the following day, unless an exception applies. *See* 17 CFR 242.201(b)(1). One exception is for the execution or display of a short sale order marked ''short exempt.'' *See* 17 CFR 242.201(b)(1)(iii)(B); 17 CFR 242.201(c).

[300] *See* Proposing Release, 88 FR 3786 at 3806 (Jan. 20, 2023).

[301] *See* Nasdaq Letter at 43–44.

[302] NYSE Letter at 8.

[303] *See* Virtu Letter II at 3; Robinhood Letter at 45–46.

[304] *See* Joy Letter.

[305] *See* FIF Letter at 12.

[306] *See* Proposing Release, 88 FR 3786 at 3806 (Jan. 20, 2023). *See also infra* note 1172 and accompanying text.

[307] *See* final 17 CFR 242.600(b)(27).

therefore be excluded from the definition of ''covered order.'' In addition, including non-exempt short sale orders for which a price test restriction is not in effect within the scope of Rule 605 reports will lead to a more complete picture of reporting entities' execution quality.[308] As discussed further below, the prior staff statements that conflict with the Commission's adopted position will be rescinded.[309]

B. Required Information

1. Categorization by Order Size

(a) Proposed Approach

Prior to the amendments, Rule 605 reports utilized order size categories based on the numbers of shares in the order (*e.g.,* 100–499 shares and 500–1,999 shares). Historically, round lots generally have been viewed as groups of 100 shares, and Rule 605 prior to these amendments reflected this: it did not require reporting of orders smaller than 100 shares, including odd-lot orders or fractional share orders (*i.e.,* orders for less than one share).[310] Additionally, preexisting Rule 605 reports did not include orders with a size of 10,000 shares or greater, pursuant to exemptive relief provided by the Commission in 2001.[311]

The Commission proposed to amend the definition of ''categorized by order size'' to designate the following categories for order sizes: (i) less than 1 share; (ii) odd-lot; (iii) 1 round lot to less than 5 round lots; (iv) 5 round lots to less than 20 round lots; (v) 20 round lots to less than 50 round lots; (vi) 50 round lots to less than 100 round lots; and (vii) 100 round lots or greater.[312] The proposed modifications to the order size categories would have utilized the new definition of round lot adopted in the Market Data Infrastructure rule (the ''MDI Rules''),[313] and included odd-lots, fractional shares (*i.e.,* orders for less than one share), and larger order sizes.[314]

(b) Final Rule and Discussion

In response to comments, the Commission is adopting a definition of ''categorized by order size'' that differs from the proposal's focus on round lot increments. Instead, as adopted, each order size category reflects a notional dollar value range, along with an indication that the category reflects orders that were for an odd-lot, a round lot, or less than a share. As adopted, this amendment will increase transparency regarding distribution of order sizes that a reporting entity handles, particularly for higher-priced stocks. The Commission also is adopting an execution quality statistic for cumulative notional order size of covered orders.

Individual investors generally supported the proposed order size categories.[315] Some individual investors stated that these categories would help them achieve investor confidence or better executions.[316] Another individual investor stated that reporting execution quality information across orders of different sizes would be ''incredibly beneficial'' to understanding the ''degree of fairness in the market.'' [317] An investor advocacy group supported the proposed changes to the definition of categorized by order size.[318] But one broker-dealer stated that ''because the Commission has simultaneously submitted for proposal a new rule that would change tick sizes and round lot definitions'' (*i.e.,* the Minimum Pricing Increments Proposing Release),[319] the reporting requirements pertaining to categorization by order size ''are subject to change which in turn could create customer confusion.'' [320]

Other commenters addressed specific elements of the proposed order size categories. An investor advocacy group supported basing the order size categories on round lots, stating that doing so not only would harmonize Rule 605 disclosure with the MDI Rules [321] that established a price-based definition of ''round lot'' but also would better enable Rule 605 reports to group orders in a way that provides useful order execution information.[322] However, a number of commenters suggested using notional dollar value categories instead of or in addition to the share-based categories.[323]

Similarly, several commenters, including a broker-dealer and financial services firms, suggested using notional size categories rather than round lot-based size categories.[324] One of the financial services firms stated that ''the process for assigning the number of shares per round lot per security is not

[308] *See* Proposing Release, 88 FR 3786 at 3806 (Jan. 20, 2023).

[309] *See infra* section VI. As stated earlier, when a short sale price test restriction is in place for the security, a short sale order not marked ''exempt'' generally would continue to be subject to special handling and generally would be excluded from the definition of covered order and thus from Rule 605 reporting. *See supra* note 300 and accompanying text. At this time, no further guidance concerning additional order types that require ''special handling'' is required because it is not possible for the Commission to provide an exhaustive list of the types of orders that may be considered ''special handling'' and no specific questions regarding whether particular order types should be considered ''special handling'' have been raised.

[310] There are a variety of circumstances in which an order for an NMS stock submitted to a broker-dealer results in a fractional share. Examples include customer orders to buy: (1) a fraction of a share (*e.g.,* order to buy 0.5 shares); (2) shares with a fractional component (*e.g.,* order to buy 10.5 shares); and (3) a dollar amount that leads to the purchase of a fractional share (*e.g.,* order to buy $1,223 worth of XYZ stock at $50 per share or 24.46 shares).

[311] *See* Large Order Exemptive Letter.

[312] *See* Proposing Release, 88 FR 3786 at 3807 (Jan. 20, 2023); proposed Rule 600(b)(19).

[313] For NMS stocks priced $250.00 or less per share, a round lot will be 100 shares; for NMS stocks priced $250.01 to $1,000.00 per share, a round lot will be 40 shares; for NMS stocks priced $1,000.01 to $10,000.00 per share, a round lot will be 10 shares; and for NMS stocks priced $10,000.01 or more per share, a round lot will be 1 share. *See* prior 17 CFR 242.600(b)(82); MDI Adopting Release, 86 FR 18596 at 18617 (Apr. 9, 2021). Separately, the Commission proposed to accelerate the implementation of the round lot definition. *See* Minimum Pricing Increments Proposing Release, 87 FR 80266 at 80270 (Dec. 29, 2022). The Commission established a phased transition plan for the implementation of the MDI Rules, which provided for the implementation of the round lot definition as part of the final phase of implementation. *See* MDI Adopting Release, 86 FR 18596 at 18698–701 (Apr. 9, 2021). At a minimum, round lot implementation will be two years after the Commission's approval of the plan amendment(s) required by 17 CFR 242.614(e) (''Rule 614(e)''). Until the round lot definition adopted pursuant to the MDI Rules is implemented, round lots continue to be defined in exchange rules. *See id.* at 16738. For most NMS stocks, a round lot is defined as 100 shares.

[314] The Commission proposed to rescind the exemptive relief for orders of 10,000 or more shares and include these orders within the scope of Rule 605 reports. *See* Proposing Release, 88 FR 3786 at 3808 (Jan. 20, 2023).

[315] *See, e.g.,* Welch Letter (supporting the inclusion of fractional, odd-lot, and large size orders); Abanes Letter; Macarthur Letter.

[316] *See* Joy Letter (stating that the ''inclusion of fractional shares [and] odd-lots are also essential in the provided data as these are the most commonly used orders by retail'' and that including these order size categories ''provides retail more information confidence to invest more frequently with smaller order sizes''); letter from Art. R Medina (Dec. 26, 2022) (''Medina Letter'') (stating that the proposed new size categories would ''help for better execution in the lit market exchanges'' and ''help these systems better execute customer orders for broker-dealers and ensure competition'').

[317] *See* letter from Creighton Bledsoe (Feb. 28, 2023) (''Bledsoe Letter'').

[318] *See* Healthy Markets Letter at 17.

[319] *See* Minimum Pricing Increments Proposing Release, 87 FR 80266 (Dec. 29, 2022).

[320] Tastytrade Letter at 5.

[321] *See supra* text accompanying note 313 (defining MDI Rules).

[322] *See* Better Markets Letter at 6.

[323] *See* SIFMA Letter II at 32; Angel Letter at 2; Schwab Letter II at 33; Fidelity Letter at 9; Rule 605 Citadel Letter at 6. Further, an academic recommended using dollar rather than share amounts and stated that ''[r]ound lots are obsolete.'' Angel Letter at 2.

[324] *See* Schwab Letter II at 33, Fidelity Letter at 9, Rule 605 Citadel Letter at 6. When discussing a potential average notional order size metric for the summary report, one of these broker-dealers stated that notional size is measured by multiplying the number of shares by the midpoint at the time of order entry. *See* Schwab Letter III at 3. In addition, an industry group stated that notional value should be based on the midpoint at the time of order receipt. *See* FIF Letter II at 11. *See also infra* notes 792 and 793 and accompanying text.

dynamic enough to make this a meaningful delineation.'' [325] In addition, according to this commenter, ''after the size of an order has achieved round lot status, there is no intrinsic difference in the size of the order until it reaches 10,000 shares or $200,000,'' and therefore ''bucketing by round lots has no application to the broader market structure.'' [326] Another financial services firm stated that creating order size categories based on notional dollar amounts would provide investors with clearer views of the execution experiences associated with their orders.[327] A broker-dealer stated that grouping orders by notional size would allow for a more accurate comparison of execution quality.[328]

Two industry groups also recommended grouping orders based on their notional dollar values.[329] One of these industry groups stated that in 2018 and 2019 it had recommended a set of notional size buckets for Rule 605 reporting.[330] This commenter suggested that the Commission utilize CAT data to conduct an analysis similar to the one conducted by IHS Markit for Q1 2018 ''to determine whether [those] notional value categories would still be appropriate or whether these notional value categories should be adjusted.'' [331] This commenter also specifically suggested that one of the thresholds separating notional value categories be $200,000.[332] The other industry group supported revising Rule 605 to utilize notional buckets for the order size categorizations instead of, or in addition to, using the number of round lots as proposed.[333] This commenter recommended that the Commission ''calculate appropriately informative notional size buckets.'' [334]

A national securities exchange suggested using the following notional value buckets rather than share size categories: less than $10,000; $10,000 to less than $50,000; $50,000 to less than $100,000; $100,000 to less than $200,000; and $200,000 to $400,000.[335] This commenter stated that this alternative would avoid the drawbacks of the current order size categories based on number of shares while ensuring coverage of most retail trades.[336]

To address the Commission's concern that defining order size buckets according to notional dollar values would no longer produce a meaningful distinction between round lot and odd-lot orders, one industry group suggested adding a column to the Rule 605 report to signify whether the orders in the applicable row are round lot or odd-lot orders.[337] This commenter also recommended that mixed lot orders be classified as round lot orders for purposes of Rule 605 reporting.[338] Another industry group and a broker-dealer recommended distinguishing round lot and odd-lot orders using a separate flag.[339]

Several individual investor commenters supported the proposed inclusion of odd-lot and fractional share orders in Rule 605 reports.[340] A group of academics stated that odd-lots currently account for over 60% of trades [341] and, under current disclosure requirements, retail traders are unable to evaluate market center execution quality for a majority of their trades.[342] These commenters also stated that fractional share market orders receive widely different price improvement across broker-dealers and full share price improvement statistics are not informative for the execution quality of fractional trades.[343] These commenters stated that these factors justify adding fractional and odd-lot trades to Rule 605 reports.[344] A broker-dealer similarly supported the proposed new category for fractional share orders as well as a category for orders from one share to 99 shares.[345] Another broker-dealer also supported including odd-lot orders in Rule 605 reports and stated this would particularly benefit retail investors seeking to accurately assess execution quality delivered by wholesale broker-dealers.[346]

Explaining that when a round lot or odd-lot order has a fractional share component, the time to execution and execution price may be impacted, one industry group recommended that: (1) fractional share orders (*i.e.,* orders for less than one share) be reported separately from round lot and odd-lot orders; and (2) round lot and odd-lot orders be broken-out further to differentiate between those orders that have, and do not have, a fractional share component.[347] However, another industry group suggested eliminating the requirement to include orders for fractional shares in Rule 605 reports, contending that ''this information is of limited value to investors.'' [348] This commenter stated that ''[t]here is also no clear way to execute fractional shares in a purely agency capacity'' and, ''[a]s a result, to the extent fractional share orders are required to be included in Rule 605 reports, any broker-dealer, even a small broker-dealer, that wanted to facilitate a fractional share order for its customer would be considered a market center for purposes of Rule 605.'' [349] Additionally, this commenter stated that ''much of today's market infrastructure does not yet support fractional share trading'' and the ''costs to fully modify this infrastructure would

[325] Schwab Letter II at 33. This commenter stated that the ''price of a stock can vary dramatically in the three-month period in which the round lot size is set,'' so an intent to approximate the notional order size by the round lot category would ''frequently fail.'' *Id.*

[326] *Id.*

[327] *See* Fidelity Letter at 9. This commenter stated that notional sizes would: (1) be more easily compared over time as lot sizes change or stocks splits occur; and (2) provide ''a more representative view of the cost to implement different types of trades and [be] more consistent with increased market use of fractional/notional trading.'' *Id.*

[328] *See* Rule 605 Citadel Letter at 6.

[329] *See* SIFMA Letter II at 32; FIF Letter at 14–15.

[330] *See* FIF Letter at 14–15. This commenter also stated that it was providing information on the percentage of orders that fell within each notional value category, as estimated by IHS Markit for Q1 2018. *See id.* at 15. Specifically, the notional size buckets and associated percentage of orders were as follows: (1) $1 to $999 (33%); (2) $999 to $4,999 (29%); (3) $5,000 to $19,999 (24%); (4) $20,000 to $49,999 (8%); and (5) $50,000 to $500,000 (6%). *See id.* at 14–15.

[331] Id. at 15. As discussed below, consistent with this commenter's recommendation, the Commission analyzed current CAT data to establish the notional size buckets it is adopting.

[332] *See id. See also infra* note 353 and accompanying text.

[333] *See* SIFMA Letter II at 32.

[334] *Id.* This commenter suggested that, for example, the Commission could use the notional buckets recommended by the first industry group in 2019. *See id.* at 32, n.78 and accompanying text (citing a letter to Brett Redfearn, Director, Division of Trading & Markets, Commission, from Christopher Bok, Financial Information Forum (Jan. 30, 2019), *available at https://www.sec.gov/comments/s7-02-10/s70210-5002077-182848.pdf*).

[335] *See* Nasdaq Letter at 46.

[336] *See id.* at 44.

[337] *See* FIF Letter at 15.

[338] *See id.*; FIF Letter II at 3.

[339] *See* SIFMA Letter II at 32; Rule 605 Citadel Letter at 6. A group of academics also recommended having a separate entry solely for round lot trades, which they said accounts of a large fraction of trade sizes and dollar values. *See* Professor Schwarz et al. Letter at 5.

[340] *See, e.g.,* Pritchard Letter; Welch Letter; Macarthur Letter; Genco Letter; Cesar Letter; Joy Letter.

[341] *See* Professor Schwarz et al. Letter at 3.

[342] *See id.* at 4.

[343] *See id.*

[344] *See id.*

[345] *See* Virtu Letter II at 3.

[346] *See* Rule 605 Citadel Letter at 11.

[347] *See* FIF Letter at 15; FIF Letter II at 3. This commenter recommended that orders be broken out into the following categories within each notional value range because orders in each of these categories have distinct execution characteristics: round lot without fractional component; round lot with fractional component; odd-lot without fractional component; odd-lot with fractional component; and fractional (less than one share). *See* FIF Letter II at 3. According to the commenter, if these five categories are separately reported for each notional value range, reporting based on the number of shares would not provide any material value for market participants. *See id.*

[348] SIFMA Letter II at 31.

[349] *Id.*

be high compared to the minimal benefit of including fractional share reporting.'' [350]

With respect to the proposed inclusion of larger-sized orders, a commenter stated that a ''natural breakpoint'' between size categories exists at $200,000 and suggested establishing a size bucket of $200,000 and greater.[351] Another commenter supported the proposed order size category for orders greater than 10,000 shares.[352] An industry group recommended designating one of the thresholds for separating notional value categories at $200,000 because in the Order Competition Rule Proposing Release the Commission proposed to utilize a $200,000 threshold for an exception from the obligation to submit a segmented order to a qualified auction.[353] A national securities exchange stated that the Commission should ''consider increasing the current cap of $200,000 [the notional block size], as this benchmark has not changed with the market or inflation over time.'' [354] This commenter stated that increasing the cap may provide ''information that is helpful for institutional buyers.'' [355]

Taking into consideration the comments received, the Commission is adopting a modified definition of ''categorized by order size.'' The Commission followed the suggestion that it use CAT data to examine which notional order size buckets would be appropriate.[356] Based on this analysis (discussed below), the Commission is adopting order size categories that utilize the following notional dollar value ranges: (i) less than $250; (ii) $250 to less than $1,000; (iii) $1,000 to less than $5,000; (iv) $5,000 to less than $10,000; (v) $10,000 to less than $20,000; (vi) $20,000 to less than $50,000; (vii) $50,000 to less than $200,000; and (viii) $200,000 or more.[357]

Each adopted order size category reflects one of these notional dollar value ranges, along with an indication that the orders were for an odd-lot, a round lot, or less than a share.[358] Accordingly, as adopted, ''categorized by order size'' means dividing orders into separate categories for the following sizes:

- Less than $250 and less than a share;
- Less than $250 and odd-lot;
- Less than $250 and at least a round lot;
- $250 to less than $1,000 and less than a share;
- $250 to less than $1,000 and odd-lot;
- $250 to less than $1,000 and at least a round lot;
- $1,000 to less than $5,000 and less than a share;
- $1,000 to less than $5,000 and odd-lot;
- $1,000 to less than $5,000 and at least a round lot;
- $5,000 to less than $10,000 and less than a share;
- $5,000 to less than $10,000 and odd-lot;
- $5,000 to less than $10,000 and at least a round lot;
- $10,000 to less than $20,000 and less than a share;
- $10,000 to less than $20,000 and odd-lot;
- $10,000 to less than $20,000 and at least a round lot;
- $20,000 to less than $50,000 and less than a share;
- $20,000 to less than $50,000 and odd-lot;
- $20,000 to less than $50,000 and at least a round lot;
- $50,000 to less than $200,000 and less than a share;
- $50,000 to less than $200,000 and odd-lot;
- $50,000 to less than $200,000 and at least a round lot;
- $200,000 or more and less than a share;
- $200,000 or more and odd-lot; and
- $200,000 or more and at least a round lot.[359]

As discussed further below, the adopted categories will facilitate market participants' ability to compare across orders of different sizes in higher-priced stocks, while controlling for potential differences in the treatment of larger-sized orders. Additionally, the adopted buckets better account for potential differences in the distribution of order sizes that reporting entities typically handle for a given stock when comparing execution quality metrics across reporting entities, facilitating apples-to-apples comparisons of execution quality across reporting entities.

For purposes of the order size categories, a mixed lot order (*i.e.,* an order for an amount of shares greater than a round lot that is not a multiple of such round lot) will be grouped in the ''at least a round lot'' category and an order for an odd-lot with a fractional share component or a round lot with a fractional share component will be grouped with other odd-lots or round lots, respectively.[360] Reporting entities generally should calculate a limit order's notional value by multiplying the number of shares by the order's limit price. In addition, reporting entities generally should calculate a market order to buy's notional value by multiplying the number of shares by the national best offer at the time of order receipt and a market order to sell's notional value by multiplying the number of shares by the national best bid at the time of order receipt.[361] Calculation of the notional value of a stop order generally should follow these principles based on whether the order once triggered is a limit order or a market order, except that the notional value of a stop market order should be based upon the national best bid or national best offer at the time the order is triggered rather than the time of order receipt.

The Commission used CAT data to examine the distribution of orders

---

[350] *Id.* This commenter stated as an example that ''FINRA does not currently have a mechanism to report fractional share trades, because all of these trades are rounded up today.'' *Id.*

[351] *See* Schwab Letter II at 33.

[352] *See* Virtu Letter II at 3.

[353] *See* FIF Letter at 14–15.

[354] Nasdaq Letter at 46.

[355] *Id.*

[356] *See supra* note 331 and accompanying text. *See also supra* note 334 and accompanying text (suggesting that the Commission calculate appropriate notional size buckets).

[357] *See infra* Figure 16 and Figure 17. In aggregate, order flow appears reasonably well-distributed across the various notional order size buckets that the Commission is adopting, with the exceptions of the smallest size bucket (orders for $250 or less) and the largest size bucket (orders for $200,000 or more), both of which have little order flow. *See infra* Section IX.D.1.b)(2)(a)(i). The Commission is adopting these notional order size buckets for the reasons described below.

[358] Some commenters suggested utilizing a column or a flag to designate whether orders in a particular row are odd-lots or round lots. *See supra* notes 337–339 and accompanying text. Instead, the Commission is incorporating into the defined order size categories whether an order is for a round lot, odd-lot, or less than a share for ease of application. The two approaches have the same substantive effect of having a single row representing each possible combination of round lot, odd-lot, and fractional share with each notional value size range.

[359] *See* final 17 CFR 242.600(b)(18). The adopted categories address the concern expressed by a commenter that the proposed categories, which were based on round lots (and also included categories for orders for less than one share and for odd-lots), may cause confusion because the definition of round lot may change. *See supra* note 320 and accompanying text.

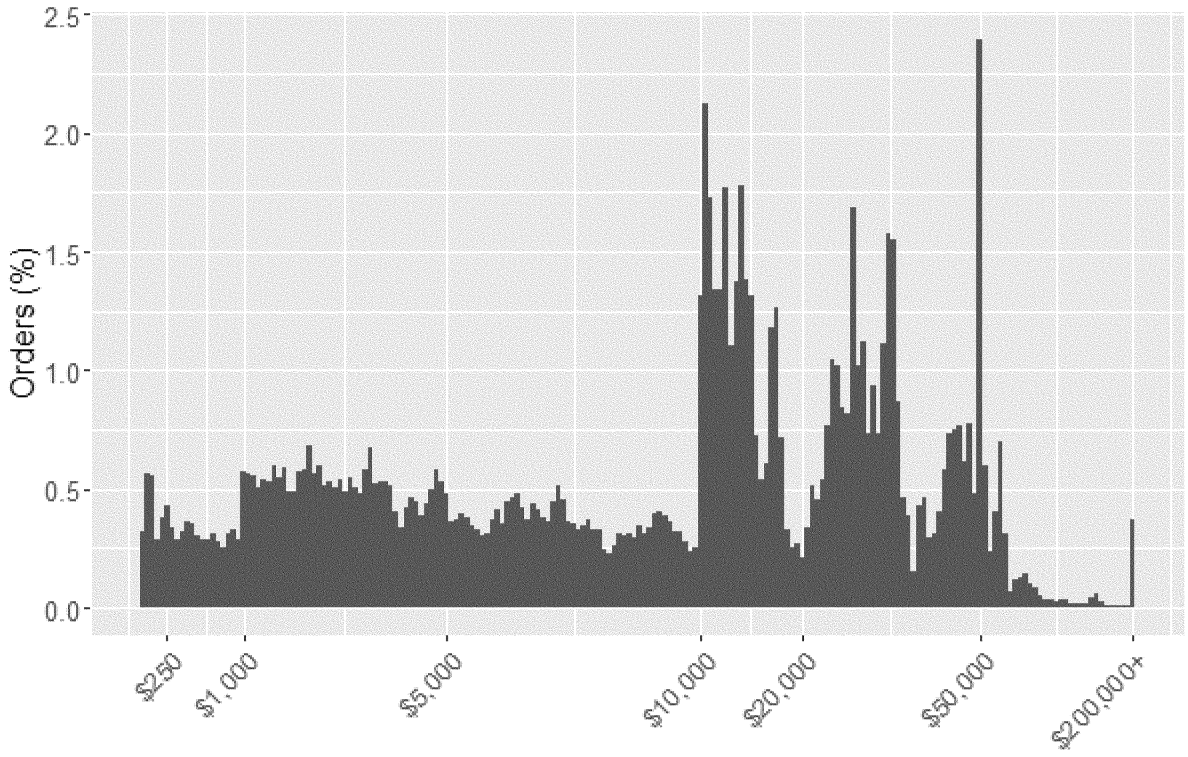
[360] *See* final 17 CFR 242.600(b)(18).

[361] The Commission does not agree with the commenters' suggestion that notional value of an order generally should be calculated based on the midpoint of the national best bid and national best offer at time of order receipt. *See supra* note 324. The order size categories reflect the order from the perspective of the order submitter. Likewise, calculating an order's notional value for purposes of categorization by order size by referencing the limit price for a limit order or the far touch for a market order generally should better reflect the order submitter's expectation of the order's notional value.

across a granular set of notional order size buckets to determine which breakpoints form the most appropriate notional order size buckets. Figure 1 presents the distribution of orders across the notional order size buckets and shows that orders tend to be clustered around certain round notional values (*e.g.,* $100, $1,000, $10,000, and $50,000).

BILLING CODE 8011–01–P

Figure 1: Distribution of Orders Across Notional Order Size Buckets, Q1 2023



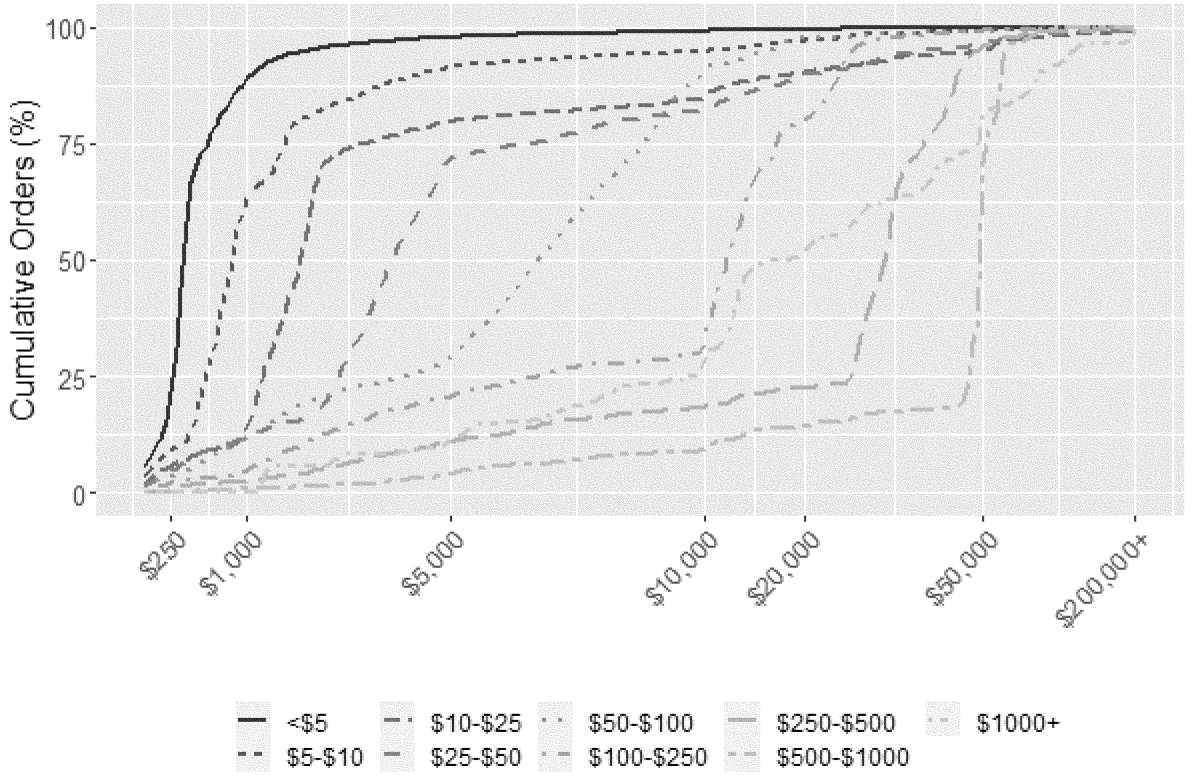
This figure shows the distribution of orders (as a percent of total orders) across notional order size buckets. Percentages are calculated as the number of submitted orders within each order size bucket, summed across all stocks and days in the sample, divided by the total number of submitted shares summed across all stocks and days. This analysis uses data from CAT for a sample of 400 stocks for Q1 2023. See infra note 1261 for a description of this dataset. The 196 notional order size buckets were determined as follows: For orders between $0 and $1,000, notional order size buckets were set in increasing $50 increments (i.e., less than $50, from $50 to less than $100, from $100 to less than $150, etc.). For orders between $1,000 and $10,000, order size buckets were set in increasing $100 increments. For orders between $10,000 and $25,000, order size buckets were set in increasing $500 increments. For orders between $25,000 and $50,000, order size buckets were set in increasing $1,000 increments. For orders between $50,000 and $200,000, order size buckets were set in increasing $5,000 increments.

When trying to determine the optimal cut-off points between notional order size buckets, the Commission considered how the order size buckets selected could meaningfully capture variations in order sizes across a variety of different factors, including stock prices, market centers, lot type and order share size categorization (*i.e.,* round lot, odd-lot, and fractional share orders). Based on its analysis, the Commission makes the following observations about the types of variations in order characteristics that will be captured by the adopted order size buckets. First, Figure 2 below presents the cumulative order flow (as a percentage of total orders) across notional order size buckets. These results show that, for stocks priced less than $5,[362] 87.6% of orders are valued below $1,000 and 66.9% of orders are valued below $500. Given that nearly a quarter of stocks are priced below $5, including a set of smaller notional order size buckets (*i.e.,* less than $250; and $250 to less than $1,000) will help ensure that orders are meaningfully distributed across order size categories and not clustered within a single category. Additionally, odd-lot orders tend to be valued less than $1,000, so the smaller notional order size buckets are useful for capturing the distribution of odd-lot orders specifically.[363]

[362] This number is based on an analysis of the volume-weighted average price (''VWAP'') calculated for each stock during normal trading hours for Q1 2023 using data from WRDS Intra-Day Indicators.

[363] Based on an analysis of the CAT data described in note 1261 infra, 17.4% of odd-lot orders are valued below $1,000, and for stocks priced less than $50 (which represent 85% of all stocks), this percentage increases to 68.9%.

Figure 2: Cumulative Order Flow across Notional Order Size Buckets, by Stock Price, Q1 2023



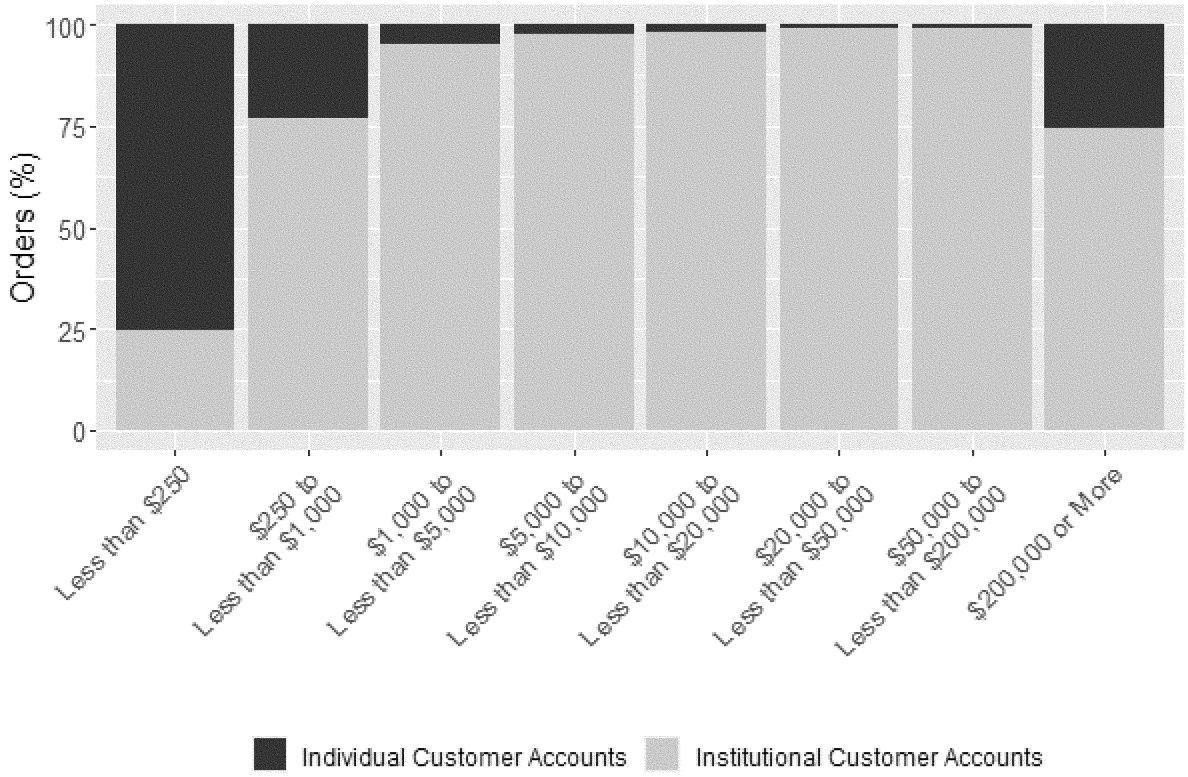
This figure shows the cumulative percentage of orders across notional order size buckets for stocks grouped according to average stock prices. Percentages are calculated as the cumulative number of submitted orders within each size bucket, summed across all stocks within a given price group and across all days in the sample, divided by the total number of submitted orders summed across all stocks within a given price group and across all days in the sample. This analysis uses data from CAT for a sample of 400 stocks for Q1 2023. See infra note 1261 for a description of this dataset. Stocks were grouped according to their average share price over the sample period. The 196 notional order size buckets were determined as follows: For orders between $0 and $1,000, notional order size buckets were set in increasing $50 increments (i.e., less than $50, from $50 to less than $100, from $100 to less than $150, etc.). For orders between $1,000 and $10,000, notional order size buckets were set in increasing $100 increments. For orders between $10,000 and $25,000, notional order size buckets were set in increasing $500 increments. For orders between $25,000 and $50,000, notional order size buckets were set in increasing $1,000 increments. For orders between $50,000 and $200,000, notional order size buckets were set in increasing $5,000 increments.

Second, orders valued below $250 contain a higher percentage of individual investor orders than higher-valued orders. To proxy for small individual investor orders, the Commission analyzed the distribution of non-IOC orders that are valued less than $1,000 and that originate from Individual Customer [364] accounts and are handled by wholesalers.[365] The Commission found that 54.2% of these orders are valued less than $250. Furthermore, 99.7% of fractional orders for less than a share, the majority of which are originated from Individual Customer accounts, are valued less than $250. Figure 3 below shows the breakdown of orders originating from Individual and Institutional Customer account types and shows that nearly three-fourths of orders valued under $250 originate from Individual Customers. Therefore, a separate notional order size category for orders valued less than $250 will be particularly useful in allowing individual investors to compare the execution quality of their orders across reporting entities.

[364] *See infra* note 1144 for a description of an ''Individual Customer'' account.

[365] This proxy was employed for two reasons. First, it was utilized because a high percentage of individual investors' orders are handled by wholesalers. *See* Proposing Release, 88 FR 3786 at 3839, n.614 (Jan. 20, 2023) (describing a Commission analysis of Rule 606 reports that showed that, in Q1 2022, a sample of 46 retail broker-dealers routed 87.3% of orders in S&P 500 stocks and 87.9% of orders in non-S&P 500 stocks to wholesalers, as compared to 9.1% and 8.5%, respectively, to national securities exchanges). Second, it was utilized because it is the Commission's understanding that IOC orders handled by wholesalers are likely to be orders directed to wholesaler SDPs. *See* infra note 1110. Based on an analysis of the CAT data described in in note 1261 infra, non-IOC orders that are valued less than $1,000 and that originate from Individual Customer accounts make up around 10.2% of wholesalers' total order flow.

Figure 3: Percentage of Individual and Institutional Customer Orders, by Notional Order Size Bucket, Q1 2023



This figure shows the percentage breakdown of orders originating from either individual customer accounts or institutional customer accounts. Percentages are calculated as the number of submitted orders within each order size bucket that originated from a given account type, summed across all stocks and days in the sample, divided by the total number of submitted orders within each order size bucket, summed across all stocks and days. This analysis uses data from CAT for a sample of 400 stocks for Q1 2023. See infra note 1261 for a description of this dataset. See infra note 1144 for a description of account types in CAT.

BILLING CODE 8011–01–C

Third, for stocks priced less than $50 (which, again, represent 85% of all stocks [366]), 68.0% of orders are valued between $1,000 and $10,000. Two of the adopted notional order size buckets ($1,000 to less than $5,000; and $5,000 to less than $10,000) will capture some variation across the majority of orders for the majority of stocks.

Fourth, 69.6% of round lots have relatively higher notional order sizes of between $10,000 and $200,000. In addition, some market centers seem to specialize in larger orders. For example, 63.3% of order flow to ATSs is valued between $10,000 and $200,000. The remaining adopted notional order size buckets ($10,000 to less than $20,000; $20,000 to less than $50,000; and $50,000 to less than $200,000) capture the distributions of these larger notional value orders, and thus allow for measurement of execution quality at market centers that specialize in larger notional value order sizes.

Lastly, the additional notional order size category for orders for valued $200,000 or more will be useful because these orders typically warrant different treatment than smaller orders.[367]

Designating order size categories based on notional order size buckets represents a shift in approach from the proposed order size categories based on round lot size ranges. In the Proposing Release, the Commission stated that modifying the order size categories to reflect the number of round lots would better allow Rule 605 reports to group orders with similar characteristics and notional values, and thereby provide more useful execution quality information.[368] The Commission also stated its belief that notional buckets and caps would not be necessary because the definition of round lot, as modified by the MDI Rules, incorporates the current market price of the security.[369] However, the Commission requested and, as described above, received, comments supporting the use of order size categories based on

[366] *See supra* note 363.

[367] *See, e.g.*, 17 CFR 242.606(a)(1) (requiring reports on the routing of customer orders) and prior 17 CFR 242.600(b)(25) (defining ''customer order'' to exclude an order with a market value of $200,000 or more); 17 CFR 242.604(b)(4) (providing an exception for orders of block size from required limit order display) and prior 17 CFR 242.600(b)(12) (defining ''block size'' as, in part, an order for a quantity of stock having a market value of at least $200,000). In addition, the adopted rule is consistent with the recommendations by two commenters to establish a $200,000 threshold and to increase the cap above $200,000. *See supra* notes 353 and 354 and accompanying text.

[368] *See* Proposing Release, 88 FR 3786 at 3807 (Jan. 20, 2023).

[369] *See id.*

notional value.[370] In the Proposing Release, the Commission recognized advantages to defining order size categories based on dollar value of the order, while also recognizing that this approach would no longer produce a meaningful distinction between round lot and odd-lot orders according to the new definitions under the MDI Rules and therefore it would not be possible to distinguish orders that may not be at the same price as quotes protected under 17 CFR 242.611 (''Rule 611'').[371] Many commenters favored utilizing order size categories based on notional dollar value.[372] Further, accepting commenters' suggestion to combine notional dollar value ranges with an indication of whether a category represents round-lot orders and odd-lot orders,[373] and also indicating whether a category represents orders of less than a share, will preserve the ability to distinguish between such orders.[374] Designating order size categories according to notional value and whether the order represents a round lot, an odd-lot, or an order smaller than a single share preserves the comparability of order execution quality statistics within an order size category and is responsive to comments.[375]

In addition, in response to commenters' suggestions that the statistics in the summary report should be derivable from the detailed report,[376] the Commission is adding a metric to the detailed report under Rule 605(a)(1) for the cumulative notional order size of all covered orders.[377] Specifically, users of the detailed reports can use the cumulative notional order size metric to calculate average notional order size, which is a metric in the summary report, and thus either reconstruct a firm's calculations in its summary report or calculate the metric for different combinations of orders.[378] Users of the detailed report also can use the cumulative notional order size metric to calculate the average share price for covered orders received by combining the metric with shares submitted. Further, the cumulative notional order size metric provides information to users of the detailed report regarding whether the orders that the reporting entity received are more heavily weighted towards the higher or the lower end of a notional order size range.

For the reasons discussed in the Proposing Release and as described below, the Commission continues to believe that fractional, odd-lot, and larger-sized orders of 10,000 or more shares represent important order flow segments.[379] By incorporating these orders into the new order size categories, Rule 605 reports will contain information about some orders that were previously missing from Rule 605 reports. The Commission disagrees with the commenter that stated that execution quality information for fractional share orders is of limited value to investors and suggested not including such orders in Rule 605 reports.[380] Fractional share orders have become increasingly popular with individual investors and the Commission continues to believe that it is important to provide standardized execution quality metrics for this segment of order flow.[381] Analysis of CAT data from August 2023 found that executed orders with a fractional share component originated from almost five and a half million unique accounts. Further, orders for less than a single share represented a significant portion of fractional order executions.[382] While fractional share orders continue to represent a small percentage (around 4.1%) of originating orders that eventually execute, they represent a significant percentage (21.6%) of order executions originating from individual accounts.[383]

With respect to the commenter's statement that the cost of modifying market infrastructure to accommodate fractional share trading ''would be high compared to the minimal benefit'' of including fractional shares in Rule 605 reports,[384] this commenter has not provided data to quantify the projected increased costs. Although this commenter provides as an example of potential infrastructure issues that FINRA ''does not currently have a mechanism to report fractional share trades, because all of these trades are

[370] *See id.* at 3809.

[371] *See id.* at 3891–92 (describing reasonable alternative to define order sizes based on dollar volume categories rather than number of round lots).

[372] *See supra* notes 323–335 and accompanying text.

[373] *See supra* notes 337–339 and accompanying text.

[374] One commenter supported the proposed order sized definitions in part because they would harmonize Rule 605 disclosures with the price-based definition of round lot from the MDI Rules. *See supra* note 322. Because the adopted order size categories combine notional value with an indication of whether the order was a round lot, odd-lot, or order less than a share, the order size categories will reflect the price-based definition of round lot when it is implemented.

[375] The Commission disagrees with a commenter's statement that the reporting requirements relating to order size categories are subject to change and thus could create confusion because of the changes being proposed in the Minimum Pricing Increments Proposing Release. *See supra* notes 319–320 and accompanying text. The Minimum Pricing Increments Proposing Release includes a proposal to accelerate the implementation of the round lot definition adopted under the MDI Rules that will assign NMS stocks priced over $250 to round lot sizes smaller than 100 shares. *See* Minimum Pricing Increments Proposing Release, 87 FR 80266 at 80270 (Dec. 29, 2022). Although the new round lot definition when implemented will be dynamic and lead to changes in the round lot for stocks priced over $250, market participants will have notice of these changes. Further, the use of notional value in the adopted order size categories will help users of Rule 605 reports understand the effect of a change in round lot size for a security because a notional value range will remain constant even if the size of a round lot changes. Moreover, it is not clear, and the commenter does not explain, how the proposals to modify tick sizes in the Minimum Pricing Increments Proposing Release would potentially affect Rule 605's requirements concerning categorization by order size.

[376] *See infra* note 769 and accompanying text. One commenter specifically recommended ''adding to the [605](a)(1) report the aggregate notional value of covered orders for each row.'' *See* FIF Letter II at 11.

[377] *See* final 17 CFR 242.605(a)(1)(i)(B) (requiring the reporting of the cumulative notional value of covered orders for all order types).

[378] *See* final 17 CFR 242.605(a)(2)(ii). *See also infra* note 796 and accompanying text (discussing the average notional order size metric in the summary report).

[379] *See* Proposing Release, 88 FR 3786 at 3808 (Jan. 20, 2023). The Commission is rescinding the portion of the Large Order Exemptive Letter that grants the Large Order Exemptive Relief because it is inconsistent with, and will be obsolete in light of, the new order size categories. *See infra* section VI for further discussion.

[380] *See supra* note 348 and accompanying text.

[381] *See* Proposing Release, 88 FR 3786 at 3808 (Jan. 20, 2023). A broker-dealer that principally facilitates the trading of fractional shares must produce a separate Rule 605 report as a market center if it meets the definition of an ''OTC market maker'' and receives covered orders for execution in such capacity. *See* final 17 CFR 242.600(b)(18) (defining ''categorized by order size'' to include categories for orders of less than a share); final 17 CFR 242.600(b)(55) (defining ''market center''); final 17 CFR 242.600(b)(75) (defining ''OTC market maker''); final 17 CFR 242.605(a)(1) (''Every market center . . . shall make available for each calendar month . . . a report on the covered orders in NMS stocks that it received for execution from any person or that it received for execution in a prior calendar month but which remained open.''). *See also supra* note 170 and accompanying text. As discussed below, the inclusion of orders less than one share will expand the number of market centers filing Rule 605 reports, and therefore this change will increase transparency about the execution quality achieved by those market centers. *See infra* notes 1436–1438 and accompanying text.

[382] Analysis of CAT data from Mar. 2022 found that almost 68% percent (31.67 million) of the 46.63 million executed orders with a fractional component were for less than a single share. *See* Proposing Release, 88 FR 3786 at 3808, n.279 (Jan. 20, 2023). Updated analysis from Aug. 2023 found that both the number and percentage of orders for less than a share increased. In Aug. 2023, approximately 81% (54.7 million) of the 67.4 million executed orders with a fractional component were for less than a single share.

[383] This considers any order with a fractional component. However, orders for less than one share still account for over 16% of order executions originating from individual accounts. *See infra* note 1424. Generally, accounts classified as ''individual'' in CAT are attributed to natural persons.

[384] *See supra* note 350 and accompanying text.

rounded up today,'' [385] these trades must still be reported to FINRA's trade reporting facility.[386] Further, CAT accepts reports involving fractional shares.[387] Only market centers or larger broker-dealers that accept orders with fractional shares for execution will need to include fractional shares in their Rule 605 reports, and those firms have the necessary systems to handle fractional shares.[388] Therefore, the Commission does not agree that the cost to implement any modifications to infrastructure needed to provide for the inclusion of fractional shares in Rule 605 reports would be so high as to exceed the benefits of providing standardized execution quality metrics for this segment of order flow.[389]

In addition, the Commission is not adopting the commenter's suggestion that Rule 605 reports also include separate reporting categories for round lot orders with a fractional share component and odd-lot orders with a fractional share component.[390] The majority of orders that have a fractional share component are orders for less than one share and these orders will appear separately in Rule 605 reports in the designated order size category. The value of including an additional category of orders of larger than one share with a fractional share component is unclear.[391] Such orders will be grouped with orders of the same notional size and according to whether the order based on overall share size is an odd-lot or a round lot, which should provide sufficient comparability for such orders.

2. Categorization by Order Type

Rule 605 reports include data for orders as categorized by order type. Prior to the amendments, Rule 605 defined ''categorized by order type'' to mean dividing orders into separate categories for market orders, marketable limit orders, inside-the-quote limit orders, at-the-quote limit orders, and near-the-quote limit orders.[392] The Commission proposed to modify this definition: (1) to remove the order type categories for inside-the-quote limit orders, at-the-quote-limit orders, and near-the-quote limit orders; (2) to add order type categories for marketable immediate-or-cancel orders, beyond-the-midpoint limit orders, executable NMLOs (excluding beyond-the-midpoint limit orders and orders submitted with stop prices), and executable orders submitted with stop prices; and (3) to specify that the category for marketable limit orders will exclude immediate or cancel orders.[393]

The Commission received comments supporting the overall changes to order type categories being proposed.[394] Additionally, and as discussed in relevant subsections below, many commenters discussed specific aspects of the proposed changes to the order type categories. The Commission is adopting the amendments to the order type categories, with a few adjustments from the proposal. First, in connection with the proposed order type categories for NMLOs, the Commission is making certain modifications to the proposed definition of executable, as discussed in section III.B.2.a) below. Second, the Commission is retaining a separate order type category for executable beyond-the-midpoint limit orders largely as proposed, with a small expansion in scope and corresponding change to the name of the relevant defined term to refer to them as ''midpoint-or-better limit orders,'' as discussed in section III.B.2.b) below. Finally, the Commission is adopting the proposed order type category for marketable IOCs, while also adding order type categories for two other types of IOCs, as discussed in section III.B.2.c) below.[395]

(a) NMLOs

(1) Proposed Approach

The Commission proposed to eliminate the three separate order type categories pertaining to NMLOs (*i.e.* , inside-the-quote limit orders, at-the-quote limit orders, and near-the-quote limit orders) [396] and to replace them with new categories for NMLOs that become executable (excluding orders submitted with stop prices and beyond-the-midpoint limit orders) and beyond-the-midpoint limit orders.[397] The Commission recognized that more meaningful measures of execution quality for NMLOs, as well as orders submitted with stop prices, would assist investors in measuring execution quality, and stated that it was proposing to add the concept of ''executable'' to allow execution quality statistics to be measured from a point where an order could be executed.[398] Specifically, the Commission proposed the following definition of ''executable'' for NMLOs (other than orders submitted with stop prices): for any non-marketable buy order (excluding orders submitted with stop prices), executable means that the limit price is equal to or greater than the national best bid during regular trading hours, and, for any non-marketable sell order (excluding orders submitted with stop prices), that the limit price is equal to or less than the national best offer during regular trading hours.[399] The Commission stated that, as is the case for orders submitted with stop prices, incorporation of the ''executable'' concept would have two effects-NMLOs would only be reported as part of a Rule 605 report if they become executable during regular trading hours and the point that NMLOs first become executable would be used as an input for several execution quality metrics.[400]

(2) Final Rule and Discussion

An individual investor supported the proposed modifications to reporting requirements for NMLOs, stating they would capture more relevant execution

[385] SIFMA Letter II at 31.

[386] *See* FINRA Trade Reporting FAQs, *available at https://www.finra.org/filing-reporting/market-transparency-reporting/trade-reporting-faq* (''Q101.15: Must trades for less than one share be reported? A101.15: Yes . . . where a trade is executed for less than one share, *e.g.,* ⅓ share, firms should round up and report a share quantity of 1.'').

[387] *See* CAT FAQ B.10 *available at https://catnmsplan.com/faq*.

[388] For example, a broker-dealer that accepts orders with fractional shares for execution will need to provide a trade confirmation to its customer that includes the execution price. In addition, such broker-dealer will need to have the ability to compare the execution price to the NBBO at the time of execution in order to help ensure compliance with the order protection rule. *See* 17 CFR 242.611.

[389] *See infra* notes 1674–1676 and accompanying text (discussing costs and benefits).

[390] *See supra* note 347.

[391] As discussed below, the Commission did not find execution quality to systematically vary significantly between odd-lots and rounds lots with fractional components and their counterparts without fractional components. *See infra* at section IX.E.3.(a)(2).

[392] *See* prior 17 CFR 242.600(b)(14).

[393] *See* Proposing Release, 88 FR 3786 at 3809–12 (Jan. 20, 2023); proposed Rule 600(b)(20).

[394] *See, e.g.,* Better Markets Letter at 6–7; Pritchard Letter; Abanes Letter. An individual investor stated that creation of new order type categories would help improve executions in the lit exchanges and ensure competition among broker-dealers. *See* Medina Letter.

[395] In addition, as discussed in section III.A.2 above, the Commission is subdividing the order type category for executable orders submitted with stop prices and modifying the definition of executable as it pertains to stop orders.

[396] Inside-the-quote limit order, at-the-quote limit order, and near-the-quote limit order mean non-marketable buy orders with limit prices that are, respectively, higher than, equal to, and lower by $0.10 or less than the national best bid at the time of order receipt, and non-marketable sell orders with limit prices that are, respectively, lower than, equal to, and higher by $0.10 or less than the national best offer at the time of order receipt. *See* prior 17 CFR 242.600(b)(37).

[397] *See* Proposing Release, 88 FR 3786 at 3809 (Jan. 20, 2023); proposed Rule 600(b)(20).

[398] *See* Proposing Release, 88 FR 3786 at 3810 (Jan. 20, 2023).

[399] *See id.*; proposed Rule 600(b)(42).

[400] *See* Proposing Release, 88 FR 3786 at 3810 (Jan. 20, 2023).

quality information for these orders.[401] A broker-dealer supported replacing the current NMLO order categories with NMLOs that become executable and beyond-the-midpoint limit orders, and stated that ''[a]dding these new categories should capture many more orders compared to current Rule 605 reports.'' [402] A national securities exchange asked for clarification regarding whether market centers would be permitted to use their own view of the NBBO, data from the securities information processors (''SIPs''), or data from competing consolidators (in the future, pursuant to the MDI Rules) when determining order marketability.[403] Another national securities exchange supported replacing the three current categories for NMLOs with NMLOs that become executable, beyond-the-midpoint limit orders, and executable orders submitted with stop prices and stated that these changes would enhance execution quality information within Rule 605 reports and better group comparable orders.[404] According to a group of academics, some broker-dealers convert their customers' order types and route most of them to the broker-dealer's ATS.[405] These commenters recommended, to provide transparency on order types selected by customers, that Rule 605 statistics reflect the order type selected by customers rather than the routing broker-dealer.[406]

After reviewing the comments, the Commission is eliminating the definition of ''inside-the-quote limit order, at-the-quote limit order, and near-the-quote limit order,'' [407] as proposed and is adopting the order type category for executable NMLOs largely as proposed for the reasons stated in the Proposing Release.[408] As a result, Rule 605 reports will capture more of those NMLOs that have an opportunity to execute, and execution quality statistics will be more useful for these types of NMLOs. However, as discussed above in section III.A.1.b), the Commission is modifying the definition of ''executable'' in response to a comment regarding the treatment of orders received during the interim opening period.[409]

A national securities exchange stated that under the Limit-Up Limit-Down (''LULD'') Plan, certain NMLOs would not necessarily be ''executable'' and requested that the Commission modify the definition of ''executable'' to conform to the provisions of the LULD Plan.[410] The Commission agrees with the commenter that an order generally should not fall within the definition of ''executable'' when the underlying security is in a Straddle State. The market for a security in a Straddle State can substantially differ from the market for that security outside of a Straddle State, as reflected in the fact that the primary listing exchange may declare a trading pause for an NMS Stock in a Straddle State.[411] Even if the primary listing exchange has not declared a trading pause for a security in a Straddle State, the decision to not consider an order executable based on a whether the national best bid or national best offer reaches a specific price at a time when the underlying security is in a Straddle State is consistent with the Commission's decision to include within the scope of Rule 605 reports only those NMLOs that become executable during regular trading hours. The Commission stated that it was only including in Rule 605 reports those NMLOs that become executable during regular trading hours in order to provide a basis for more comparable execution quality measures because there are substantial differences in the nature of the market between regular trading hours and after-hours.[412] Accordingly, for purposes of determining when an order first became executable, an order generally should not become executable during a time when the underlying security is in a Straddle State.[413]

(b) Midpoint-or-Better Limit Orders

(1) Proposed Approach

Inside-the-quote limit orders were a separate order type category under Rule 605 before the amendments,[414] and Rule 605 did not require price improvement statistics to be calculated for these orders because they are not a marketable order type (*i.e.,* they do not fully cross the spread).[415] The Commission proposed to require execution quality statistics for limit orders priced more aggressively than the midpoint and to classify these types of orders as beyond-the-midpoint limit orders.[416] Specifically, the Commission proposed to define a ''beyond-the-midpoint limit order'' as follows: with respect to an order received at a time when a NBBO is being disseminated, (i) any non-marketable buy order with a limit price

[401] *See* Genco Letter.

[402] Rule 605 Citadel Letter at 11.

[403] *See* NYSE Letter at 8. Until the implementation of the MDI Rules, a reporting entity generally should use data from the exclusive SIPs to calculate its Rule 605 statistics, including the determination of whether a limit order is marketable. The MDI Rules include a phased transition plan to implement the decentralization consolidation model, including a parallel operation period followed by the cessation of operations of the exclusive SIPs, which will only cease operations if the Commission approves an amendment to the effective national market system plan(s) to effectuate such a cessation. *See* MDI Adopting Release, 86 FR 18596 at 18700–01 (Apr. 9, 2021). The Commission will monitor the implementation of the decentralized consolidation model required under the MDI Rules.

[404] *See* Nasdaq Letter at 44.

[405] *See* Professor Schwarz *et al.* Letter at 5.

[406] *See id.* Each firm or market center generally should classify orders based on the order type when received. This generates execution quality statistics that are comparable among different types of reporting entities because many of the Rule's statistical measures are based on time of order receipt (or benchmarked to the NBBO when received, for marketable order types). In addition, some receiving market centers or broker-dealers may not have information about the order type when the originating customer entered the order and thus would not have the information needed to classify orders based on the order type selected by the customer.

[407] These terms will no longer be used with the adopted changes to the order type categories, which focus on whether a NMLO becomes executable rather than on how a NMLO's limit price compares to the quote, as discussed further below. The Commission received one comment supporting the elimination of this definition. *See* Nasdaq Letter at 44.

[408] *See* Proposing Release, 88 FR 3786 at 3809–10 (Jan. 20, 2023); final 17 CFR 242.600(b)(19). As discussed further below, the Commission is adopting a new order type category for executable NMLOs that are immediate-or-cancel and thus these orders will not be included within the scope of the order type category for executable NMLOs. *See infra* section III.B.2.c).

[409] *See* final 17 CFR 242.600(b)(39). *See also supra* notes 244–246 and accompanying text.

[410] *See* NYSE Letter at 8–9. This commenter stated that, under the LULD Plan, a security is in a ''Straddle State'' when the national best bid is below the LULD lower price band or the national best offer is above the LULD upper price band and an order is not executable when the underlying security is in a Straddle State. *See id.* at 9, n.12.

[411] *See* Section VII(A)(2) of 20th Amendment to the National Market System Plan to Address Extraordinary Market Volatility (''LULD Plan''). The LULD Plan defines a ''Straddle State'' as when the national best bid (offer) is below (above) the lower (upper) price band and the stock is not in a limit state, and ''trading in that NMS Stock deviates from normal trading characteristics such that declaring a Trading Pause would support the [LULD] Plan's goal to address extraordinary market volatility.'' Id. The primary listing exchange for a stock must have policies and procedures to determine when to declare a trading pause. *See id.*

[412] *See* Proposing Release, 88 FR 3786 at 3810 (Jan. 20, 2023). The Commission is further advancing this goal through the adopted definition of ''executable,'' which additionally specifies that NMLOs will be executable only after the primary listing market has disseminated its first firm, uncrossed quotations in the security. *See* final 17 CFR 242.600(b)(39).

[413] This guidance is based upon the current definition of Straddle State in the LULD Plan, as described above. If this definition changes due to an LULD Plan amendment and the change impacts the guidance provided here, this guidance may no longer be valid.

[414] *See* prior 17 CFR 242.600(b)(14).

[415] Prior Rule 605(a)(1)(i) specified execution quality statistics to be provided for all order types, and prior Rule 605(a)(1)(ii) specified execution quality statistics to be provided for marketable order types. *See* prior 17 CFR 242.605(a)(1)(i) and (ii).

[416] *See* Proposing Release, 88 FR 3786 at 3811 (Jan. 20, 2023).

that is higher than the midpoint of the national best bid and national best offer at the time of order receipt, or (ii) any non-marketable sell order with a limit price that is lower than the midpoint of the national best bid and national best offer at the time of order receipt; and, with respect to an order received at a time when a NBBO is not being disseminated, (i) any non-marketable buy order with a limit price that is higher than the midpoint of the national best bid and national best offer at the time that the national best bid and national best offer is first disseminated after the time of order receipt, or (ii) any non-marketable sell order with a limit price that is lower than the midpoint of the national best bid and national best offer at the time that the national best bid and national best offer is first disseminated after the time of order receipt.[417]

Additionally, the Commission proposed to require that the execution quality statistics for beyond-the-midpoint limit orders include the additional information required of both marketable and non-marketable order types.[418] The Commission also proposed to modify the time-to-execution statistics to state that, with respect to beyond-the-midpoint limit orders, these time-based statistics would have been measured from the time such orders become executable rather than from the time of order receipt.[419]

(2) Final Rule and Discussion

A national securities exchange and a broker-dealer supported including beyond-the-midpoint orders among the new order type categories.[420] The broker-dealer stated that adding beyond-the-midpoint limit orders, along with NMLOs that become executable, should capture many more orders.[421] On the other hand, an industry group questioned whether the proposed inclusion of beyond-the-midpoint limit orders would be worthwhile given their current sparse usage (2.9% of NMLOs), which the commenter predicts would decrease if the minimum pricing increments proposed in the pending Minimum Pricing Increments Proposing Release[422] are adopted.[423] In addition, this commenter suggested clarifying that an order that is a beyond-the-midpoint limit order would not also be a NMLO.[424]

After consideration of the comments, the Commission is adopting an order type for limit orders priced aggressively as compared to the midpoint, but with several modifications from the beyond-the-midpoint limit order that was proposed. The specific changes being made from the proposal are: (1) revising the definition of ''beyond-the-midpoint limit order'' to include limit orders priced at the midpoint and renaming this term ''midpoint-or-better limit order''; and (2) making a modification to this definition to account for the interim opening period, as suggested by a commenter.[425] In addition, the Commission is adopting as proposed the requirements that for this order type: (1) the Rule 605 report will include the execution quality statistics specific to both marketable order types and non-marketable order types;[426] and (2) time-based statistics will be measured from the time such orders become executable.[427]

The Commission is expanding the scope, as compared to the proposal, of the ''midpoint-or-better'' order types to include limit orders priced at the midpoint in response to a commenter's concern that a category for orders that are priced more aggressively than the midpoint may not be worthwhile because these types of NMLOs are sparsely used.[428] The Commission conducted additional analysis of NMLOs priced in between the national best bid and national best offer and continues to believe that market participants would benefit from receiving execution quality information specific to NMLOs priced better than the midpoint, along with NMLOs priced at the midpoint, because they may have different execution quality statistics than other types of NMLOs.[429] The Commission understands that some NMLOs priced inside the quote are submitted by traders with the intention of executing immediately against hidden or odd-lot liquidity that may be available. Scoping in limit orders priced at the midpoint will increase the size of this order type category, while including additional orders that have certain execution quality statistics that are similar to limit orders priced more aggressively than the midpoint.[430] Midpoint-or-better limit orders may be treated more like marketable limit orders in certain contexts, and the Commission continues to believe that market participants will benefit from receiving price improvement statistics and effective spread statistics for these order types.

In response to a commenter's request for clarification that an order that falls within this order type would not also be a NMLO,[431] the Commission confirms that midpoint-or-better limit orders will not fall within the order type category for NMLOs that become executable. Although midpoint-or-better limit orders are technically a subset of NMLOs, the definition of ''categorized by order type'' expressly excludes midpoint-or-better limit orders from the order type category for executable NMLOs.[432] Accordingly, execution quality data for midpoint-or-better limit orders will be included within the statistics for only the order type categories for midpoint-or-better limit orders (excluding IOCs) or midpoint-or-better limit orders with an immediate-or-cancel instruction, and described in section III.B.2.c)(2) below.

(c) Marketable and Non-Marketable IOCs

(1) Proposed Approach

Prior to the amendments, Rule 605 reports grouped marketable IOCs together with other marketable orders.

[417] *See id.*; proposed Rule 600(b)(16).

[418] *See* Proposing Release, 88 FR 3786 at 3811 (Jan. 20, 2023); proposed Rule 605(a)(1)(i) through (iii).

[419] *See* Proposing Release, 88 FR 3786 at 3811 (Jan. 20, 2023); proposed Rule 600(b)(9) (definition of average effective order quoted spread), (10) (definition of average effective spread), (11) (definition of average percentage effective spread).

[420] *See* Nasdaq Letter at 44; Rule 605 Citadel Letter at 11.

[421] *See* Rule 605 Citadel Letter at 11.

[422] *See* Minimum Pricing Increments Proposing Release, 87 FR 80266 (Dec. 29, 2023).

[423] *See* FIF Letter at 13.

[424] *See id.* at 12.

[425] *See* final 17 CFR 242.600(b)(57). *See also* supra section III.A.1.b) (discussing modifications to account for interim opening period).

[426] *See* final 17 CFR 242.605(a)(1)(i) through (iii). *See also* final 17 CFR 242.600(b)(19).

[427] *See* final 17 CFR 242.600(b)(8), (9), and (12). As discussed further below, the Commission is adopting a separate order type category for midpoint-or-better limit orders that are also IOCs. *See infra* section III.B.2.c). As such, the Commission is adopting separate order type categories for midpoint-or-better limit orders (excluding IOCs) and midpoint-or-better limit orders that are immediate-or-cancel. For purposes of this release, these two order types may be referred to collectively as ''midpoint-or-better order types.''

[428] *See supra* note 423 and accompanying text. The Commission is still considering the proposed changes to minimum pricing increments discussed in the Minimum Pricing Increments Proposing Release.

[429] For example, Commission analysis demonstrates that midpoint-or-better limit orders executed by wholesalers tend to have somewhat higher fill rates and on-exchange midpoint-or-better limit orders tend to have a higher percentage of orders that execute in less than 1 millisecond. *See infra* note 1213; Table 4. *See* also Proposing Release, 88 FR 3786 at 3810–11 (Jan. 20, 2023).

[430] *See infra* Section IX.C.3.c)(3).

[431] *See supra* note 424 and accompanying text.

[432] The Commission is modifying this exclusion in the definition of ''categorized by order type'' from the proposal to refer to the midpoint-or-better order types instead of beyond-the-midpoint limit orders to conform with the modification to the defined term as discussed above. *See* final 17 CFR 242.600(b)(19).

The Commission proposed to assign marketable IOCs their own separate order type category by adding a category for ''marketable immediate-or-cancel orders'' and indicating that the category for ''marketable limit orders'' excludes IOC orders.[433] The Commission also proposed to require the same execution quality information for marketable IOCs as is required for other marketable order types.[434]

(2) Final Rule and Discussion

A national securities exchange supported establishing a new order type category for marketable IOC orders.[435] An industry group stated that, for each order type, the execution profile differs based on whether the orders are IOC or time-in-force orders and therefore recommended requiring broker-dealers and market centers to break out reporting of all order types (not just marketable order types, as proposed by the Commission) to distinguish between IOC and time-in-force orders.[436]

A broker-dealer stated that it supported assigning IOCs to a separate order category so that they would no longer be commingled with retail orders.[437] According to this commenter, many wholesale broker-dealers execute IOC orders for non-retail investors and currently ''these IOC orders may be aggregated with retail orders for reporting purposes, even though the execution profile is very different and could negatively skew a wholesale broker-dealer's execution quality metrics.'' [438] This commenter also stated that although the Commission proposed to assign marketable IOCs as a separate order type category, similar treatment was not proposed for non-marketable IOCs.[439] Thus, this commenter suggested that the Commission ''include a flag for IOC orders that equally applies across both marketable and non-marketable orders'' because of the commenter's view that including non-marketable IOCs within the same order type category as regular NMLOs would significantly skew reported data.[440]

Following consideration of the comments, the Commission is adopting a separate order type category for marketable IOCs as propose[441] Moreover, to address commenters' suggestions that there also be separate order type categories for non-marketable IOCs,[442] the Commission is adopting, in addition to the categories that were proposed, order type categories for NMLOs that are immediate-or-cancel (''NMLO IOCs'') and midpoint-or-better limit orders that are immediate-or-cancel (''midpoint-or-better IOCs''). As is the case with other non-marketable order types, NMLO IOCs will be included in Rule 605 reports if they become executable.[443] Additional Commission analysis demonstrates that IOCs represent a significant component of order flow for both marketable orders and non-marketable orders.[444] Moreover, the Commission agrees with the commenter that commingling NMLO IOCs with NMLOs that are not immediate-or-cancel or midpoint-or-better IOCs with midpoint-or-better limit orders that are not immediate-or-cancel could distort execution quality statistics[445] because the Commission's analysis demonstrates that IOCs tend to have shorter execution times and, with respect to orders received by wholesalers, lower fill rates.[446]

However, the Commission is not fully adopting commenters' suggestion that the Commission differentiate between IOCs and orders that are not immediate-or-cancel for every order type category used in Rule 605.[447] While the adopted amendments will add order type categories for marketable IOCs, executable NMLO IOCs, and midpoint-or-better IOCs, the adopted amendments will not include separate order type categories for IOCs that have characteristics of the other order types (*e.g.,* market order with an immediate or cancel instruction, executable stop marketable limit order with an immediate or cancel instruction). An order submitter placing a market order likely has an expectation of receiving an immediate execution because there is no limit price. IOC limit orders are also submitted with an expectation of executing immediately. Moreover, an order submitter placing a market order with an immediate or cancel instruction or a limit order with an immediate or cancel instruction can reasonably expect that, if the order receives an execution, it will be at the prevailing market price at the time of order receipt. Therefore, the Commission does not believe that the execution profile for market orders with an immediate or cancel instruction will vary significantly enough from other marketable IOCs to warrant an order type category for market orders with an immediate or cancel instruction that separates these orders from other marketable IOCs.[448] In addition, as discussed above, the execution profiles for an order type category or categories for limit orders with a stop condition and an IOC instruction are not likely to have significantly different execution profiles than other stop orders that fall within the same order type categories based upon marketability, and thus the Commission is not requiring order type categories that would further sub-divide the categories for orders submitted with stop prices.[449]

[433] *See* Proposing Release, 88 FR 3786 at 3811 (Jan. 20, 2023); proposed Rule 600(b)(20).

[434] *See* Proposing Release, 88 FR 3786 at 3811 (Jan. 20, 2023); proposed Rule 605(a)(1)(i) and (ii).

[435] *See* Nasdaq Letter at 44.

[436] *See* FIF Letter at 13. This commenter stated that an additional column in the Rule 605(a)(1) report could be used to indicate whether a particular row pertains to IOC or time-in-force orders. *See id. See also* FIF Letter III at 4.

[437] *See* Rule 605 Citadel Letter at 7.

[438] *Id.*

[439] *See id.* at 10.

[440] *See id.*

[441] *See* final 17 CFR 242.600(b)(19).

[442] *See supra* notes 436, 440, and accompanying text.

[443] To implement this change from the proposed amendments, the Commission is modifying the proposed amendments to the definition of ''categorized by order type'' to add midpoint-or-better limit orders that are immediate-or-cancel and executable non-marketable limit orders that are immediate-or-cancel, as well as to exclude IOCs from the order types for midpoint-or-better limit orders and executable NMLOs. *See* final 17 CFR 242.600(b)(19). Consistent with this change, the Commission is also modifying Rule 605 to refer to midpoint-or-better limit orders and midpoint-or-better IOCs in Rule 605(a)(1)(i) (setting forth execution quality statistics required of all order types), (ii) (setting forth execution quality statistics required of marketable order types), and (iii) (setting forth execution quality statistics required of non-marketable order types); and to refer to executable NMLOs and executable NMLO IOCs in Rule 605(a)(1)(i) and (iii).

[444] *See infra* Table 5. With respect to orders that would fall within the adopted NMLO IOC category, this analysis demonstrates that for orders received by exchanges and ATSs, IOCs represent 4.7% of orders priced below the midpoint and 13.3% of orders priced at the quote, and for orders received by wholesalers, IOCs represent 65.3% of orders priced below the midpoint and 67.0% of orders priced at the quote. And with respect to orders that would fall within the adopted midpoint-or-better IOC category, this analysis demonstrates that for orders received by exchanges and ATSs, IOCs represent 35.8% of orders priced above the midpoint and 37.9% of orders priced at the midpoint, and for orders received by wholesalers, IOCs represent 90.8% of orders priced above the midpoint and 84.2% of orders priced at the midpoint. *See id.*

[445] *See supra* notes 437–440 and accompanying text.

[446] *See infra* Table 5.

[447] *See supra* notes 436, 440, and accompanying text.

[448] *See infra* Table 5.

[449] *See supra* section III.A.2.b). It is unlikely that many market participants will submit a market order with both a stop condition and an IOC instruction. However, even if such orders are submitted, they will either: (1) trigger immediately and execute at market prices, or (2) not trigger and cancel immediately because of the IOC instruction. In the case of (1), such orders are not likely to have different execution profiles than other market orders submitted with a stop price. In the case of (2), such orders will be cancelled before they become executable and will therefore not be in reported as part of Rule 605 reports because orders submitted with stop prices must be triggered to become executable and be included in a Rule 605 report.

3. Timestamp Conventions and Time-to-Execution Statistics

(a) Proposed Approach

Prior to the amendments, Rule 605 required the reporting of information on the number of shares of covered orders executed within certain timeframes, as measured in seconds after the time of order receipt.[450] Rule 605 also required the reporting of information on the average time to execution for marketable order types.[451] In addition, the definitions ''time of order execution'' and ''time of order receipt'' in preexisting Rule 600 specified that time must be measured ''to the second.'' [452]

The Commission proposed to update the timestamp conventions in the definitions of ''time of order receipt'' and ''time of order execution'' so that these definitions require that such times be measured in increments of a millisecond or finer.[453] The Commission also proposed to specify that the average time-to-execution statistics that Rule 605 required for marketable order types should be expressed in increments of a millisecond or finer.[454] Further, the Commission proposed to require that the share-weighted average time to execution be provided for non-marketable order types, as calculated from the time such orders become executable, and the proposed definition of ''executable'' provided that the time an order becomes executable shall be measured in increments of a millisecond or finer.[455] Finally, the Commission proposed to eliminate the existing time-to-execution buckets and require the reporting of share-weighted median and 99th percentile time to execution for all order types.[456]

(b) Final Rule and Discussion

As discussed below, after consideration of the comments, the Commission is adopting the use of timestamp conventions of a millisecond or finer for time-based execution quality statistics as proposed. The Commission is also requiring average time-to-execution statistics for all order types and specifying that for NMLOs these statistics will be measured from when the order becomes executable as proposed. However, the Commission is not adopting the proposed median and 99th percentile execution quality statistics for all order types. Instead, the Commission is retaining the time-to-execution buckets from Rule 605 prior to these amendments, which apply to all order types, but is modifying the associated time ranges to account for the overall increase in trading speeds since Rule 605 was adopted and as supported by certain commenters.

Several individual investors supported the proposal to require reporting of average time to execution, median time to execution, and 99th percentile time to execution in increments of a millisecond or finer.[457] Another individual investor stated that measuring in milliseconds would be a ''huge step forward'' in understanding order execution.[458] A national securities exchange supported eliminating time-to-execution categories in favor of average time to execution, median time to execution, and 99th percentile time to execution, each as measured in increments of a millisecond or finer and calculated on a share-weighted basis.[459] This commenter stated that requiring average time to execution for all order types, as well as statistics regarding the distribution of execution times within each order type, ''would offer more consequential information.'' [460] According to this commenter, ''[t]hese statistics could be used to judge and compare the average time to execution for a particular order type and still provide information about the extent to which outlier values may skew the average.'' [461]

One industry group stated that the use of milliseconds is the best approach at this time.[462] This commenter suggested that the Commission should engage in discussions with market centers to consider whether a requirement for market centers to report with increased granularity for CAT, Rule 605, and other required reporting would be appropriate.[463] An investor advocacy group stated that requiring timestamp information in millisecond increments would allow for meaningful points of comparison between market centers and/or broker-dealers for data that uses timestamp information and time-to-execution statistics.[464] Another investor advocacy group recommended that the Commission modify the required time-to-execution buckets for all order types to time buckets that can be adjusted over time, starting with the following buckets: less than 500 microseconds; 500 microseconds to 1 millisecond; 1 to 10 milliseconds; 10 to 100 milliseconds; 100 milliseconds to 1 second; 1 to 10 seconds; and greater than 10 seconds.[465] This commenter stated that ''[b]y creating buckets for timestamp, rather than average time to execution, the reports would provide much greater granularity while still allowing a user of the data to recreate average time to execution.'' [466] A broker-dealer supported the new statistics reporting times in increments of a millisecond or finer and stated that this will better reflect the speed at which orders are executed today.[467]

[450] *See* prior 17 CFR 242.605(a)(1)(i)(F) through (J) (requiring for all orders the reporting of the cumulative number of shares of covered orders executed within 5 specified time intervals after the time of order receipt). The preexisting time-to-execution bucket intervals were: (1) 0 to 9 seconds; (2) 10 to 29 seconds; (3) 30 to 59 seconds; (4) 60 to 299 seconds; and (5) 5 to 30 minutes.

[451] *See* prior 17 CFR 242.605(a)(1)(ii)(D), (F), and (I) (requiring for market and marketable limit orders the reporting of average time to execution for shares executed with price improvement, shares executed at the quote, and shares executed outside the quote, respectively). *See infra* section III.B.4.g) for additional information about Rule 605 statistics based on whether orders executed with price improvement, at the quote, or outside the quote.

[452] *See* prior 17 CFR 242.600(b)(91) and (92).

[453] *See* Proposing Release, 88 FR 3786 at 3812 (Jan. 20, 2023); proposed Rule 600(b)(108) and (109).

[454] *See* Proposing Release, 88 FR 3786 at 3812 (Jan. 20, 2023); proposed Rule 605(a)(1)(ii)(C), (G), and (L). Prior to the amendments, Rule 605 did not specify a level of granularity for the existing time-to-execution statistics. However, the Rule 605 NMS Plan requires these fields to be expressed in number of seconds and carried out to one decimal place. *See* Rule 605 NMS Plan section VI (a)(21), (23), and (26).

[455] *See* Proposing Release, 88 FR 3786 at 3812–13 (Jan. 20, 2023); proposed Rule 600(b)(42); proposed Rule 605(a)(1)(iii)(C).

[456] *See* Proposing Release, 88 FR 3786 at 3812–13 (Jan. 20, 2023); proposed Rule 605(a)(1)(ii)(D), (E), (H), (I), (M), and (N); proposed Rule 605(a)(1)(iii)(D) and (E). Specifically, the Commission stated that while the distribution of execution speeds in addition to the average would still be useful, the then-existing time-to-execution buckets are of limited utility because the smallest time-to-execution bucket encompasses all orders executed between zero and nine seconds. *See* Proposing Release, 88 FR 3786 at 3813 (Jan. 20, 2023). The Commission further stated that, rather than adding additional buckets to provide distribution information for execution speeds of less than one second, the Commission was proposing to require both share-weighted median and 99th percentile time-to-execution statistics to allow users of the data to assess how quickly a market center or broker-dealer is able to execute incoming orders and understand the extent to which the time to execution for a particular category is affected by outlier values. *See id.*

[457] *See, e.g.,* Pritchard Letter, Macarthur Letter, and Cesar Letter.

[458] *See* Bledsoe Letter. In addition, several commenters stated that ''broker-dealers are able and should be required to measure order executions in seconds or milliseconds, rather than 2 days.'' Letter Type C at *https://www.sec.gov/comments/s7-29-22/s72922.htm.*

[459] *See* Nasdaq Letter at 44.

[460] *See id.* at 45.

[461] *Id.*

[462] *See* FIF Letter at 17.

[463] *See id.*

[464] *See* Better Markets Letter at 8.

[465] *See* Healthy Markets Letter at 17 (recommending that the Commission adopt these time buckets pursuant to an attachment to the Rule, rather than the Rule itself, to facilitate the easy updating of these buckets).

[466] *Id.*

[467] *See* Robinhood Letter at 46.

The Commission is adopting the updates to the timestamp conventions to measure time-based statistics in increments of a millisecond or finer as proposed for the reasons discussed in the Proposing Release.[468] Requiring that Rule 605 reports include timestamp information in millisecond increments will allow for meaningful points of comparison among market centers or broker-dealers.[469]

A broker-dealer stated that although it supports transitioning time-to-execution metrics to smaller increments of time, it is concerned that more granular timestamps may lead to greater variation across firms because firms may have different practices around when to mark the same event, quotation information may vary materially due to geographic latency, and SIP data are likely to vary from proprietary feeds.[470] This commenter stated that the Commission should address these potential issues with timestamps to ensure that execution quality statistics for brokers are not misleading, biased, or inconsistent.[471] However, evidence suggests that geographic latencies, which may account for the majority of latency differences experienced by the SIP, are currently below a millisecond.[472] Therefore, any distortions related to latencies are likely to be smaller than the timestamp granularity. Further, it is likely that distortions may be reduced by using finer timestamp conventions that more closely align to existing market practice, as the NBBO that is matched to a particular order is likely to be closer to the NBBO at the time of order receipt.[473] Reporting firms generally should record the time of order receipt at the time that the firm first receives the order and the time of order execution at the time of execution as included on the trade confirmation.

One individual investor, who expressed concern related to the proposal, stated that focusing on the speed of execution only benefits high-frequency traders who can take advantage of small price discrepancies to make quick profits.[474] This commenter stated that he is more concerned with getting a fair price for his trades than the speed of execution.[475] The Commission is retaining time-to-execution statistics in Rule 605 reports for the reasons discussed herein. Different investors benefit from faster execution times for different reasons. With respect to individual investors in particular, delays in execution can lead to worse prices for market orders in an increasing (for buy orders) or decreasing (for sell orders) market and lower probabilities of execution for IOCs.[476] However, amended Rule 605 does not focus on speed to the exclusion of other important aspects of execution quality, including fill rates and price improvement.

The Commission is adopting, as proposed, the requirement that average time-to-execution statistics be calculated for all order types, including non-marketable order types.[477] The Commission is also adopting, as proposed, the requirement that average time to execution for non-marketable order types be measured from the point in time that orders become executable because this will provide a control for prevailing market conditions and benchmark orders from a point when such orders can reasonably be expected to execute.

An industry group raised concerns with reporting time to execution when the size of the customer's order exceeds the size of the opposite-side bid or offer and suggested that time-to-execution statistics for marketable orders should only consider the time to execution for shares executed by a reporting firm during the time period prior to the order first becoming unmarketable.[478] This commenter stated that firms that receive marketable orders that are larger relative to the opposite-side displayed NBBO quantity would show a longer time to execution as compared with firms that receive marketable orders that are smaller relative to the opposite-side displayed NBBO quantity, and in this way reported performance would be impacted by factors that do not reflect a true comparison of the execution performance across firms.[479] In addition, a broker-dealer stated that execution time statistics should be required only for market orders because marketable limit orders (including NMLOs that become marketable) may be partially executed or may exceed the consolidated quote size and it would be difficult to interpret this data without more context and information.[480] Another commenter stated that the execution speed metric for marketable limit orders should be limited to size available at the best protected quote at the far touch because this will ensure that orders larger than the quoted size that take out the best price and are posted for the balance do not skew the statistics.[481]

The Commission is not adopting these commenters' suggestions to limit the application of time-to-execution statistics to take into account concerns about marketable limit orders that exceed the available quantity at the opposite side bid or offer. The Commission disagrees with restricting time-to-execution statistics so that they apply to market orders only because time-to-execution statistics will provide meaningful information for all marketable and non-marketable order types and the time it takes to execute an initially marketable limit order that becomes non-marketable is still relevant.[482] The Commission also disagrees with the suggestion that it is necessary to limit time-to-execution statistics to the time it takes to execute the size available at the opposite side quote or the time it takes to first exhaust available liquidity to avoid skewed statistics. If a covered order receives a partial execution, the share-weighted time-to-execution statistics will consider the execution time of each subset of shares that received an execution and will not consider any subset of shares that does not receive an execution, and this will help mitigate against partial executions distorting

[468] *See* Proposing Release, 88 FR 3786 at 3812 (Jan. 20, 2023).

[469] *See id.* Reporting entities that choose to utilize a timestamp convention finer than a millisecond generally should utilize that same convention throughout their detailed report required by Rule 605(a)(1) for a particular month.

[470] *See* Robinhood Letter at 47–48.

[471] *See id.* at 48.

[472] *See infra* note 1461 and accompanying text.

[473] *See id.*

[474] See Gillmore Letter.

[475] *See id.*

[476] *See infra* notes 1476–1477 and accompanying text.

[477] *See* final 17 CFR 242.605(a)(1)(ii)(G), (I), and (L); final 17 CFR 242.605(a)(1)(iii)(D). See also Proposing Release, 88 FR 3786 at 3813 (Jan. 20, 2023).

[478] *See* FIF Letter II at 3–4. In an earlier comment letter, this commenter had suggested that the time-to-execution period should only consider the portion of an order that is marketable at the time of order receipt or, alternatively, only count towards the time of execution the period during which the order is marketable. *See* FIF Letter at 18. *See also* FIF Letter II at 3 (amending its suggestion after further discussions).

[479] *See* FIF Letter at 17–18; FIF Letter II at 3. This commenter also requested confirmation that time to execution should not be reported for unfilled shares and that unfilled shares would be reflected through the reporting of the number of shares of covered orders and the number of shares cancelled prior to execution. *See* FIF Letter at 18. The Commission agrees that, as is currently the case, the time to execution for unfilled shares will not be required to be reported as part of the time-to-execution statistics because their inclusion could distort the statistics. *See, e.g.,* final 17 CFR 242.605(a)(1)(i)(G) (requiring disclosure of ''the cumulative number of *shares* of covered orders'' executed in less than 100 microseconds) (emphasis added).

[480] *See* Rule 605 Citadel Letter at 10.

[481] *See* Schwab Letter II at 32.

[482] *See supra* note 480 and accompanying text.

time-to-execution statistics.[483] Similarly, if some shares of a covered order execute more quickly than others due to the availability of liquidity, the share-weighted time-to-execution statistics will take into account the time to execution for each subset of shares. Other available information will allow users of Rule 605 reports to control for these types of factors and facilitate their ability to interpret time-to-execution statistics for marketable limit orders. In particular, Rule 605 statistics will be categorized by order type and size and this categorization will provide useful context to understand time-to-execution statistics. For example, larger-sized orders may be more likely to exceed the consolidated quote size and the time-to-execution statistics for covered orders that fall within different size ranges will appear in separate rows.

Individual investors and a national securities exchange supported the proposed addition of median and 99th percentile time-to-execution statistics for all order types.[484] However, an industry group recommended an alternative to the reporting of the median and 99th percentile statistics because of its view that market participants and other firms analyzing Rule 605 data would not be able to aggregate these statistics across symbols and order types.[485] The commenter stated that ''it is important that users of the report have the ability to aggregate this data . . . across different sub-categories of orders.'' [486] Specifically, this commenter recommended that firms report share-weighted average time to execution without adjusting for outliers and separately report share-weighted average time to execution with an adjustment for outliers.[487] In addition, an investor advocacy group suggested that the Commission modify the required time-to-execution buckets for all order types to time buckets that can be adjusted over time rather than requiring average time-to-execution statistics.[488]

The Commission agrees with the commenter that it would not be possible to aggregate median or 99th percentile time-to-execution statistics across symbols or order types.[489] Although median or 99th percentile time-to-execution statistics may have provided useful information in each individual row (*i.e.,* representing a particular symbol, order type, and order size), users of the reports would have been unable to aggregate these statistics across multiple rows without the full underlying dataset because the median and 99th percentile values cannot be aggregated across different stocks or order types. The inability to aggregate these statistics would have made them less useful because the final rule amendments will result in more rows of information, and the median and 99th percentile time-to-execution statistics would only have provided information to compare more discrete subsets of Rule 605 data. Therefore, the Commission is not adopting its proposal to require the reporting of median and 99th percentile time-to-execution statistics for all order types.

The Commission is not adopting the commenter's suggestion that, instead of requiring median and 99th percentile time-to-execution statistics, the Commission should require the separate reporting of average time to execution with outliers and without outliers.[490] The Commission does not agree that these alternative metrics would solve the identified problem because the method of identifying outliers, such as the longest 1% of orders, would also prevent aggregation across multiple rows. As is the case with median and 99th percentile statistics, any cut-off selected as the means to identify outliers would not be constant across different stocks or order types and thus interfere with aggregation.

As another means of providing such distribution information, and consistent with the alternative that the Commission considered in the Proposing Release [491] and a commenter's suggestion,[492] the Commission is retaining the time-to-execution buckets in place prior to the amendments and modifying these buckets to incorporate additional granularity. The Commission continues to believe that information about the distribution of order execution speeds is useful because orders may execute near instantaneously or over the course of several minutes and thus average time-to-execution statistics in some instances could be skewed by outlier values. The amended time-to-execution buckets that the Commission is adopting will provide information about the distribution of execution times at a more granular level. This information will allow market participants and other users of the data to assess how quickly a market center or broker-dealer is able to execute incoming orders and better understand whether and to what extent the average time to execution within a particular category may be affected by outlier values.

The adopted time-to-execution buckets differ from the time-to-execution buckets that existed in Rule 605 prior to the amendments in two respects. First, the Commission is utilizing new time ranges for the time-to-execution buckets to make the buckets more granular in recognition of increased execution speeds and consistent with comment. As adopted, the time-to-execution bucket ranges are: (1) less than 100 microseconds; (2) 100 microseconds to less than 1 millisecond; (3) 1 millisecond to less than 10 milliseconds; (4) 10 milliseconds to less than 1 second; (5) 1 second to less than 10 seconds; (6) 10 seconds to less than 30 seconds; (7) 30 seconds to less than 5 minutes; and (8) 5 minutes or more.[493] The Commission is selecting these amended time-to-execution bucket ranges based on its analysis of the distribution of shares across various time-to-execution buckets.[494] The Commission's analysis demonstrates that most market and marketable limit orders have execution times clustered in the faster buckets and most at-the-quote NMLOs have execution times in the slower buckets.[495] The time-to-execution buckets that the Commission is adopting are designed to best capture variations in execution times across different order types.

Specifically, the Commission is including a time-to-execution bucket of less than 100 microseconds in order to provide visibility into differences in execution times for IOCs. Most IOCs execute in less than 100 microseconds and the distribution of some IOCs across slower time-to-execution buckets will

[483] Requiring that average time-to-execution statistics be calculated for non-marketable order types from the point in time that they become executable will realize the benefits of including those orders in the statistics while, at the same time, minimizing the distortions that could occur if time-to-execution statistics included the time during which such orders were non-marketable.

[484] *See supra* notes 457, 459–461, and accompanying text.

[485] *See* FIF Letter at 21–22; FIF Letter II at 7–9; FIF Letter III at 3.

[486] FIF Letter III at 3.

[487] *See* FIF Letter at 21–22. This commenter suggested that, for example, the share-weighted average time to execution that is adjusted for outliers could exclude the one percent of orders with the longest time to execution. *See id.*

[488] *See supra* notes 465–466 and accompanying text.

[489] *See supra* note 485 and accompanying text.

[490] *See supra* note 487 and accompanying text.

[491] *See* Proposing Release, 88 FR 3786 at 3892 (Jan. 20, 2023).

[492] *See supra* notes 465–466 and accompanying text.

[493] *See* final 17 CFR 242.605(a)(1)(i)(G) through (N). The Commission is not specifying time ranges for the time-to-execution bucket in a separate attachment as suggested by a commenter (*see supra* note 465) and is instead adopting set time buckets.

[494] *See infra* Figure 20 and Figure 21.

[495] *See infra* note 1466; Figure 21.

allow market participants to use Rule 605 reports to identify IOCs that are outliers with respect to execution time.[496] The Commission is also adopting a time-to-execution bucket of 100 microseconds to less-than-one millisecond that will capture an additional set of sub-millisecond orders. The inclusion of sub-millisecond orders in distinct time-to-execution buckets is consistent with the commenter's suggestion to utilize more granular time buckets for orders executed in less than 500 microseconds and for orders executed in between 500 microseconds and 1 millisecond.[497] The two adopted time-to-execution buckets for orders executed from 1 millisecond to less than 1 second are similar to the commenter's recommendation for sub-second time buckets,[498] but utilize two time-to-execution buckets instead of the suggested three based on the Commission's analysis of order distribution.[499] The time-to-execution buckets for orders executed from 1 second to less than 10 seconds and from 10 seconds to less than 30 seconds are comparable to the two shortest time-to-execution buckets in the preexisting rule.[500] The longest time-to-execution buckets being adopted are comparable to the longest time-to-execution buckets in the preexisting rule, but combine the second- and third-longest buckets based on the Commission's analysis of order distribution.[501]

Under the amended rule, the Commission is adopting time-to-execution buckets at the sub-millisecond level while also adopting a timestamp convention that will not require the use of reporting increments finer than a millisecond. These two aspects of Rule 605 are not inconsistent because the time-to-execution buckets will not require reporting entities to record time in microseconds. Instead, reporting entities that record time at the millisecond-level only generally should bucket orders based on the difference between the recorded time of order receipt (or executability in the case of NMLOs) and the recorded time of execution.[502] Accordingly, a reporting entity that records time in milliseconds generally should report in milliseconds and will not be able to identify orders as being completed in less than 100 microseconds; therefore, this time-to-execution bucket will remain empty.[503]

Second, when calculating where an NMLO falls within a time-to-execution bucket, time to execution will be calculated from the time the order becomes executable.[504] Prior to the amendments, Rule 605 reporting requirements included only those NMLOs that fell within limited order type categories (*i.e.,* inside-the-quote limit orders, at-the-quote limit orders, and near-the-quote limit orders) and the preexisting time-to-execution buckets contemplated that, for all orders, the relevant time period to be measured was from the time of order receipt to the time of order execution.[505] Calculating where NMLOs fall within the time-to-execution buckets utilizing the time the order becomes executable rather than the time of order receipt is consistent with how the Commission proposed, and is adopting, to measure other time-based execution quality statistics for NMLOs.[506]

4. Execution Quality Statistics

Preexisting Rule 605(a)(1) required market centers to include in their monthly reports columns of detailed execution quality information. For all order types, the required statistics included information on the number of orders; cumulative number of shares; cumulative number of shares cancelled prior to execution; cumulative number of shares executed at the receiving market center and at any other venue; and average realized spread.[507] In addition, for market orders and marketable limit orders, the required statistics included information on the average effective spread; cumulative number of shares executed with price improvement, at the quote, and outside the quote; for shares executed with price improvement, the share-weighted average amount per share that prices were improved; and for shares executed outside the quote, the share-weighted average amount per share that prices were outside the quote.[508]

As described further herein, the Commission proposed to modify the execution quality statistics required for all order types and marketable order types, and to add execution quality statistics specific to non-marketable order types. As proposed, the required statistics for all order types would have included information on the number of orders; cumulative number of shares; cumulative number of shares cancelled prior to execution; cumulative number of shares executed at the receiving market center, broker, or dealer, and at any other venue; cumulative number of shares of the full displayed size of the protected bid or offer at the time of execution; average realized spread and average percentage realized spread at two time intervals; average effective spread; average percentage effective spread; and average effective over quoted spread.[509] In addition, the required statistics for marketable order types and beyond-the-midpoint limit orders would have included the cumulative number of shares for shares executed with price improvement, at the quote, and outside the quote; share-weighted average amount per share that prices were improved; share-weighted average amount per share that prices were outside the quote; and price improvement statistics relative to the best available displayed price.[510] Finally, for non-marketable order types the required statistics would have included the number of orders that received a complete or partial fill, and cumulative number of shares executed regular way at prices that could have filled the order while the order was in force.[511]

Several individual investors generally supported the proposal to add new execution quality statistics.[512] One of these individual investors stated that the proposed enhancements to the required statistical measures of execution quality will provide valuable insights for investors.[513] Another individual investor stated that the proposed modification to reporting requirements for NMLOs would capture more relevant execution quality

[496] *See infra* note 1465; Figure 20.

[497] *See supra* notes 465–466 and accompanying text.

[498] *See supra* note 465 and accompanying text.

[499] *See supra* notes 494–495 and accompanying text.

[500] *See* prior 17 CFR 242.605(a)(1)(i)(F) (for covered orders executed from 0 to 9 seconds after the time of order receipt) and (G) (for covered orders executed from 10 to 29 seconds after the time of order receipt).

[501] *See* prior 17 CFR 242.605(a)(1)(i)(I) (for covered orders executed from 60 seconds to 299 seconds after the time of order receipt) and (J) (for covered orders executed from 5 minutes to 30 minutes after the time of order receipt).

[502] *See, e.g.,* final 17 CFR 242.605(a)(1)(i)(G) (requiring reporting of ''[t]he cumulative number of shares of covered orders executed less than 100 microseconds after the time of order receipt; or, for non-marketable limit orders, after the time the order becomes executable'').

[503] *See* note 496 and accompanying text (stating that most IOCs execute in less than 100 microseconds).

[504] *See, e.g.,* final 17 CFR 242.605(a)(1)(i)(G).

[505] *See, e.g.,* prior 17 CFR 242.605(a)(1)(i)(F).

[506] *See supra* note 455 and accompanying text.

[507] *See* prior 17 CFR 242.605(a)(1)(i).

[508] *See* prior 17 CFR 242.605(a)(1)(ii). For a discussion of the time-to-execution statistics in the current rule, *see supra* section III.B.3.

[509] *See* Proposing Release, 88 FR 3786 at 3903–04 (Jan. 20, 2023).

[510] *See id.* at 3904.

[511] *See id.* at 3904–05. For a discussion of the proposed modifications to time-to-execution statistics as discussed in the Proposing Release, *see supra* section III.B.3.

[512] *See, e.g.,* Prichard Letter; Varghese Letter; Welch Letter.

[513] *See* Varghese Letter.

information for these orders.[514] However, an individual investor that expressed concerns about the proposal stated that the proposed amendments to execution quality statistics ''do not address the fundamental of market fragmentation, where orders are routed to different venues depending on their likelihood of being executed quickly and cheaply.'' [515]

An industry group stated that the Commission does not appear to have considered the impact of variable tick sizes for securities, as contemplated by the proposed harmonization of quoting and trading increments discussed in the Minimum Price Increments Proposing Release, on market participants' ability to compare execution quality over several months.[516] This commenter suggested that there should be some mechanism by which investors are informed of how to interpret Rule 605 reports in situations where the tick size is recalibrated and it impacts reported execution quality.[517]

A group of academics stated that although some of the new disclosure requirements may be helpful for a subset of trades, they suggest limiting changes to the Rule 605 statistics to the new order size categories, including new categories for fractional shares and odd-lots, and E/Q statistics.[518] These commenters stated that these adjustments would reduce implementation costs and speed up adoption.[519] However, although limiting the changes to order size categories and E/Q statistics could potentially reduce costs and speed implementation, the other adopted modifications to the execution quality statistics described herein are designed to enhance the disclosures required by prior Rule 605. Even if the Commission were to limit the amendments to order sizes and E/Q statistics, preexisting market centers would still need to adjust their systems and processes to capture new information and new reporting entities would need to develop their systems and processes to capture the required execution quality statistics.

The Commission received many comments concerning specific execution quality statistics and discusses these comments below. Further, with respect to the proposed execution quality statistics in general, an academic suggested adding median data in addition to average data because, according to this commenter, ''fat tails'' can make average numbers ''highly misleading.'' [520] This commenter also generally suggested that percentages should be included along with dollar amounts.[521]

The Commission is adopting the proposed detailed execution quality statistics with several adjustments. In the subsections below, the Commission discusses the comments received and the execution quality statistics being adopted as they pertain to: (1) realized spread, (2) average effective spread, (3) percentage-based effective and realized spread, (4) effective over quoted spread, (5) size improvement, (6) riskless principal, (7) price improvement, and (8) relative fill rate.[522] In response to the commenter's suggestion to add median data and percentages, as described herein, the Commission is adopting additional statistics that will provide modified time-to-execution buckets, percentage-based statistics that will complement certain dollar-based statistics, and an average midpoint statistic that will make it possible to calculate percentages relevant to other statistics.

(a) Realized Spread

(1) Proposed Approach

Prior to these amendments, Rule 605 required calculation of average realized spread for executions of all covered orders and this metric was calculated by comparing the execution price of an order and the midpoint of the NBBO as it stands 5 minutes after the time of order execution.[523] The Commission proposed to shorten this time horizon and require that average realized spread be calculated 15 seconds and 1 minute after the time of execution in recognition of the increased speed of the contemporary market environment.[524] The Commission proposed to require realized spreads to be calculated at both intervals in order to provide relevant information for symbols with different liquidity characteristics.

(2) Final Rule and Discussion

The Commission is adopting the proposed realized spread time horizons of 15 seconds and 1 minute for the realized spread statistics required for all order types. After considering comments received, the Commission is also adding shorter time horizons of 50 milliseconds and 1 second, and additionally retaining preexisting Rule 605's requirement to calculate realized spread 5 minutes after the time of order execution. In total, there will be five realized spread time horizons: 50 milliseconds, 1 second, 15 seconds, 1 minute, and 5 minutes.

A national securities exchange, an investor advocacy group, and an individual investor supported the proposed changes to realized spread.[525] However, an industry group and two broker-dealers opposed the continued inclusion of realized spread statistics and recommended that the Commission remove these statistics from Rule 605's reporting requirements.[526] The industry group stated that it was concerned that this data element is being misused as a proxy for certain firm profits.[527] One of the broker-dealers stated that ''the Commission's assertion that realized spread can serve as a proxy for liquidity provider profitability has been thoroughly discredited, including by academic research.'' [528] The other broker-dealer stated that realized spread statistics are not a measure of profitability because they ignore inputs that impact profitability, including inventory holding costs, fixed costs, and transaction rebates and fees.[529] This commenter further stated that ''there is

[514] *See* Genco Letter.

[515] *See* Gillmore Letter. The proposed changes to Rule 605's execution quality metrics are not intended to reduce market fragmentation. Instead, the Commission expects that these changes will ameliorate the potentially adverse effects of market fragmentation on efficiency, price transparency, best execution of investor orders, and order interaction.

[516] *See* SIFMA Letter II at 20.

[517] *See id.* at 21. The Commission is still considering the proposal to change tick sizes discussed in the Minimum Pricing Increments Proposing Release.

[518] *See* Professor Schwarz et al. Letter at 5.

[519] *See id.*

[520] *See* Angel Letter at 4.

[521] *See id.*

[522] For a discussion of the time-to-execution statistics that the Commission is adopting and the changes made to those statistics as compared to what was proposed, *see supra* section III.B.3. For a discussion of the cumulative notional value of covered orders statistic that the Commission is adopting, *see supra* notes 376–378 and accompanying text.

[523] *See* Proposing Release, 88 FR 3786 at 3814 (Jan. 20, 2023). For buy orders, realized spread was calculated as double the amount of difference between the execution price and the midpoint of the NBBO 5 minutes after the time of order execution. For sell orders, realized spread was calculated as double the amount of difference between the midpoint of the NBBO 5 minutes after the time of order execution and the execution price. *See id.*

[524] *See id.* at 3815.

[525] *See* Better Markets Letter at 8; Nasdaq Letter at 44; Pritchard Letter. *See also* Schwab Letter III at 3 (supporting the inclusion of realized spread statistics in the summary report to provide ''better transparency regarding the distinct characteristics of order flow among brokers'').

[526] *See* SIFMA Letter II at 31; Rule 605 Citadel Letter at 8; Virtu Letter II at 11.

[527] *See* SIFMA Letter II at 31.

[528] Rule 605 Citadel Letter at 8–9 (stating that realized spread does not consider the actual exit trade, does not account for fixed or variable costs, and cannot compare a large ''parent'' order with smaller ''child'' orders).

[529] *See* Virtu Letter II at 11–12.

a risk that such measurements are improperly used . . . as a proxy for liquidity providers' profitability.'' [530]

The Commission observes that commenters to the original Rule 11Ac1–5 proposal also questioned the usefulness of a realized spread statistic and recommended that it be eliminated.[531] When adopting Rule 11Ac1–5, the Commission stated that average realized spread is an essential measure for evaluating a market center's order execution practices.[532] Average realized spread remains an essential measure for evaluating execution quality because it measures the portion of the spread that liquidity providers earn in excess of adverse selection.[533] Liquidity providers' adverse selection risk represents the risk that market prices will move against them before they can unwind their accumulated positions. A lower average realized spread can indicate that prices have moved in a direction more adverse to the liquidity provider after the order was executed. Thus, a low average realized spread can indicate that a liquidity provider was providing liquidity at a time when prices were moving against it. In addition, average realized spread can provide useful information about the type of order flow a larger broker-dealer receives because smaller (or even negative) realized spreads reflect that liquidity providers are earning less of the spread from their liquidity provisions, which is usually a reflection of order flow with greater adverse selection risk. Therefore, the Commission is retaining the metric, and is adopting the 15 second and 1 minute time horizons as proposed along with additional time horizons as discussed below, to make the metric more useful in relation to current market speeds.

The Commission stated in the Proposing Release that to the extent realized spreads capture adverse selection costs faced by liquidity providers, they provide a measure of the potential profitability of trading for liquidity providers.[534] The Commission does not maintain that realized spread is a measure of a firm's overall profitability.[535] Instead, realized spread statistics allow market participants to identify those market centers willing to supply liquidity during stressed markets or when prices are moving quickly, and to evaluate larger broker-dealers' order execution or routing practices, as well as to understand the type of order flow a particular broker-dealer may be handling. One commenter, in the context of summary reports, stated that realized spread can be used to calculate price impact (when combined with effective spread statistics), which ''would provide better transparency regarding the distinct characteristics of order flow among brokers.'' [536] For both market centers and larger broker-dealers, realized spread can allow market participants to control for the extent to which orders submitted by persons with better information than is generally available in the market are routed to different market centers or received by different broker-dealers, as compared to orders submitted by persons without an information advantage. Orders submitted by persons with such an information advantage represent a substantial risk to liquidity providers that take the other side of the position.

Several commenters discussed the proposed time horizons for measuring realized spread. An investor advocacy group stated the 15 second and 1 minute time horizons ''better capture the reality of today's fast-paced market transactions and align well with the available academic literature.'' [537] An industry group stated that the Commission has not provided a rational basis for its method of calibrating the realized spread timeframes and, in particular, has not appropriately analyzed inventory turnover, thereby making the proposed 15 second and 1 minute timeframes arbitrary with respect to inventory turnover.[538] A broker-dealer stated that ''[r]ealized spread assumes that liquidity providers exit each position in a costless manner at the end of a fixed period and is highly dependent on the time horizon used to make the calculation'' and questioned the Commission's choice of 15 seconds and 1 minute.[539] This commenter stated that ''[w]hile mark-out metrics like realized spread might have limited use in comparing samples of otherwise substantially similar order flow, these metrics become largely useless when attempting to compare different types of order flow or market centers.'' [540] Another broker-dealer stated that it is unclear what the Commission's basis is for ''bluntly'' measuring realized spreads at 15 seconds and 1 minute.[541] Another investor advocacy group recommended that to best identify adverse selection, realized spread should be calculated on even shorter time horizons, including 50 milliseconds and 100 milliseconds.[542]

As discussed in the Proposing Release, requiring realized spread information at different time horizons will provide investors with relevant information for more liquid stocks and more thinly traded stocks.[543] The Commission selected the 15 second and 1 minute time horizons for calculating realized spread based on its own analysis, which was supported by several commenters and aligned with existing academic literature.[544] However, several commenters questioned the Commission's basis for measuring realized spreads at 15 seconds and 1 minute.[545] In the Proposing Release, the Commission acknowledged that both shorter (50 millisecond, 100 millisecond) and longer (3 minute, 5 minute) time horizons would provide useful information for certain groups of stocks, but stated that each additional time horizon adds computational burden and increases the size and complexity of

[530] *Id.* at 12.

[531] *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75424 (Dec. 1, 2000).

[532] *See id.*

[533] *See infra* note 1230 and accompanying text.

[534] *See* Proposing Release, 88 FR 3786 at 3814 (Jan. 20, 2023).

[535] *See infra* note 1232 and accompanying text.

[536] Schwab Letter III at 3. Similarly, an industry group advocated including realized spread statistics in the summary report in order to provide a means of assessing the impact of order flow that market participants may classify as more or less informed as well the size of an order relative to the average daily value of the stock. *See* FIF Letter at 31–32. Because realized spreads will be measured using the price at the time of order execution, and effective spreads will be measured using the price at the time of order receipt (or order executability, in the case of NMLOs and midpoint-or-better limit orders), the decomposition of realized spreads into effective spreads and price impact will not be exact. *See infra* note 1484 for further discussion.

[537] Better Markets Letter at 8.

[538] *See* SIFMA Letter II at 31–32. This commenter further stated that it does not believe a one-size-fits-all metric can work because market participants have different views regarding the appropriate time periods for measuring realized spread and the appropriate period can vary based on the specific symbol or type of order flow involved. *See id.* at 32.

[539] *See* Rule 605 Citadel Letter at 8.

[540] *Id.*

[541] *See* Virtu Letter II at 12.

[542] *See* Healthy Markets Letter at 17.

[543] *See* Proposing Release, 88 FR 3786 at 3815–16 (Jan. 20, 2023).

[544] *See id.* at 3814, n.367 (*citing* Jennifer S. Conrad & Sunil Wahal, *The Term Structure of Liquidity Provision*, 136(1) J. Fin. Econ. 239–259 (2020)) and at 3815. In response to the commenter's statement that the Commission has not appropriately analyzed inventory turnover (*see supra* note 538 and accompanying text), the Commission observes that although an ideal measurement horizon would align with the amount of time that an average liquidity provider holds only inventory positions established from providing liquidity, these data are not easily observable. *See infra* note 1489 and accompanying text. Instead, the Commission's analysis of realized spreads in the Proposing Release was based on the theoretically motivated and empirically observed decline in realized spreads over increasing time horizons, similar to the academic literature. *See infra* notes 1490–1491 and accompanying text.

[545] *See supra* notes 537–541 and accompanying text.

reports.[546] Further, in the Proposing Release, the Commission analyzed the decline in realized spreads of increasing time horizons in order to determine when a significant percentage of the decline in realized spread had been captured.

The Commission replicated its realized spread analysis from the Proposing Release, using data from Q1 2023, and in both analyses the cumulative decline in realized spread captured at different time horizons varies by market capitalization.[547] These results indicate that, consistent with the Commission's statement in the Proposing Release,[548] both shorter and longer time horizons than those proposed will provide useful information for certain subsets of stocks.

After consideration of the comments and the Commission's original and updated analysis, the Commission is adopting two shorter time horizons (50 milliseconds and 1 second) and one longer time horizon (5 minutes, consistent with prior Rule 605) in addition to the two time horizons that were proposed (15 seconds and 1 minute).[549] The time horizons of 50 milliseconds and 1 second are in line with the commenter's suggestion that the Commission include shorter time horizons to better capture adverse selection.[550] Further, as discussed below, the 50 millisecond time horizon is appropriate for large capitalization stocks. The 1 second time horizon offers another point of comparison along the range of time horizons and aligns with a realized spread measure that industry analysts often use.[551] The Commission is also adopting the requirements to calculate realized spread at 15 seconds and 1 minute, which were the time horizons proposed. Finally, the Commission is retaining the requirement in place prior to the amendments to calculate realized spread at 5 minutes. The results of the Commission's replicated realized spread analysis continue to show that a 5 minute time horizon is informative for illiquid stocks.[552] Thus, requiring realized spread at five time horizons will better capture variation [553] among different capitalization stocks with different liquidity profiles than the two proposed thresholds alone.

In response to commenters critical of the Commission's basis for its selection of realized spread time horizons,[554] the Commission performed additional empirical analyses of optimal realized spread time horizons for robustness. The Commission examined the amount of noise in price impact measures to analyze the time horizon that incorporates the lowest amount of noise into measurements of price impact.[555] For the largest stocks, the signal-to-noise ratio begins to decline immediately, even at very fast time horizons.[556] This latter result supports including a very fast time horizon, such as 50 milliseconds, consistent with a comment received.[557] However, the ratio starts to flatten out after the 1 minute horizon for smaller stocks and for medium to large stocks after 15 seconds.[558] Further, for the two smaller stock groups, the results show a small but steady increase in the signal-to-noise ratio as the time horizon increases, implying that realized spread measures are becoming more informative as the noise in the price impact component decreases. This result supports including a longer time horizon, *i.e.*, 5 minutes, which maximizes the signal-to-noise ratio for these stocks.[559] These additional empirical analyses also support a range of realized spread time horizons, consistent with the amended time horizons.

(b) Average Effective Spread

(1) Proposed Approach

Prior to these amendments, Rule 605 required firms to calculate average effective spread for market and marketable limit order types only.[560] Preexisting Rule 600(b)(8) defined ''average effective spread'' as the share-weighted average of effective spreads for order executions calculated, for buy orders, as double the amount of difference between the execution price and the midpoint of the national best bid and national best offer at the time of order receipt and, for sell orders, as double the amount of difference between the midpoint of the national best bid and national best offer at the time of order receipt and the execution price.[561]

The Commission proposed to expand effective spread reporting requirements to require that firms report average effective spread statistics for all covered orders, and to modify the methodology for calculating this metric for executable NMLOs, beyond-the-midpoint limit orders, and executable stop orders.[562] Specifically, the Commission proposed to revise the definition of ''average effective spread'' to provide that, for order executions of NMLOs [563] and orders submitted with stop prices, average effective spread be calculated from the time the order becomes executable.[564]

(2) Final Rule and Discussion

The Commission is adopting a requirement to report effective spread statistics for marketable order types (*i.e.,* market orders, marketable limit orders, and marketable IOCs), marketable stop order types, and midpoint-or-better order types, but is not adopting the proposal to expand the effective spread reporting requirement to other non-marketable order types. For marketable

[546] *See* Proposing Release, 88 FR 3786 at 3816 (Jan. 20, 2023).

[547] *See id.*; *infra* Table 7. In the Proposing Release, the analysis showed that most of the difference in realized spread was captured for the largest stocks at 15 seconds, and more than half of the difference was captured for smaller cap stocks at one minute. *See* Proposing Release, 88 FR 3786 at 3815 (Table 1) (Jan. 20, 2023). Similarly, the analysis using Q1 2023 data shows approximately 90% of the cumulative decline in realized spread is captured by the 15-second horizon for the largest market capitalization group, compared to only about 50% for the smaller market capitalization groups. At the one-minute horizon, approximately 75% of the realized spread is captured for the smaller market capitalization groups. *See infra* Table 7.

[548] *See* Proposing Release, 88 FR 3786 at 3816 (Jan. 20, 2023).

[549] *See also infra* notes 833–838 and accompanying text for discussion of the addition of average realized spread to the summary report.

[550] *See supra* note 542 and accompanying text (suggesting that realized spread should be calculated on even shorter time horizons, including 50 milliseconds and 100 milliseconds). The Commission considered 50 and 100 millisecond time horizons as part of its updated analysis, consistent with the commenter's suggestion to add 50 and 100 millisecond time horizons (*see infra* note 1492), but, based on this analysis, determined that one very fast time horizon, such as 50 milliseconds, among a wider range of time horizons will be beneficial, for the reasons described below.

[551] *See, e.g., Bringing the Power of Signal V6 to D-Limit,* IEX (Oct. 31, 2023), *available at https://www.iex.io/article/bringing-the-power-of-signal-v6-to-d-limit;* Mackintosh, Phil, *What Markouts Are and Why They Don't Always Matter*, Nasdaq (July 2020) *available at https://www.nasdaq.com/articles/what-markouts-are-and-why-they-dont-always-matter-2020-07-23*; and Mackintosh, Phil, *All-in Economics to Trade Are What Matters Most, available at https://www.nasdaq.com/articles/all-in-economics-to-trade-are-what-matters-most.*

[552] *See infra* Table 7.

[553] Offering a range of realized spread time horizons is also consistent with industry practice, in which a range of time horizons is used to compare adverse selection with so-called ''mark-out curves.'' *See, e.g., supra* note 551.

[554] *See supra* notes 538 and 541.

[555] *See infra* Figure 22 and Figure 23.

[556] *See infra* Figure 23.

[557] *See supra* note 542.

[558] *See infra* Figure 23.

[559] *See id.*

[560] *See* prior 17 CFR 242.605(a)(1)(ii)(A).

[561] See prior 17 CFR 242.600(b)(8).

[562] *See* Proposing Release, 88 FR 3786 at 3816 (Jan. 20, 2023).

[563] *See* proposed Rule 600(b)(10). As proposed, beyond-the-midpoint limit orders would have been a type of NMLO. *See* Proposing Release, 88 FR 3786 at 3816, n.385 (Jan. 20, 2023).

[564] *See* proposed Rule 600(b)(10). *See also* Proposing Release, 88 FR 3786 at 3816 (Jan. 20, 2023).

stop order types and midpoint-or-better order types, average effective spread will be measured from the time that the order becomes executable.

One broker-dealer suggested that the Commission should reconsider whether to require firms to report effective spread statistics for NMLOs because ''effective spread is not widely accepted as a meaningful measure of execution quality for NMLOs.'' [565] This commenter stated that the proposed effective spread metric for NMLOs does not measure a dimension of execution quality that is likely to differ across market centers or be affected much by where an order is routed.[566] This commenter further stated that ''[f]or orders submitted outside the NBBO, [effective spread] essentially amounts to negative one times the quoted spread at the moment the order becomes executable'' and ''shows better execution when the quoted spread is wider.'' [567]

After consideration of the comments, the Commission is adopting a modified version of the proposed amendments. The Commission is adopting amendments that will expand effective spread reporting requirements to include marketable stop order types and midpoint-or-better order types, in addition to market and marketable limit order types as required by the preexisting rule. However, the Commission is not adopting the proposed requirement to require average effective spread statistics for all covered orders, and thus is not requiring reporting for other non-marketable order types. The Commission is also revising the proposed definition of ''average effective spread'' to specify that, for order executions of marketable stop order and midpoint-or-better limit orders, average effective spread is calculated from the time the order becomes executable. In effect, the adopted amendments require average effective spread for all marketable order types (*i.e.,* market orders, marketable limit orders, and marketable IOCs), marketable stop orders, and midpoint-or-better order types.

The Commission acknowledged in the Proposing Release that average effective spread for NMLOs and orders submitted with stop prices would measure something different than the average effective spread for marketable order types.[568] Generally, because these orders are less aggressively priced, average effective spread would not measure the price paid for immediacy of execution as it would for marketable order types.[569] Instead it would provide a measure of the amount a liquidity provider could expect to earn for providing liquidity.[570] As the commenter states, this amount would generally vary based on the width of spread, which is outside the control of the reporting entities that are receiving orders for execution. Therefore, average effective spread for NMLOs and stop NMLO orders may not provide a useful measure to distinguish between market centers or larger broker-dealers and thus the Commission has determined not to adopt this proposed metric. The exception is with respect to midpoint-or-better limit orders, which in some cases behave more like marketable orders.[571] Similar to market and marketable limit orders, some inside-the-quote limit orders are submitted by traders with the intention of executing immediately, in this case against hidden or odd-lot inside-the-quote liquidity. Because midpoint-or-better order types are more aggressively priced, the average effective spread metric will also measure the price these orders could expect to pay for immediacy. Further, requiring average effective spread for midpoint-or-better order types is consistent with requiring the same statistics for this order type as are required for marketable order types (for example, price improvement statistics).

Finally, because marketable stop orders will be either market orders or marketable limit orders at the time they are triggered (*i.e.,* at the time they are executable), measuring effective spread from the point of executability will also measure the price these orders pay for immediacy once triggered. Therefore, as described in section III.A.2.b) above, the Commission is requiring the same statistics for marketable stop orders as for other marketable order types, including average effective spread.

(c) Percentage Spreads (Effective and Realized)

(1) Proposed Approach

Prior to these amendments, Rule 605 statistics included the average realized spread and average effective spread for executions of covered orders, and these statistics provide dollar-based spread data.[572] The Commission proposed to add a requirement that effective spread and realized spread also be reported as percentages.[573] The proposed definitions for ''average percentage effective spread'' and ''average percentage realized spread'' would have: (1) utilized the dollar-based effective and realized spread statistics for the numerator; (2) utilized the midpoint of the NBBO at either the time of order receipt (for marketable order types) or the time an order first becomes executable (for non-marketable order types) as the denominator; and (3) then the result would be averaged on a share-weighted basis for the month.[574]

(2) Final Rule and Discussion

The Commission is adopting the proposed requirement to disclose percentage-based spread statistics for average realized spread and average effective spread. However, the Commission is modifying the proposed definitions of ''average percentage effective spread'' and ''average percentage realized spread'' to use a new defined term (''average midpoint'') in the denominator. Doing so will eliminate any ambiguity about how to calculate these statistics, as described in more detail below. In addition, the Commission is making the percentage effective spread statistic applicable to marketable order types, marketable stop order types, and midpoint-or-better limit order types only, rather than all order types as proposed. Further, the Commission is adding a requirement to include an average midpoint statistic, which serves as the denominator of percentage-based spread statistics, in the detailed reports required pursuant to Rule 605(a)(1).

An investor advocacy group stated that a percentage-based spread measure would provide additional information where there is a significant price change in a security during the month.[575] In addition, an industry group stated its agreement with the approach proposed by the Commission for calculating average percentage effective spread.[576] Specifically, this commenter described share-weighted average percentage spread as the sum of effective spread per share times shares executed divided by the sum of the midpoint times shares executed.[577]

[565] Virtu Letter II at 12. *See also infra* notes 609–611 and accompanying text (describing a commenter's suggestion that the Commission remove reporting of E/Q for all orders and not add price improvement statistics for non-marketable group orders).

[566] See Virtu Letter II at 12.

[567] Id.

[568] *See* Proposing Release, 88 FR 3786 at 3816 (Jan. 20, 2023).

[569] *See id.*

[570] *See id.*

[571] *See infra* note 1209 and accompanying text.

[572] *See* prior 17 CFR 242.605(a)(1)(i)(K) and (a)(1)(ii)(A).

[573] *See* Proposing Release, 88 FR 3786 at 3816 (Jan. 20, 2023).

[574] *See id.* at 3816-17.

[575] *See* Better Markets Letter at 8.

[576] *See* FIF Letter at 29.

[577] *See id.*

The Commission continues to believe including percentage-based statistics for effective spread and realized spread, in addition to the dollar-based statistics in the existing report, will account for differing underlying stock prices and better facilitate comparisons of spread statistics across different time periods and securities.[578] In order to simplify the definitions and eliminate ambiguity about how to calculate percentage-based spread statistics, and because the Commission is requiring the separate disclosure of an average midpoint statistic as described below, the Commission is modifying the adopted definitions of ''average percentage effective spread'' and ''average percentage realized spread'' to use defined terms. As proposed, both percentage-based spread statistics would have been share-weighted and used as their denominator the midpoint of the national best bid and national best offer at the time of order receipt or, for non-marketable limit orders, beyond-the-midpoint limit orders, and orders submitted with stop prices, at the time such orders first become executable.[579]

A commenter stated it interpreted the definition of share-weighted average percentage spread as the ratio of share-weighted effective spread divided by share-weighted midpoint.[580] However, based on the commenter's interpretation, the Commission acknowledges that it is ambiguous whether the modifier ''share-weighted'' in the proposed amendment applied to: (1) the percentage calculation (*i.e.*, calculating the percentage effective spread or percentage realized spread for each transaction and then share-weighting such percentage); [581] or (2) each of the denominator and the numerator (*i.e.,* calculating the share-weighted average effective or realized spread and dividing that by the share-weighted midpoint).[582] Therefore, in order to simplify these definitions and eliminate ambiguity as to how percentage-based spread statistics will be required to be calculated, and consistent with the commenter's interpretation of how to calculate this statistic, the Commission is modifying the definitions of ''average percentage effective spread'' and ''average percentage realized spread'' from the definitions proposed.

Specifically, ''average percentage effective spread'' will be defined as the average effective spread [583] for order executions divided by the average midpoint for order executions.[584] ''Average percentage realized spread'' will be defined as the average realized spread [585] for order executions divided by the average midpoint for order executions.[586] As proposed, the definitions of ''average percentage effective spread'' and ''average percentage realized spread'' used as their numerators the share-weighted effective spread and the share-weighted realized spread, respectively.[587] However, because ''average effective spread'' and ''average realized spread'' are defined as share-weighted averages, the Commission is instead using the defined terms ''average effective spread'' and ''average realized spread'' as the numerator in order to simplify the adopted definitions of ''average percentage effective spread'' and ''average percentage realized spread.'' Instead of repeating the same definition of average midpoint in each of the percentage-based spread definitions as proposed, the Commission is adopting the defined term ''average midpoint'' and will use this term in the denominator (*i.e.*, average midpoint for order executions). ''Average midpoint'' will be defined as the share-weighted average of the midpoint of the national best bid and national best offer at either the time of order receipt or, for non-marketable limit orders, midpoint-or-better limit orders, and orders submitted with stop prices, at the time such orders first become executable.[588] The term ''average midpoint'' as applied to order executions will be substantively the same as the proposed denominator for the percentage-based spread statistics.[589] Further, the Commission is adding an average midpoint statistic to the detailed report required by Rule 605(a)(1) so that certain statistics in the summary report—namely, average midpoint and the percentage-based statistics—will be derivable from the detailed report,[590] as suggested by commenters.[591] With the detailed report containing the information necessary to calculate the statistics in the summary report, market participants and other users of the reports will be able to recalculate the statistics in the summary report with different subsets of data.

Finally, the Commission is requiring average percentage effective spread only for marketable order types, marketable stop order types, and midpoint-or-better order types for the same reasons that the Commission is requiring average effective spread only for these order types.[592]

(d) Effective over Quoted Spread (E/Q)

(1) Proposed Approach

Effective over quoted spread (''E/Q'') can be derived from Rule 605 reports required prior to these amendments, but the prior Rule did not require the reporting of E/Q or quoted spread.[593] The Commission proposed to require, for executions of all covered orders, that reporting entities report the average E/Q, expressed as a percentage, for all marketable and non-marketable order types.[594] The proposed definition ''average effective over quoted spread'' would have required the computation of a share-weighted average E/Q by dividing effective spread by quoted spread for each transaction and then averaging that over the month (weighted by number of shares).[595] The quoted spread would have been the difference between the national best bid and the national best offer at either the time of order receipt (for marketable order types) or the time an order first becomes executable (for non-marketable order types).[596]

(2) Final Rule and Discussion

The Commission is adopting a statistic for average E/Q, expressed as a percentage, but with a modified

[578] *See* Proposing Release, 88 FR 3786 at 3816-17 (Jan. 20, 2023).

[579] *See id.* at 3817; proposed Rule 600(b)(11) (average percentage effective spread) and proposed Rule 600(b)(12) (average percentage realized spread).

[580] *See supra* note 577.

[581] *See* Proposing Release, 88 FR 3786 at 3817, n.392 (Jan. 20, 2023) and accompanying text (stating the percentage would be averaged on a share-weighted basis).

[582] *See id.* at 3816–17 (stating ''this [referring to the denominator] would then be averaged on a share-weighted basis for the month'').

[583] *See* final 17 CFR 242.600(b)(8).

[584] *See* final 17 CFR 242.600(b)(10). *See also* 17 CFR 242.600(b)(9) (defining average midpoint).

[585] *See* final 17 CFR 242.600(b)(13).

[586] *See* final 17 CFR 242.600(b)(11).

[587] *See* Proposing Release, 88 FR 3786 at 3816 (Jan. 20, 2023); proposed Rule 600(b)(11) (average percentage effective spread) and proposed Rule 600(b)(12) (average percentage realized spread).

[588] *See* final 17 CFR 242.600(b)(9). The Commission is modifying the order types listed in the definition of average midpoint from the definition that was proposed to be included in both percentage-based spread statistics in order to conform to the order types adopted herein. *See supra* section III.B.2.

[589] The definition includes ''share-weighted'' to make clear that average midpoint is also a share-weighted statistic. *See* final 17 CFR 242.600(b)(9).

[590] *See* final 17 CFR 242.605(a)(1)(i)(Y); final 17 CFR 242.605(a)(2)(vi), (vii), (viii), (x), and (xi).

[591] *See infra* note 769 and accompanying text.

[592] *See supra* notes 568–571 and accompanying text.

[593] *See* Proposing Release, 88 FR 3786 at 3817 (Jan. 20, 2023).

[594] *See id.* E/Q is generally expressed as a percentage that represents how much price improvement an order received. An E/Q of 100% means a buy order was executed at the national best offer or a sell order was executed at the national best bid, and an E/Q of 0% means an order was executed at the midpoint of the NBBO. *See id.*

[595] *See id.*

[596] *See id.*

weighting methodology to utilize spread-based weighting rather than the proposed weighting methodology of share-weighting the E/Q for each transaction. In addition, the Commission is making the average E/Q statistic applicable to marketable order types, marketable stop order types, and midpoint-or-limit order types only, instead of all order types. Further, the Commission is adding a requirement to include average quoted spread, which is the denominator of average E/Q, in the detailed reports required pursuant to Rule 605(a)(1).

A financial services firm stated that E/Q is a ''very common metric used within the industry to judge execution quality'' and that it ''does a good job of providing a normalized comparison of price improvement relative to the price improvement opportunity.'' [597]Another financial services firm stated that ''E/Q directly quantifies how much of the spread the broker secures for its investor-client'' and ''[i]ncluding E/Q on Rule 605 reports will enable investors to make 'apples to apples' comparisons of execution quality.'' [598] In addition, an investor advocacy group stated that requiring a separate field in Rule 605 reports for E/Q allows market participants to compare price improvement statistics across securities and across market centers and broker-dealers.[599]

However, several commenters recommended that the Commission require spread-based weighting, rather than share-based weighting, for the calculation of average E/Q and indicated that the industry uses spread-based weighting when calculating E/Q.[600] One industry group stated that spread-based weighting ''results in the same amount of E/Q being reported for the same aggregate dollar amount of E/Q being provided.'' [601] This commenter further stated that the method of weighting can influence the reported E/Q metrics and, using share-based or notional-based weighting, a firm that provides a lower aggregate dollar amount of price improvement relative to a second firm could result in the first firm reporting a lower E/Q than the second firm, even though this lower E/Q would not reflect that customers received better executions.[602] Another industry group stated that a share-weighting formula would tend to weigh sub-dollar stocks more heavily and could allow a firm to manipulate its average E/Q by adjusting the type of stocks for which it provides better price improvement.[603] This commenter also stated that using a spread-weighting formula would preserve the relationship between price improvement in dollars and E/Q and therefore the firm's E/Q would remain the same regardless of how the firm distributes its price improvement among different stocks.[604]

Similarly, a financial services firm stated share-weighting detaches E/Q from the ability to understand it in the context of the opportunity for price improvement and this ''opens the door for possible manipulation of results.'' [605] This commenter also stated that wholesalers' discretionary price improvement dollars are fungible and that share-weighting of E/Q would result in an incentive to provide more price improvement on narrow spread securities and less price improvement on wide spread securities.[606] A broker-dealer stated that a share-weighted methodology may incentivize market participants to allocate price improvement to lower priced securities with narrower quote spreads.[607] This commenter recommended the use of a spread-weighted average because a spread-weighted average would be tied to the total price improvement delivered in dollars and unaffected by how that price improvement is allocated among different symbols.[608]

An industry group and a financial services firm suggested that Rule 605 reports not include E/Q and leave it to users of the report to calculate E/Q from other statistics that are currently included in the reports.[609] The industry group further stated that the Commission was inconsistent when it proposed requiring the reporting of E/Q for non-marketable order types but not requiring the reporting of price improvement statistics for such order types.[610] This commenter provided four alternative approaches to address this perceived inconsistency, but did not recommend two of the alternatives because they required the reporting of E/Q and did not recommend a third alternative because, according to the commenter, price improvement is only a relevant statistic for marketable orders.[611]

After review of the comments, as stated above, the Commission is adopting a requirement that Rule 605 reports include a statistic for average E/Q, expressed as a percentage, but is adjusting the weighting methodology from the proposal. The Commission is adopting a spread-weighted average E/Q statistic, consistent with commenters' suggestions.[612] In addition, the Commission is requiring average E/Q only for marketable order types, marketable stop order types, and midpoint-or-better order types, rather than all order types as proposed. Because spread-weighted average E/Q is the same as average effective spread divided by average quoted spread, in lieu of creating a separate definition for ''average effective over quoted spread'' as proposed, Rule 605 as adopted specifies that the required statistics for marketable order types, marketable stop order types, and midpoint-or-better order types include, for executions of covered orders, the average effective spread divided by the average quoted spread, expressed as a percentage.[613] The Commission is also requiring that Rule 605 reports include a reported statistic for average quoted spread and is defining ''average quoted spread'' as the share-weighted average of the difference between the national best offer and the national best bid at the time of order receipt or, for order executions of non-marketable limit orders,[614] the difference between the

[597] Schwab Letter II at 31.

[598] Vanguard Letter at 4.

[599] *See* Better Markets Letter at 8.

[600] *See* FIF Letter at 23; SIFMA Letter II at 27; Schwab Letter II at 31; Schwab Letter III at 4; Rule 605 Citadel Letter at 5.

[601] FIF Letter at 23.

[602] *See id.* at 23–24.

[603] *See* SIFMA Letter II at 27.

[604] *See id.*

[605] Schwab Letter III at 4.

[606] *See* Schwab Letter II at 31; Schwab Letter III at 4.

[607] *See* Rule 605 Citadel Letter at 5.

[608] *See id.* This commenter provided examples of how the same amount of price improvement in dollars can generate different share-weighted average E/Q statistics depending on the symbols to which it is allocated, whereas spread-weighting yields the same E/Q in each scenario. *See id.* at 5, 13.

[609] *See* FIF Letter at 20–21 (stating that for marketable order types, it is not necessary to include E/Q in the detailed reports required by Rule 605(a)(1) because E/Q can be derived from other data that is already included and this data, specifically, is found in the price improvement, price dis-improvement, and effective spread statistics); Schwab Letter II at 31 (suggesting that the reports include effective spread and quoted spread and then allow individuals to compute E/Q).

[610] *See* FIF Letter at 21. As described in supra section III.B.4.b)(2), the Commission is requiring effective spread statistics only for marketable order types, marketable stop order types, and midpoint-or-better order types, rather than all order types as proposed. As described in more detail below, the Commission is requiring E/Q only for these same order types. Further, the required statistics for each of these order types also include price improvement statistics. *See* final 17 CFR 605(a)(1)(ii)(E) through (L). Therefore, there are no order types for which Rule 605 will require the reporting of E/Q but not price improvement statistics.

[611] *See* FIF Letter at 21.

[612] *See* supra notes 600–608 and accompanying text.

[613] *See* final 17 CFR 242.605(a)(1)(ii)(D).

[614] Because the requirement to report average quoted spread applies only to market orders, marketable limit orders, marketable IOCs, marketable stop order types, and the midpoint-or-

national best offer and the national best bid at the time such orders first become executable.[615] Thus, Rule 605 as adopted also will specify that the required statistics for marketable order types, marketable stop order types, and midpoint-or-better order types include, for executions of covered orders, average quoted spread.[616]

The Commission agrees with commenters that the use of a spread-weighting methodology will provide a consistent measure of E/Q that will not vary based on the specific symbols to which price improvement is allocated.[617]The adopted methodology will avoid a potential incentive to allocate price improvement in a manner that would maximize the reported E/Q statistic without changing the total dollar value of the price improvement provided. Thus, the use of a spread-weighted average E/Q is consistent with the Commission's stated goal of facilitating the comparability price improvement statistics across symbols.[618] In addition, the Commission acknowledges that the industry generally uses spread-weighting when calculating E/Q[619] and thus, as stated by a commenter, will provide a ''normalized comparison of price improvement relative to the price improvement opportunity'' [620] that is consistent with existing industry practice.

The adopted definition of ''average quoted spread'' is the same as the description of ''total quoted spread'' that was embedded in the proposed definition of ''average effective over quoted spread,'' with two modifications from the embedded definition as proposed.[621] First, the Commission is specifying that average quoted spread is a share-weighted average. Second, the Commission is limiting the list of order types for which the average quoted spread will be required to be measured at the time the order first becomes executable to conform to the order types being adopted herein. The inclusion of an average quoted spread statistic in Rule 605 reports will provide an additional piece of information that market participants and other users of the reports can use to evaluate execution quality. Moreover, in response to the commenters who stated that E/Q could be calculated using the effective spread and quoted spread statistics and that the Commission should allow users to derive E/Q,[622] as stated in the Proposing Release, E/Q is a relatively simple metric to capture contemporaneously with execution and requiring a separate field for E/Q will increase the ability of market participants to access and utilize E/Q to compare price improvement statistics across securities, and across market centers and broker-dealers.[623]

In addition, because effective spread is a necessary input into E/Q, the Commission is not adopting the application of E/Q to non-marketable order types other than midpoint-or-better order types (and marketable stop order types, which are generally non-marketable orders upon receipt).[624] Accordingly, the Commission will include E/Q within the statistics required for marketable order types, marketable stop order types, and midpoint-or-better order types only.[625]

(e) Size Improvement

(1) Proposed Approach

Prior to the amendments, Rule 605 reports included price improvement metrics but did not include any statistics that directly measured whether orders received an execution of more than the displayed size at the quote.[626] The Commission proposed adding a benchmark metric that would, in combination with information about shares executed, indicate the level of ''size improvement,'' *i.e.,* the extent to which orders received an execution at prices at or better than the quote for share quantities greater than the displayed size at the quote.[627] Specifically, the Commission proposed requiring the reporting of the cumulative number of shares of the full displayed size of the protected bid at the time of execution, in the case of a market or limit order to sell; and of the full displayed size of the protected offer at the time of execution, in the case of a market or limit order to buy.[628] As proposed, for each order, the share count would have been capped at the order size if the full displayed size of the national best bid or national best offer is larger than the order.[629] The Commission explained that the proposed size improvement benchmark metric could be combined with information about the number of shares executed at or above the quote to measure a market center or broker-dealer's ability to offer customers execution at the quote (or better), even when there is no depth available at that price.[630]

(2) Final Rule and Discussion

The Commission is adopting a modified version of the proposed size improvement benchmark metric that measures the displayed size at the time of order receipt (or the time the order becomes executable for midpoint-or-better order types) instead of measuring the displayed size at the time of order execution as proposed. The Commission is also modifying the proposed size improvement benchmark metric by having it apply only to marketable order types, marketable stop order types, and midpoint-or-better order types rather than all order types, as proposed. Finally, based on comments received, the Commission is adopting an additional size improvement metric (as discussed below, ''size improved outsized shares'') that was not part of the proposal and indicates the amount of size improvement in those instances in which an order could have received size improvement.

Several commenters supported adding a requirement that Rule 605 reports include the proposed size improvement benchmark metric.[631] A broker-dealer

better order types, the only non-marketable limit orders this will apply to are the midpoint-or-better order types and marketable stop order types (which are non-marketable until triggered). *See* final 17 CFR 242.605(a)(1)(ii)(A).

[615] *See* final 17 CFR 242.600(b)(12); final 17 CFR 242.605(a)(1)(ii)(A); final 17 CFR 242.605(a)(2)(viii). See also infra notes 817–827 and accompanying text for discussion of E/Q and quoted spread statistics in the summary report.

[616] *See* final 17 CFR 242.605(a)(1)(ii)(A).

[617] *See supra* notes 600–608 and accompanying text.

[618] *See* Proposing Release, 88 FR 3786 at 3817 (Jan. 20, 2023).

[619] *See supra* note 600 and accompanying text.

[620] *See supra* note 597.

[621] *See* Proposing Release, 88 FR 3786 at 3817 (Jan. 20, 2023). The substantive difference between the two is that ''average quoted spread'' as adopted will reflect the share-weighted average of quoted spreads of all transactions for the month within a reporting category, whereas ''average effective over quoted spread'' would have divided effective spread by quoted spread for each transaction and then used a share-weighted average of that number over the month. *See id.*

[622] *See supra* note 609.

[623] *See* Proposing Release, 88 FR 3786 at 3817 (Jan. 20, 2023). *See also infra* notes 1534–1537 (discussing that the concern in the Proposing Release that extrapolating an average E/Q using average effective spread and average quoted spread may lead to a noisier level of E/Q is no longer relevant with the use of a spread-weighted average E/Q).

[624] *See supra* section III.B.4.b)(2).

[625] *See* final 17 CFR.605(a)(1)(ii)(D).

[626] Although share-weighted effective spread metrics may provide information about size improvement because effective spread will be larger for orders that have to ''walk the book'' (*i.e.,* consume available depth beyond the best-priced quotes), effective spread combines both price and size information. *See* Proposing Release, 88 FR 3786 at 3817 (Jan. 20, 2023).

[627] *See id.* at 3818.

[628] *See id.;* proposed Rule 605(a)(1)(i)(F).

[629] *See* Proposing Release, 88 FR 3786 at 3818 (Jan. 20, 2023); proposed Rule 605(a)(1)(i)(F).

[630] *See* Proposing Release, 88 FR 3786 at 3818 (Jan. 20, 2023).

[631] *See* Pritchard Letter; SIFMA Letter II at 25; SIFMA AMG Letter at 6; Rule 605 Citadel Letter at

Continued

stated that the proposed size improvement metric would provide market participants with important information about an additional dimension of execution quality that is not captured by current Rule 605 statistics.[632] According to this commenter, this metric will be particularly beneficial for retail investors seeking to accurately assess execution quality delivered by wholesale broker-dealers.[633] Another broker-dealer stated that size improvement is a ''substantial benefit'' offered by broker-dealers and market makers to retail orders and ''its absence in Current Rule 605 reports means that execution quality is significantly undercounted.'' [634] This commenter requested an explanation of how fractional share orders should be addressed in certain statistics, for example size improvement statistics.[635] Another commenter stated that it supported the addition of a size improvement metric because of its significant impact on transaction costs for retail investors.[636]

An industry group stated that it agreed with the Commission on the value of including size improvement statistics, but opposed measuring size improvement based on the number of shares available at the time of execution.[637] Instead, this commenter recommended measuring size improvement against the full displayed size at the opposite side of the NBBO as of the time of order receipt (for marketable group orders) or as of the time an order becomes executable (for non-marketable group orders).[638] This commenter presented three scenarios to illustrate why it supports measuring size improvement against the full displayed size at the time of order receipt rather than at the time of execution.[639] This commenter also stated that it assumes that where an order has multiple executions, the Commission would require adding the displayed size to the benchmark metric at the time of each execution, rather than counting the displayed size for only one execution.[640]

Further, this commenter stated that a market could have protected bids and offers that are not represented in the NBBO but are at the same price as the NBBO, and these bids and offers are included in Level 1 market data.[641] This commenter also stated that it understands that when the Commission refers to the cumulative number of shares of the full displayed size of the protected bid or offer, the Commission is including in this number shares of protected bids and offers that are not represented in the NBBO but are at the same price as the NBBO.[642]

A broker-dealer stated that the proposal ''falls well short of including the necessary statistics to reflect the benefits of size improvement.'' [643] This commenter stated that the proposed size improvement metric would be inadequate because it would include all orders in the calculation, even when there is no opportunity to provide size improvement, and thereby would dilute the amount and obfuscate the value of size improvement provided when the need for size improvement actually exists.[644] This commenter suggested the following alternative metrics that, in its view, would more accurately reflect size improvement benefits obtained by each broker for its retail investor customers: (1) the number of orders for which the order size exceeded the available shares displayed on the relevant side of the NBBO (''outsized orders''); (2) the total number of shares executed as part of these outsized orders; and (3) the number (or percentage) of shares within the outsized orders that received size improvement (*i.e.,* were executed at or better than the NBBO price, in excess of the amount of aggregate displayed liquidity at the NBBO).[645]

As discussed in the Proposing Release, this commenter also suggested in a petition for rulemaking to the Commission that Rule 605 should include an alternative metric, referred to as ''real price improvement'' (''RPI''), that combines price improvement with size improvement by using as its benchmark a price that reflects the equivalent size of shares-including depth of book quotes and odd-lot quotes.[646] When the Commission described why it was not proposing to include an RPI benchmark or metric in the proposed rule, the Commission stated that although RPI may be a more informative measure of size improvement than a measure that can be calculated using the proposed size improvement benchmark metric, the RPI would require market centers and reporting broker-dealers to subscribe to all exchanges' proprietary depth-of-book data feeds and would entail a ''significant cost'' to reporting entities that did not already subscribe to these feeds.[647] Therefore, the Commission preliminarily believed that the benefits to market participants of having an RPI metric were not justified by the potentially significant additional costs to reporting entities.[648]

In commenting on this rulemaking, this commenter again suggested that the Commission add an RPI benchmark or metric to Rule 605 and responded to the Commission's statement that such measure could be too costly for market participants who would need to subscribe to exchanges' depth-of-book data feeds.[649] According to this

11; CCMR Letter at 13. *See also* Nasdaq Letter at 44 (stating that size improvement opportunities are significant and relevant to best execution decisions).

[632] *See* Rule 605 Citadel Letter at 11.

[633] *See id.* (stating that, according to a recent study, factoring in size improvement more than doubled the dollar amount of price improvement reported by wholesale broker-dealers).

[634] Robinhood Letter at 46–47. This commenter opposed the proposed changes to Rule 605 but suggested expanding Rule 606 reports to add a column for size improvement, among other execution quality metrics. *See id.* at 42–43.

[635] *See id.* at 48 (asking how the displayed size and the time of execution of fractional share orders would be counted for purposes of the size improvement benchmark).

[636] *See* CCMR Letter at 13.

[637] *See* FIF Letter at 20.

[638] *See id.* This commenter stated that this method is how other statistics in the report, such as effective spreads, are measured. *See id.*

[639] *See* FIF Letter II at 4–7. In the first scenario, the customer's order size is larger than the displayed size, and the commenter states its suggested approach would reflect this oversizing and provide for a more accurate comparison across brokers that receive customer orders that, on average, oversize the NBBO by different percentages. *See id.* at 4–5. In the second scenario, the customer's order size is larger than the displayed size and results in price dis-improvement, and the commenter states that its suggested approach would require the broker-dealer to report price dis-improvement but would also include data to reflect that the broker-dealer received an order that oversized the opposite-side NBBO. *See id.* at 5–6. In the third scenario, a broker-dealer is delayed in executing the customer's order due to a systems issue and the executed size is the same as the displayed size at the time of order receipt but larger than the displayed size at the time of order execution, and the commenter states that its suggested approach would correctly reflect that the broker-dealer did not provide size improvement. *See id.* at 6–7.

[640] *See id.* at 5, n.10, and 6, n.11.

[641] *See* FIF Letter at 20.

[642] *See id.*

[643] Virtu Letter II at 5.

[644] *See id.* at 10.

[645] *See id.* According to this commenter, these metrics would be more informative because they would not include orders in which there was no need to provide size improvement. *See id.*

[646] *See* Proposing Release, 88 FR 3786 at 3818 (Jan. 20, 2023) (*citing* Virtu Petition at 3).

[647] *See id.*

[648] *See id.* at 3818–19.

[649] *See* Virtu Letter II at 7 (''To truly and accurately measure execution quality, Rule 605 disclosures should be updated to compare fill prices for all orders to the average price in the market to fill the same number of shares considering all displayed quotes—including NBBO, depth of book, and odd lots.''), 10 (''To properly reflect the value of size improvement benefits that brokers obtain for retail investors, Rule 605 should measure an order's execution price that is the volume-weighted average price ('VWAP') for an equivalent quantity of shares based on the shares available across exchanges.'').

commenter, many brokers utilize vendors to produce Rule 605 reports and these vendors are capable of handling depth-of-book data.[650] This commenter also stated that ''if the Commission's proposed tick size reductions are adopted, there would be less liquidity at the NBBO, and investors who currently use SIP data would have less visibility into market liquidity and would need to access the exchanges' depth-of-book data feeds anyway.''[651] Another commenter suggested that the Commission undertake a more detailed analysis of the costs and benefits of requiring RPI statistics in Rule 605 reports and that the Commission should require the reporting of RPI information if this analysis ''indicates that the benefits . . . outweigh the costs.''[652] According to this commenter, the Commission did not quantify either the costs of requiring reporting entities to have access to a full set of consolidated depth information or the benefits of providing this additional information about size improvement to market participants.[653] Finally, one commenter stated that ''[p]rice improvement should be measured relative to the displayed book, not the NBBO. Odd lots are ignored in the calculation of the NBBO.''[654]

An investor advocacy group recommended eliminating the proposed size improvement metric until such a time when the public data feed contains more information regarding the depth of quotations.[655] According to this commenter, accurately identifying size improvement would require proprietary depth of book feeds, and if the size improvement statistic relied solely on the SIP it would be misleading because it would not reflect the top of book across public quotes or hidden or mid-point priced orders.[656] A group of academics stated that some of the proposed disclosure requirements, such as size improvement, may be helpful for a subset of trades, but recommended limiting changes to Rule 605 to a more limited set of statistics to reduce implementation costs and speed up adoption.[657]

The Commission considered the comments and, in response to commenter feedback, is modifying the proposed size improvement benchmark metric and adding an additional size improvement metric. Further, the Commission is requiring the disclosure of both size improvement metrics only for marketable order types, marketable stop order types, and midpoint-or-better order types, rather than for all order types as proposed. To implement these changes, the Commission is adopting a defined term for the size improvement benchmark metric—the ''order size benchmark.'' As adopted, ''order size benchmark'' means the number of shares of the full displayed size of all protected bids at the same price as the national best bid at the time of order receipt, in the case of a market or limit order to sell, or the full displayed size of all protected offers at the same price as the national best offer at the time of order receipt, in the case of a market or limit order to buy.[658] For marketable stop order types and midpoint-or-better order types, the full displayed size is measured at the time the order becomes executable rather than the time of order receipt.[659] For each order, the share count is capped at the order size.[660] The Commission is also modifying the proposed Rule 605(a)(1) metrics to require the reporting of, for executions of covered orders, the cumulative number of shares of the order size benchmark.[661] The term ''order size benchmark'' is the same as the proposed size improvement benchmark metric, except in the following two respects.

First, in response to the commenter who recommended the size improvement benchmark be captured at the time of order receipt,[662] the Commission is modifying the time at which the order size benchmark measures the available displayed size on the opposite side of the NBBO. Instead of measuring the displayed size at the time of execution as proposed, the order size benchmark in the final rule measures displayed size at the time of order receipt, for market and marketable limit orders, and at the time an order becomes executable, for marketable stop order types and midpoint-or-better order types. Capturing the displayed size of the opposite side quote at the time of order receipt (or the time of executability for marketable stop order types and midpoint-or-better order types) provides a view of the available size at the time an order could first reasonably be expected to execute and therefore provides users of the Rule 605 data information relating to which market centers and broker-dealers are more likely to be able to fill orders in a size larger than what may be readily available. Using the time of order receipt (or time the order becomes executable) as in the final rule will simplify calculation of the order size benchmark because there will be one relevant time for each order, even if that order results in multiple executions. In contrast, if the Commission required calculation of the order size benchmark at the time of execution as proposed, an order with multiple executions would have different times of execution for different portions of the order. The Commission also agrees with the commenter that measuring the displayed size at the time of execution could result in a less accurate picture of size improvement in some instances,[663] particularly if some shares priced at the opposite side of the NBBO are displayed at the time of order receipt and then lifted before the time of execution.[664]

Second, the Commission is adopting a modification to make clear that the order size benchmark measures the full displayed size of all shares at the same price as the protected bid or offer (as applicable).[665] The Commission agrees with the commenter that the share count should be required to include not just those shares that are represented in the NBBO but also shares of protected bids

[650] *See id.* at 10.

[651] *Id.* The Commission is still considering the proposed changes discussed in the Minimum Pricing Increments Proposing Release, including changes to tick sizes. *See* Minimum Pricing Increments Proposing Release, 87 FR 80266 (Dec. 29, 2023). The Commission will consider comments regarding whether changes to tick sizes would lead to changes in the use of depth-of-book feeds in the context of that proposal.

[652] *See* CCMR Letter at 16. *See also id.* at 15 (stating that current Rule 605 disclosures fail to consider that there is a limited size available at the NBBO on exchanges, thus failing to account for size improvement, and price improvement should be measured with reference to the average price obtainable for the full order on the exchange, not just with reference to the NBBO).

[653] *See id.* at 16 (*citing* Proposing Release, 88 FR 3786 at 3894 (Jan. 20, 2023)).

[654] Angel Letter at 3.

[655] *See* Healthy Markets Letter at 18.

[656] *See id.*

[657] *See* Professor Schwarz et al. Letter at 5.

[658] *See* final 17 CFR 242.600(b)(72).

[659] *See id.*

[660] *See id.*

[661] *See* final 17 CFR 242.605(a)(1)(ii)(R).

[662] *See supra* notes 637–639 and accompanying text.

[663] *See supra* note 637. This commenter also provided several scenarios presenting how the presentation of size improvement statistics would differ if size improvement is measured against the full displayed size at the time of order receipt (as suggested by the commenter) or the time of execution (as proposed). *See supra* note 639 and accompanying text. As described, final Rule 605 measures size improvement at the time of order execution.

[664] *See supra* note 639. In response to the commenter's request for clarification about how to calculate size improvement for fractional shares (*see supra* note 635 and accompanying text), the order size benchmark is capped at the size of the order and therefore in the case of a fractional share order where the displayed size exceeds the order size, the order size benchmark will reflect the fractional size of the order. *See* final 17 CFR 242.600(b)(72). The commenter's question about how to calculate time of execution is moot because the adopted rule will measure the size improvement statistics at the time of order receipt rather than the time of execution.

[665] *See* final 17 CFR 242.600(b)(72).

and offers that are not represented in the NBBO but are at the same price as the NBBO.[666] Reporting entities will be able to capture information about these shares without relying on proprietary depth-of-book feeds because the SIP includes all protected bids and offers.

The Commission considered commenter's suggestions for alternative size improvement metrics.[667] In response to the commenter's recommendation to include the number of shares executed as part of outsized orders, the Commission observes that, using the Rule 605 statistics as adopted, it is possible to calculate the number of shares eligible for size improvement (''outsized share count'') for any row of Rule 605 data by taking the cumulative number of shares of covered orders received and subtracting the cumulative number of shares of the order size benchmark.[668] Although the outsized share count that can be calculated using Rule 605 statistics as adopted differs slightly from the commenter's recommended metric, it similarly addresses commenter's criticism that the order size benchmark includes orders in which the reporting entity does not have the opportunity to provide size improvement because the order size is equal to or less than the available shares at the NBBO.[669] The Commission is not adopting the commenter's suggestion to include the number of outsized orders in the Rule 605 statistics because the number of outsized orders alone is less meaningful when this information is aggregated across orders.[670] Instead, the outsized share count, which will be derivable from the Rule 605 statistics as adopted, will provide a metric that is more useful for comparison purposes when aggregated.

The Commission agrees with the commenter that it would provide useful information to add a size improvement metric that will measure the level of size improvement in those instances in which the order presents an opportunity for size improvement.[671] Therefore, the Commission is adopting an additional Rule 605 statistic that will require reporting of the sum of, for each execution of a covered order, the greater of: the total number of shares executed with price improvement plus the total number of shares executed at the quote minus the order size benchmark; or zero (the ''size improved outsized shares'').[672] For each execution of a covered order, the total number of shares executed with price improvement plus the total number of shares executed at the quote represents the number of shares executed at or better than the opposite side of the NBBO at the time of order receipt (or executability). Subtracting the order size benchmark from that sum represents the extent to which the reporting entity provided such executions at a size greater than the displayed size at the quote. The resulting number can be negative if a reporting entity does not provide an execution at or better than the NBBO for the full number of displayed shares at the opposite side of the NBBO (*i.e.,* there is ''size dis-improvement''). However, the size improved outsized shares metric is designed to capture the extent to which the reporting entity achieves size improvement when an order presents an opportunity for size improvement and as such will never be negative. Instead, for each execution of a covered order, the size improved outsized shares metric will be the greater of the described calculation and zero. As an example, assume the protected NBBO for a security is $5.00–$5.05. If a market center receives a 400-share market order to sell and executes all 400 shares at $5.00, and there were 300 shares displayed at the national best bid at the time of order receipt, the order size benchmark will be 300 shares. To continue this example, the size improved outsized shares will be the greater of 100 shares (*i.e.,* 400 shares minus 300 shares) and zero shares, and thus the size improved outsized shares will be 100 shares.[673] As a second example, assume the protected NBBO for a security is $10.00–$10.10. If a market center receives a 300-share market order to buy but only executes 100 shares at $10.10 and there were 200 shares displayed at the national best offer for $10.10 at the time of order receipt, the order size benchmark will be 200 shares. To continue this example, the size improved outsized shares will be the greater of −100 shares (*i.e.,* 100 shares minus 200 shares) and zero shares, and thus the size improved outsized shares will be zero shares.

Where the size improved outsized shares will differ from information derivable from other execution quality statistics in final Rule 605 is in cases where there is size dis-improvement, which may occur when some shares execute at prices worse than the quote or do not execute even though a sufficient number of shares are displayed at the quote. With respect to the information that can be derived from other Rule 605 statistics, as discussed in the Proposing Release, the order size benchmark can be compared to the number of shares executed at or better than the quote to calculate whether the reporting entity filled any portion of the customer order at the opposite side of the NBBO (or better), even when insufficient depth was available at that price (''net size improvement'').[674] Unlike the size improved outsized shares, the net size improvement will take into account instances of size dis-improvement and, in such instances, will take into account negative values.[675] To continue the second example above, where the market center is able to fill 100 shares at $10.10 but the depth available at the protected offer is 200 shares, the net size improvement will be −100 shares (*i.e.,* 100 shares minus 200 shares).

The ability to compare size improved outsized shares and net size improvement will contain useful information for market participants as well. For example, market participants will be able to use this variable to tell the difference between a market center that has a net size improvement value

[666] *See supra* notes 641–642 and accompanying text.

[667] *See supra* notes 645–653 and accompanying text.

[668] *See* final 17 CFR 242.605(a)(1)(i)(C); final 17 CFR 242.605(a)(1)(ii)(R).

[669] *See* Virtu Letter II at 10.

[670] For further discussion of the Commission's consideration of alternative size improvement measures, *see infra* section IX.E.3.d)(3).

[671] *See supra* note 645 and accompanying text.

[672] *See* final 17 CFR 242.605(a)(1)(ii)(S).

[673] The Commission is not adopting a metric that would reflect the percentage of shares within outsized orders that received size improvement because it will be possible to calculate this percentage using the outsized share count and the size improved outsized shares.

[674] *See* Proposing Release, 88 FR 3786 at 3818 (Jan. 20, 2023) (discussing the ''size improvement share count''). To better distinguish this term from size improved outsized shares, the Commission is using the term ''net size improvement'' herein instead of ''size improvement share count.''

[675] In cases where the best displayed quote equals or exceeds the order size (*i.e.,* where there is no opportunity to provide size improvement), the size improved outsized shares will always be zero. In contrast, the net size improvement will not be negative in instances in which the depth at the best displayed quote exceeds the customer-requested order size because the share count used to calculate the order size benchmark will be capped at the order size. The Commission's analysis of the correlation between the proposed measure of size improvement and this additional measure of size improvement indicates that including information about size improved outsized shares will likely provide information that is not available from the net size improvement. *See infra* note 1548 and accompanying text; Table 8. This analysis also indicates that these size improvement metrics convey different information about execution quality than the price improvement metrics contained in Rule 605 reports prior to these amendments, particularly for orders received by off-exchange market centers. *See infra* note 1548 and accompanying text; Table 8.

of zero because it does not offer size improvement, or because it offers a mix of size improvement and size dis-improvement. This will be informative for market participants that are concerned about the risk of receiving size dis-improvement. Market participants and other users of Rule 605 reports will be able to divide the size improved outsized shares by the net size improvement to obtain a ratio that informs about the extent to which a reporting entity is executing orders with size dis-improvement. The higher the ratio (*i.e.,* the higher it is above 1), the more size dis-improvement occurred. For example, assume a market participant compares two market centers for a particular order type, size, and security and calculates that Market Center 1 has net size improvement of 2,500 and size improved outsized shares of 4,000; and Market Center 2 has net size improvement of 5,000 and size improved outsized shares of 6,000. To continue this example, Market Center 1 would have a ratio of 8/5 (*i.e.,* 4,000/2,500) and Market Center 2 would have a ratio of 6/5 (*i.e.,* 6,000/5,000), indicating that orders received size dis-improvement more frequently on Market Center 1 than on Market Center 2.[676] In addition, market participants can standardize the size improved outsized shares by dividing this metric by the outsized share count.[677]

Finally, the Commission is limiting the application of the size improvement metrics to marketable order types, marketable stop order types, and midpoint-or-better order types, rather than to all order types as proposed. The order size benchmark is more useful in conjunction with information about the number of shares executed at, better than, or worse than the NBBO,[678] and these statistics are available only for marketable order types, marketable stop order types, and midpoint-or-better order types in Rule 605 as amended. Further, the size improved outsized shares metric is more informative when it can be compared to net size improvement and providing information about size improved outsized shares without a view of net size improvement could be misleading. In addition, NMLOs generally do not have an expectation of execution at the price of the protected quote at the time of order receipt and therefore providing information about the size available at that price is less informative.[679] Therefore, the Commission is not requiring the order size benchmark or the size improved outsized shares metric for non-marketable order types other than midpoint-or-better order types.

The Commission is not adopting a metric based on RPI.[680] As the Commission stated in the Proposing Release, RPI would require market centers and reporting broker-dealers to subscribe to all exchanges' proprietary depth-of-book feeds and these subscriptions would entail a significant cost for those reporting entities that do not already subscribe to the feeds.[681] Although a commenter states that many broker-dealers use vendors to prepare Rule 605 reports that can handle depth-of-book data,[682] Rule 605 does not require use of a vendor and the Commission does not assume that all reporting entities will choose to use a vendor. Moreover, if vendors need to subscribe to all exchanges' proprietary depth-of-book feeds for purposes of preparing Rule 605 reports, these vendors may pass on these costs to the reporting entities.

In response to the commenter's suggestion that the Commission should not adopt Rule 605 metrics concerning size improvement, among others, because of concerns about implementation costs and adoption speed,[683] reporting entities will have the underlying raw data necessary to calculate the order size benchmark and the new size improved outsized shares metric because they are already capturing this information for trade confirmations or internal purposes or will be easily able to obtain this information from publicly available data sources. Therefore, the inclusion of these metrics in Rule 605 reports will not make a significant difference in the costs or amount of time needed to implement the changes to Rule 605 being adopted.

(f) Riskless Principal

(1) Proposed Approach

In effecting riskless principal transactions, a market center or broker-dealer submits a principal order to an away market center in order to fulfill a customer order. Upon execution at the away market center, the market center or broker-dealer that initially received the customer order (*i.e.,* the receiving market center or broker-dealer) executes the customer transaction on the same terms as the principal execution. Prior to these amendments, a market center that executed the riskless principal leg of the trade (*i.e.,* the receiving market center's execution of the customer order on the same terms as the principal transaction) generally should have reported those orders in its Rule 605 statistics as part of the cumulative number of shares of covered orders that were executed at the receiving market center under Rule 605(a)(1)(i)(D), rather than as a part of the cumulative number of shares of covered orders executed at any other venue under Rule 605(a)(1)(i)(E).[684] The Commission proposed to carve riskless principal orders out from Rule 605(a)(1)(i)(D) by providing that the number of shares of covered orders executed at the receiving market center, broker, or dealer excludes shares that the market center, broker, or dealer executes on a riskless principal basis.[685] As a result, the market center that executes the riskless principal order would have included these shares as part of the cumulative number of shares executed away from that venue under Rule 605(a)(1)(i)(E), and only the market center that executes the corresponding principal order would have included those shares as part of the cumulative number of shares

[676] In this simplified example, it is possible to compare the overall size improvement percentage (calculated by dividing the net size improvement by the outsized share count) to the size improvement outsized shares percentage (calculated by dividing the size improved outsized shares by the outsized share count) to see the difference between these two metrics. To continue the above example, assume that Market Center 1 has an outsized share count of 10,000 and Market Center 2 has an outsized share count of 20,000. Market Center 1 and Market Center 2 would each have 25% overall size improvement, indicating that Market Center 1 and Market Center 2 achieved similar amounts of overall size improvement. Market Center 1 would have 40% size improved outsized shares and Market Center 2 would have 30% size improved outsized shares. Market Center 1's higher size improved outsized shares percentage, combined with the fact that it has the same overall size improvement percentage as Market Center 2, indicates that orders received size dis-improvement more frequently on Market Center 1 than Market Center 2.

[677] *See infra* note 1547 and accompanying text.

[678] *See* final 17 CFR 242.605(a)(1)(ii)(E), (H), and (I). For example, the count of shares executed at or better than the NBBO is necessary to calculate net size improvement.

[679] Information about the size available at the protected quote may be more informative for midpoint-or-better order types because the Commission understands that some traders submit inside-the-quote limit orders with the intention of executing immediately.

[680] For further discussion of the RPI metric, *see infra* section IX.E.3.d)(1).

[681] *See* Proposing Release, 88 FR 3786 at 3818 (Jan. 20, 2023).

[682] *See supra* note 650 and accompanying text.

[683] *See supra* note 657 and accompanying text.

[684] *See* Proposing Release, 88 FR 3786 at 3819 (Jan. 20, 2023). In the Proposing Release, the Commission stated that Commission staff has taken the position that the market center executing an order as riskless principal should reflect the order on its monthly report as executed at such market center, and not at another venue, using the time that the order was executed at such market center. *See id.* (*citing* Staff Legal Bulletin No. 12R, ''Frequently Asked Questions About Rule 11Ac1–5'' (June 22, 2001)).

[685] *See id.;* proposed Rule 605(a)(1)(i)(D).

executed *at* the receiving market center under proposed Rule 605(a)(1)(i)(D).

(2) Final Rule and Discussion

The Commission is adopting the requirement that the calculation of the number of shares of covered orders executed at the receiving market center, broker, or dealer will exclude shares executed on a riskless principal basis as proposed, for the reasons described in the Proposing Release.[686] Therefore, a receiving market center, broker, or dealer will reflect the execution of the principal order as executed at any other venue.[687] For example, Market Center 1 receives a customer order for 100 shares that it executes on a riskless principal basis. Market Center 1 sends a corresponding principal order of 100 shares to Market Center 2, where it executes in full. Prior to these amendments, Market Center 1 generally would have counted 100 shares as executed at the market center (rather than away). Because Market Center 2 was the execution venue for the corresponding principal order, it also would have counted 100 shares executed at the market center (*i.e.,* at Market Center 2). Under the amendments, Market Center 1 will instead count 100 shares executed away and Market Center 2 will count 100 shares executed at the market center.

A broker-dealer requested clarification regarding the Commission's proposed changes to the treatment of riskless principal orders.[688] This commenter stated that the ''Proposal's suggestion'' that the proposed change would make execution statistics more informative to market participants ''is misleading.'' [689] According to this commenter, execution quality metrics reported under current Rule 605 ''correctly take into account all orders routed to a wholesale broker-dealer (irrespective of where execution occurs) in order to provide a comprehensive view of the market center's overall execution quality'' and ''[t]his would not change under the Proposal.'' [690]

The Commission agrees with the commenter that the execution quality statistics for these shares are already reported as part of Rule 605 reports (*i.e.,* regardless of whether such shares are executed at a market center or away, market centers must include the statistics for such orders). However, modifying whether riskless principal orders are required to be classified as shares executed at a market center, broker, or dealer will make the Rule 605 statistics more informative. If both the market center that executes the riskless principal order and the away market center that executes the corresponding principal order count their legs of the transaction as part of their shares executed at the receiving market center, it could obscure information about how often a market center internalizes an order. As applied to wholesalers, it will be useful for investors to be able to observe what percentage of orders a wholesaler internalizes because internalized orders are not exposed to competition on an order-by-order basis, whereas the principal order associated with a riskless principal transaction may be exposed to trading interest from other market participants. In response to the commenter's request for clarification, the Commission observes that it was referring to only proposed Rule 605(a)(1)(i)(D) and (E) (*i.e.,* the statistics concerning the cumulative number of shares of covered orders executed at the receiving market center, broker, or dealer and executed at any other venue) when it stated in the Proposing Release that Rule 605's execution quality statistics would be more informative if riskless principal orders were reported as executed at another venue.[691]

(g) Price Improvement

(1) Proposed Approach

Preexisting Rule 605 required the reporting, for marketable order types, of: (1) the cumulative number of shares of covered orders (a) executed with price improvement, (b) executed at the quote, and (c) executed outside the quote; (2) for shares executed with price improvement, the share-weighted average amount per share that prices were improved; and (3) for shares executed outside the quote, the share-weighted average amount per share that prices were outside the quote.[692] Under these preexisting requirements, an order executed at a price better than the NBBO would have been an order executed with price improvement. The MDI Rules expanded the data that will be made available for dissemination within the national market system (''NMS data'') and included certain odd-lot information in NMS data.[693] While this odd-lot information will include pricing information for odd-lots priced inside the NBBO,[694] using the Rule 605's price improvement statistics prior to the amendments, there is no way for market participants to evaluate the performance of broker-dealers and market centers relative to such better-priced orders.

The Commission proposed to add a definition for ''best available displayed price,'' which would include the best priced odd-lot if that price is inside the NBBO and to provide additional price improvement statistics related to the best available displayed price.[695] Specifically, the Commission proposed to define ''best available displayed price'' as, with respect to an order to buy, the lower of (i) the national best offer at the time of order receipt or (ii) the price of the best odd-lot order to sell at the time of order receipt as disseminated pursuant to an effective transaction reporting plan or effective national market system plan; and, with respect to an order to sell, the higher of (i) the national best bid at the time of order receipt or (ii) the price of the best odd-lot order to buy at the time of order receipt as disseminated pursuant to an effective transaction reporting plan or effective national market system plan.[696] The Commission also proposed

[686] *See* Proposing Release, 88 FR 3786 at 3819 (Jan. 20, 2023); final 17 CFR 242.605(a)(1)(i)(E).

[687] Final 17 CFR 242.605(a)(1)(i)(F) (cumulative number of shares executed at any other venue).

[688] *See* Rule 605 Citadel Letter at 10.

[689] *See id.* (*citing* Proposing Release, 88 FR 3786 at 3819 (Jan. 20, 2023)).

[690] *Id.*

[691] *See* Proposing Release, 88 FR 3786 at 3819 (Jan. 20, 2023).

[692] *See* prior 17 CFR 242.605(a)(1)(ii)(B) through (I). ''Executed with price improvement'' means, for buy orders, execution at a price lower than the national best offer at the time of order receipt and, for sell orders, execution at a price higher than the national best bid at the time of order receipt. *See* final 17 CFR 242.600(b)(45). ''Executed at the quote'' means, for buy orders, execution at a price equal to the national best offer at the time of order receipt and, for sell orders, execution at a price equal to the national best bid at the time of order receipt. *See* final 17 CFR 242.600(b)(42). ''Executed outside the quote'' means, for buy orders, execution at a price higher than the national best offer at the time of order receipt and, for sell orders, execution at a price equal to the national best bid at the time of order receipt. *See* final 17 CFR 242.600(b)(44).

[693] *See* final 17 CFR 242.600(b)(69); MDI Adopting Release, 86 FR 18596 at 18613 (Apr. 9, 2021).

[694] ''Odd-lot information'' means (i) odd-lot transaction data disseminated pursuant to the effective national market system plan or plans required under 17 CFR 242.603(b) as of Apr. 9, 2021; and (ii) odd-lots at a price greater than or equal to the national best bid and less than or equal to the national best offer, aggregated at each price level at each national securities exchange and national securities association. *See* final 17 CFR 242.600(b)(69). Contemporaneously with the Proposing Release, the Commission separately proposed to, among other things, amend the definition of odd-lot information to include a new data element to identify the best odd-lot orders available in the market inside the NBBO, and accelerate the implementation of the round lot and the odd-lot information definitions. *See* Minimum Pricing Increments Proposing Release, 87 FR 80266 at 80293–302 (Dec. 29, 2022).

[695] *See* Proposing Release, 88 FR 3786 at 3820 (Jan. 20, 2023).

[696] *See* proposed Rule 600(b)(14); Proposing Release, 88 FR 3786 at 3820 (Jan. 20, 2023). Because the best odd-lot order to buy or sell would be inside the NBBO, the national best bid or national best

to specify that, for beyond-the-midpoint limit orders, the best available displayed price shall be determined at the time such order becomes executable instead of the time of order receipt.[697]

The Commission further proposed to add two defined terms—''executed outside the best available displayed price'' and ''executed with price improvement relative to the best available displayed price''—to classify order executions based on their execution price relative to the best available displayed price.[698] Finally, the Commission proposed to require the reporting, for marketable order types, of (1) the cumulative number of shares of covered orders (a) executed with price improvement relative to the best available displayed price, (b) executed at the best available displayed price, and (c) executed outside the best available displayed price; (2) for shares executed with price improvement relative to the best available displayed price, the share-weighted average amount per share that prices were improved as compared to the best available displayed price; and (3) for shares executed outside the best available displayed price, the share-weighted average amount per share that prices were outside the best available displayed price.[699]

(2) Final Rule and Discussion

The Commission is adopting the definition of ''best available displayed price'' as proposed. Further, the Commission is requiring price improvement statistics relative to the best available displayed price, in addition to price improvement statistics relative to the NBBO, for marketable order types and midpoint-or-better order types as proposed.

An investor advocacy group agreed with the Commission that additional price improvement statistics specifically related to the best available displayed price would allow market participants to evaluate how well market centers and broker-dealers perform in executing covered orders relative to the best available displayed price.[700] In addition, an academic stated in support of the proposal that it ''is ludicrous to measure price improvement while ignoring visible odd lot liquidity'' and that price improvement should be measured relative to the effective best bid or offer for the dollar amount of the order.[701]

However, several commenters disagreed with the proposed price improvement statistics based on the best available displayed price because, according to these commenters, these statistics could be ''misleading.'' [702] An industry group stated that metrics that measure price improvement utilizing a comparison to the best odd-lot price would ''yield misleading information because it ignores the size of the order as compared to the size available at the odd-lot price.'' [703] A financial services firm suggested that the detailed report should exclude best available displayed price because this metric is only relevant in the commenter's view in a small number of occasions and would add ''misleading'' information to the report.[704] This commenter stated that while the Commission cited a recent academic working paper showing that odd-lots offer better prices than the NBBO 16–18% of the time, the percent of the time that the best available price differs from the NBBO will be smaller when the MDI Rule's new round lot definitions take effect.[705] According to this commenter, if the best available displayed price is relevant only for a small part of the time and absent context regarding how many shares are included in the price or how many shares the order was for, the best available displayed price metrics would ''border on meaningless and add unnecessary complexity to the report.'' [706]

Another broker-dealer suggested that the Commission reconsider the use of execution quality statistics with differing reference points would be ''confusing to retail investors.'' [707] This commenter also stated that using the best displayed odd-lot price as a reference point presents a number of difficulties or opportunities to be misleading because, for example, these quotes could ''be flickering quotes that are generally not accessible'' or for a ''size substantially smaller than the order size.'' [708] Another broker-dealer stated that measuring price improvement against odd-lot prices would ''yield unhelpful and misleading information'' because the size associated with odd-lot prices ''will vary greatly.'' [709] One commenter added that ''{c}ompilation of protected quotes is complicated. An odd-lot NBBO creates ambiguity.'' [710] An industry group and a financial services firm stated that any data related to the best available displayed price should not be included in the report format until the best odd-lot order to buy and best odd-lot order to sell have been included in the SIP.[711]

After consideration of the comments, the Commission is adopting the definition of ''best available displayed price'' and the addition of price improvement statistics based on this price for marketable order types and midpoint-or-better order types as proposed. As discussed in the Proposing Release, requiring price improvement statistics relative to the best available displayed price in the market, whether that is the NBBO or the best odd-lot order to buy or sell, will enhance the ability of market participants to evaluate the performance of market centers and broker-dealers.[712] The Commission continues to hold this view. Odd-lots often reflect pricing that is superior to the NBBO.[713] A recent academic working paper shows that odd-lots offer better prices than the NBBO 18% of the time for bids and 16% of the time for offers.[714] Although the round lot

offer would only be used if there is not a best odd-lot price on the same side of the market as the order. *See id.* at 3820, n.427.

[697] *See* proposed Rule 600(b)(14); Proposing Release, 88 FR 3786 at 3820 (Jan. 20, 2023).

[698] *See* Proposing Release, 88 FR 3786 at 3820 (Jan. 20, 2023). The Commission proposed to define ''executed outside the best available displayed price'' as, for buy orders, execution at a price higher than the best available displayed price; and, for sell orders, execution at a price lower than the best available displayed price. *See id.;* proposed Rule 600(b)(44). Similarly, the Commission proposed to define ''executed with price improvement relative to the best available displayed price'' as, for buy orders, execution at a price lower than the best available displayed price; and, for sell orders, execution at a price higher than the best available displayed price. *See* Proposing Release, 88 FR 3786 at 3820 (Jan. 20, 2023); proposed Rule 600(b)(47).

[699] *See* Proposing Release, 88 FR 3786 at 3820 (Jan. 20, 2023); proposed Rule 605(a)(1)(ii)(O) through (S).

[700] *See* Better Markets Letter at 8.

[701] *See* Angel Letter at 3.

[702] *See* SIFMA Letter II at 32; Schwab Letter III at 6; Robinhood Letter at 47; Rule 605 Citadel Letter at 6.

[703] SIFMA Letter II at 32.

[704] *See* Schwab Letter III at 6.

[705] *See* Schwab Letter II at 34; Schwab Letter III at 6. *See also* Proposing Release, 88 FR 3786 at 3821 (Jan. 20, 2023) (citing Bartlett et al. (2022)).

[706] *See* Schwab Letter II at 34; Schwab Letter III at 6.

[707] *See* Robinhood Letter at 47.

[708] *Id.* This commenter also stated that the best displayed odd-lot price might be a reasonable reference point for very small sized orders, such as fractional shares orders, but is not reasonable for any order of a round lot or greater. *See id.* at 47, n.115.

[709] *See* Rule 605 Citadel Letter at 6.

[710] Data Boiler Letter at 28.

[711] *See* Schwab Letter III at 6; FIF Letter at 33.

[712] *See* Proposing Release, 88 FR 3786 at 3820 (Jan. 20, 2023).

[713] *See* MDI Adopting Release, 86 FR 18596 at 18729 (Apr. 9, 2021) (describing analysis that found, among other things, that in May 2020, ''40% of {odd-lot} transactions (representing approximately 35% of all odd-lot volume) occurred at a price better than the NBBO'').

[714] *See* Bartlett et al. (2022). The authors found that this percentage increases monotonically in the stock price, for example, for bid prices, increasing

Continued

definition in the MDI Rules will result in fewer odd-lot orders in stocks with prices greater than $250, most stocks will not be affected by the new round lot definition.[715] In addition, a substantial amount of odd-lot transaction volume in stocks greater than $250 will not be included in the MDI round lot definition.[716] The changes in 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 did not have access to this information prior to the MDI Rules.[717] Therefore, even though implementation of MDI Rules may result in changes to the number of odd-lot orders, price improvement statistics relative to the best available displayed price will continue to enhance the ability of market participants to evaluate order performance after implementation of the MDI Rules' round lot definition.

Under the MDI Rules, odd-lot information will include pricing information about odd-lots priced better than the NBBO and competing consolidators will be able to offer a product that contains information on the best priced odd-lot on each exchange.[718] Once this odd-lot information is available, reporting entities will be able to calculate the best available displayed price by using the information to identify the best-priced odd-lot order to buy (order to sell) available in the market and comparing it to the national best bid (offer). The MDI Rules have been approved but have not yet been implemented. As discussed further in section VII below, Rule 605's price improvement statistics that are relative to the best available displayed price will not be required to be reported until six months after odd-lot order information needed to calculate the best available displayed price is made available pursuant to an effective national market system plan.[719]

The Commission disagrees with commenters' concerns that price improvement statistics relative to the best available displayed price will be misleading or confusing.[720] The price improvement statistics relative to the NBBO contained in preexisting Rule 605 will still be available to market participants and other users of Rule 605 reports and therefore the price improvement statistics relative to the best available displayed price will be a supplement to, rather than a replacement for, price improvement statistics relative to the NBBO. While an odd-lot price that is better than the NBBO may not reflect sufficient quantity to execute certain orders, particularly larger-sized orders, the NBBO similarly may not reflect the best price at which certain orders can be filled using readily available liquidity. Statistics on price improvement relative to the best available displayed price will provide an additional data point for market participants to consider in the detailed Rule 605(a)(1) reports. Further, Rule 605's price improvement statistics will be presented within order size categories, including order size categories for orders of less than one share and odd-lot orders. Thus, to the extent that price improvement relative to the best available displayed price may be more informative for smaller-sized orders than larger-sized orders, the Rule 605 reports will present the price improvement statistics related to best available displayed price in a format that will make it possible to focus on those smaller-sized orders.

(h) Relative Fill Rate

(1) Proposed Approach

Prior to these amendments Rule 605 did not contain any execution quality metrics specific to non-marketable order types. Recognizing the need for more meaningful measures of execution quality for NMLOs and orders submitted with stop prices, the Commission proposed requiring additional information for executable NMLOs, executable stop orders, and beyond-the-midpoint limit orders. Specifically, the Commission proposed to require the reporting of the number of orders that received either a complete or partial fill.[721] The Commission also proposed to require the reporting of the cumulative number of shares executed regular way at prices that could have filled the order while the order was in force, as reported pursuant to an effective transaction reporting plan or effective national market system plan.[722] As proposed, the share count for each order would be capped at the order size.[723]

(2) Final Rule and Discussion

The Commission did not receive comment on the proposal to report the number of orders that received either a complete or partial fill. For the reasons discussed in the Proposing Release, the Commission is adopting Rule 605(a)(1)(iii)(A) as proposed, with one correction to the rule text.[724] Specifically, the Commission is adding the word ''covered'' to keep the language of Rule 605(a)(1)(iii)(A) consistent with other parts of Rule 605[725] as amended and avoid creating any ambiguity in the language of Rule 605.[726] The Commission also is adopting the relative fill rate metric as proposed, and, in response to comments received, is adopting an additional relative fill rate metric that measures only on-exchange executions.

With respect to the proposed metric based on the cumulative number of shares executed regular way at prices that could have filled the order while it was in force, an industry group stated that it would be fairer to measure a

from 5% for the group of lowest-price stocks in their sample, to 42% for the group of highest-priced stocks.

[715] *See* MDI Adopting Release, 86 FR 18596 at 18753, n.1960 (Apr. 9, 2021) and accompanying text (estimating ''approximately 98.5% of NMS stocks will have a round lot size of 100 shares'').

[716] *See id.* at 18753.

[717] *See id.* at 18754. *See also infra* notes 1032–1034 and accompanying text.

[718] *See* MDI Adopting Release, 86 FR 18596 at 18753 (Apr. 9, 2021).

[719] The Commission is still considering the proposed changes discussed in the Minimum Pricing Increments Proposing Release, which included proposals to accelerate the implementation of the round lot and odd-lot information definitions contained in the MDI Release and amend the definition of odd-lot information to include a new data element for the best available odd-lot orders available in the market. *See* Minimum Pricing Increments Proposing Release, 87 FR 80266 at 80294–95 (Dec. 29, 2022). If, in the future, the Commission determined to adopt an amendment to the definition of odd-lot information to include a data element that identifies the best odd-lot orders available in the market, reporting entities would be required to use such information to determine the best available odd-lot price. However, when the MDI Rules are implemented, there will be sufficient odd-lot information for reporting entities to calculate the best available displayed price because odd-lot information will include better priced odd-lot orders.

[720] *See supra* notes 702–710 and accompanying text.

[721] *See* Proposing Release, 88 FR 3786 at 3821 (Jan. 20, 2023); proposed Rule 605(a)(1)(iii)(A).

[722] *See* Proposing Release, 88 FR 3786 at 3821 (Jan. 20, 2023); proposed Rule 605(a)(1)(iii)(B). Generally, ''regular way'' refers to bids, offers, and transactions that embody the standard terms and conditions of a market whereas a non-regular way transaction refers to one executed other than pursuant to standardized terms and conditions, such as a transaction that has extended settlement terms. *See, e.g.*, Regulation NMS Adopting Release, 70 FR 37496 at 37537, n.326 (June 29, 2005).

[723] *See* Proposing Release, 88 FR 3786 at 3821 (Jan. 20, 2023); proposed Rule 605(a)(1)(iii)(B).

[724] *See* Proposing Release, 88 FR 3786 at 3821 (Jan. 20, 2023).

[725] For example, final 17 CFR 242.605(a)(1)(i)(A) requires disclosure of the number of ''covered orders.''

[726] *See* final 17 CFR 242.605(a)(1)(iii)(A). Rule 605 as amended applies only to covered orders, so this does not represent a substantive change to Rule 605(a)(1)(iii)(A) as proposed. Final 17 CFR 242.605(a)(1) specifies that ''[e]very market center, broker, or dealer shall make available . . . : a report on the covered orders in NMS stocks that it received for execution.''

firm's execution rate against on-exchange executions because exchanges are fair-access venues, while ATS and dealer trades may not represent liquidity accessible to all market participants.[727] This commenter recommended that the Commission also require firms to report the cumulative number of shares executed ''regular way'' on any exchange at prices that could have filled the order while the order was in force.[728] Further, a broker-dealer stated that it may be useful to receive data on the number of shares that traded on all market centers for NMLOs as compared to an individual market center because being able to compare relative fill rates would potentially allow market participants to choose venues they perceive as being more likely to execute their NMLOs or assess if changes to the venues they route these orders to produce better fill rates.[729]

After consideration of the comments, the Commission is adopting the requirement for reporting of the cumulative number of shares executed regular way at prices that could have filled the order while the order was in force as proposed, for the reasons discussed in the Proposing Release.[730] In response to commenters' concerns about being able to compare the relative fill rate for orders executed on venues accessible to all market participants, the Commission is adopting an additional requirement for the reporting of the cumulative number of shares executed regular way on any national securities exchange at prices that could have filled the order while the order was in force, as reported pursuant to an effective transaction reporting plan or effective national market system plan.[731] Similar to the other relative fill rate metric that the Commission is adopting as proposed, for each order the share count will be capped at order size to prevent relatively small orders from skewing the metric.[732] The Commission agrees with commenters that the general metric that will measure the cumulative number of shares executed regular way anywhere in the market may include liquidity that was not accessible to the reporting firm.[733] Under the Exchange Act, national securities exchanges must provide fair access to displayed quotations.[734] Therefore, the additional metric concerning the relative fill rate on national securities exchanges will provide a comparative metric based on displayed quotations that all firms will have had the ability to access.

IV. Summary Execution Quality Report

Prior to the amendments, Rule 605 required market centers to produce detailed execution quality statistics and make this data available via large electronic data files, as required by the Rule 605 NMS Plan.[735] This detailed report was in machine-readable, rather than human-readable, format. The required format made the detailed report more suitable for further processing and analysis than for ready use by market participants and other interested parties. The Commission proposed in Rule 605(a)(2) that all market centers and larger broker-dealers required to produce the detailed report pursuant to Rule 605(a)(1) must also produce a summary execution quality report. After consideration of the comments, the Commission is adopting Rule 605(a)(2), with modifications from the proposal, as described further below.

A. Proposed Approach

Proposed Rule 605(a)(2) would have required every market center, broker, or dealer[736] to make publicly available for each calendar month a report providing summary statistics on all executions of covered orders that are market orders and marketable limit orders that it received for execution from any person.[737] The proposed summary report included a section for NMS stocks that are included in the S&P 500 Index as of the first day of the month and a section for other NMS stocks, and within each section, each symbol would have been equally weighted based on share volume.[738] The Commission proposed that each section of the report required by Rule 605(a)(2) contain the following summary statistics: (i) the average order size; (ii) the percentage of shares executed at the quote or better; (iii) the percentage of shares that received price improvement; (iv) the average percentage price improvement per order; (v) the average percentage effective spread; (vi) the average effective over quoted spread, expressed as a percentage; and (vii) the average execution speed, in milliseconds.[739]

The Commission proposed that the summary report be made available using the most recent version of the XML schema and the associated PDF renderer published on the Commission's website.[740] The proposed schema would have been a set of custom XML tags and XML restrictions designed by the Commission to reflect the disclosures in proposed Rule 605(a)(2).

B. Final Rule and Discussion

The Commission is adopting Rule 605(a)(2), with modifications from the proposal, to require that every market center, broker, or dealer produce a summary execution quality report in addition to the more detailed report required by Rule 605(a)(1).[741] The summary report will enable market participants and other interested parties to have ready access to focused aggregated data that will allow them to compare some of the more significant aspects of the execution quality provided by specific market centers and larger broker-dealers. Moreover, by requiring market centers, brokers, and dealers to produce a summary report in addition to, rather than instead of, the more voluminous data called for by Rule 605(a)(1), those market participants or other observers that would like to perform more comprehensive or specific analyses of execution quality remain able to download the more granular underlying data files and perform such analyses.

Several commenters supported the proposal to produce a summary report on the basis that investors would benefit from the greater access to execution quality data.[742] A financial services firm stated that although some broker-dealers voluntarily publish summary-level execution quality reports on their websites, ''these ad hoc disclosures are not universal, and, in any event, generally feature statistics brokers prefer to 'showcase' that may not reflect the

[727] *See* FIF Letter at 22. *See also* 17 CFR 242.610(a) and (b) (addressing means of access to quotations); 15 U.S.C. 78f(b)(2) and 15 U.S.C. 78o(b)(3) (providing for fair access to membership in SROs).

[728] *See* FIF Letter at 22.

[729] *See* Virtu Letter II at 12.

[730] *See* Proposing Release, 88 FR 3786 at 3821–22 (Jan. 20, 2023); final 17 CFR 242.605(a)(1)(iii)(B).

[731] *See* final 17 CFR 242.605(a)(1)(iii)(C).

[732] *See id.*

[733] *See supra* note 727 and accompanying text.

[734] *See* 15 U.S.C. 78f(b)(2), (4), (5), and (8). See also 17 CFR 242.610.

[735] *See* prior 17 CFR 242.605(a)(1) and (2); Rule 605 NMS Plan, at sections V and VI.

[736] As described in section II.A *supra,* a broker or dealer that is not a market center is not subject to the reporting requirements of Rule 605(a)(1) or (2) unless that broker or dealer introduces or carries 100,000 or more customer accounts through which transactions are effected for the purchase or sale of NMS stocks.

[737] *See* Proposing Release, 88 FR 3786 at 3823 (Jan. 20, 2023).

[738] *See id.*

[739] *See id.* at 3823–24.

[740] *See id.* at 3824; proposed Rule 605(a)(2). XML enables data to be defined, or ''tagged,'' using standard definitions. XML and PDF are ''open standards,'' which is a term that is generally applied to technological specifications that are widely available to the public, royalty-free, at no cost.

[741] *See* final 17 CFR 242.605(a)(2).

[742] *See, e.g.,* Beddo Letter; Genco Letter; Pritchard Letter; Macarthur Letter; Varghese Letter; letter from Ian Marshall (Mar. 6, 2023).

most meaningful measures of execution quality.'' [743] According to this commenter, the proposal would address this ''coverage gap'' by requiring larger broker-dealers to make Rule 605 disclosures and giving customers of these larger broker-dealers ''a direct line of sight into broker-dealer performance.'' [744] This commenter added that a ''standardized summary report will provide retail investors with a comprehensible overview of the thousands of rows and dozens of columns that appear on Rule 605 reports today.'' [745] Another financial services firm stated that a summary report ''will help investors more effectively evaluate competing broker offerings'' [746] and that compliance and technology costs associated with enhanced Rule 605 reporting ''are outweighed by the significant benefits to retail investors,'' including ''greater competition among firms to provide customers with strong execution quality.'' [747]

In contrast, other commenters, including broker-dealers, stated that a summary report could mislead investors, especially if the metrics required by Rule 605(a)(2) do not adequately account for differences in broker-dealer business models and customer bases.[748] One broker-dealer stated that using the summary report to compare execution quality across broker-dealers ''without normalizing for different order activity ignores differences in the flow of orders handled by these brokers and other aspects of the services that brokers provide or offer, including fees, interest rates, commissions, ease of use, customer service, accessibility, tools, and educational resources, and therefore could be potentially misleading to individual investors.'' [749] A financial services firm stated that the summary report ''needs additional descriptive statistics showing order flow attributes that can affect the comparability of execution quality statistics to enable a more accurate and useful measure of execution quality.'' [750] This commenter also stated that ''retail brokers have vastly different client bases reflected in vastly different order flow characteristics, which affects execution quality'' and ''[t]hese differences need to be reflected in the Summary Report so that the individual investor has sufficient data to make an educated assessment of execution quality performance between different brokers.'' [751] To address these concerns, this commenter suggested that the Commission add several metrics to the summary report ''to enable investors to accurately compare execution quality between different brokers''—specifically, average notional order size, percentage realized spread, and percentage quoted spread.[752]

The Commission acknowledges that differences in execution quality can be driven by differences between reporting entities other than differences in their skills at handling and/or executing orders, such as differences in the characteristics of their order flow. Any particular market center or broker-dealer's order flow may be made up of a different mixture of securities, order types, and order sizes, which may impact that market center or broker-dealer's execution quality statistics [753] The Commission recognizes that it is important to strike a balance between sufficient aggregation of orders to produce statistics that are meaningful and sufficient differentiation of orders to facilitate fair comparisons of execution quality across reporting entities. After reviewing the comments received, the Commission is modifying the calculation of several proposed metrics and is also adding several new metrics to the final summary report. For example, the Commission agrees with a commenter's suggestion [754] to add certain metrics—average notional order size, percentage realized spread, and percentage quoted spread—to the final summary report.[755]

Although a commenter suggested that the summary reports be ''normalized across brokers'' in order to reflect differences in order flow that may impact a broker's execution quality, including ''the difficulty of order flow the broker is handling,'' [756] the commenter did not explain how the summary reports should be normalized. The changes to the proposed summary report will provide more information about a broker-dealer's order flow characteristics than originally proposed [757] and will therefore enable users of the summary reports to better compare the execution quality metrics of broker-dealer firms with similar order flow characteristics and identify when different order flow characteristics may be contributing to differences in execution quality. Further, while the Rule 605(a)(2) summary report presents only one particular set of metrics related to execution quality, customers and other interested parties may also take into consideration other aspects of broker-dealer service, including but not limited to, fees, commissions, and educational resources, when comparing broker-dealers. In section IV.B.1.b) below the Commission discusses the specific execution quality statistics in detail.

Another broker-dealer stated that the detailed Rule 605 reports are often difficult for retail investors to analyze.[758] However, this commenter stated that the proposed solution—creating a high-level summary report—''could lead to retail investor confusion if the summary report does not adequately capture or explain the differences in order flow that are present across different market centers and broker-dealers.'' [759] This commenter stated that it may make sense for the Commission to first implement the revisions to Rule 605(a)(1) and evaluate the detailed reports before working with FINRA, retail brokers, and retail investors to determine how best to produce a summary report that contains ''digestible and accurate execution quality information.'' [760] The Commission does not agree with the commenter's approach. The Commission described the proposed summary report in detail in the Proposing Release, has considered comments related to the summary report, and is making changes in response to comments. The adopted summary report will improve the ability of investors and the public to view some of the more significant aspects of the execution quality provided by specific market centers and larger broker-dealers. Denying investors the opportunity to view a summary report

[743] Vanguard Letter at 4.

[744] *Id.*

[745] *Id.*

[746] Fidelity Letter at 8.

[747] *Id.*

[748] *See, e.g.,* SIFMA Letter II at 30; Virtu Letter II at 11; Rule 605 Citadel Letter at 5; Schwab Letter II at 30–31; Schwab Letter III at 2; Data Boiler Letter at 17–18; letter from Kelvin To, Founder and President, Data Boiler Technologies, LLC (Apr. 12, 2023) (''Data Boiler Letter II'') at 1.

[749] Virtu Letter II at 11. Another broker-dealer stated more generally that the Commission should account for ''retail client personas that vary considerably among broker-dealers,'' and these ''differences cause execution quality data to be difficult to compare on an apples-to-apples basis because, for example, trade and execution data generated from buy-and-hold investors' orders differs vastly from the same data generated from active traders' orders.'' Letter from Steven M. Greenbaum, Senior Vice President and General Counsel, TradeStation Securities, Inc. (Mar. 30, 2023) (''TradeStation Letter'') at 7.

[750] Schwab Letter III at 2.

[751] *Id.*

[752] *See id.* at 2–3.

[753] *See* Proposing Release, 88 FR 3786 at 3831 (Jan. 20, 2023).

[754] *See* Schwab Letter III at 2–3.

[755] *See infra* section IV.B.1.b) for additional discussion of these specific metrics.

[756] Virtu Letter II at 4.

[757] *See infra* note 833 and accompanying text.

[758] *See* Rule 605 Citadel Letter at 5.

[759] *Id.*

[760] *See id.*

until after the detailed reports are fully implemented would entail unnecessary delay of the benefits the summary report is designed to provide.

Finally, according to an individual investor, the information contained in the proposed summary report is not useful to investors, and ''[m]ost retail investors lack the knowledge and expertise to interpret these reports and use them to make informed trading decisions.'' [761] In contrast, an investor advocacy group states it ''does not agree with those who would argue that the proposed changes to disclosure of order execution will not benefit retail investors, who are unlikely to read the Rule 605 reports.'' [762] This commenter stated that ''even though a certain percentage of retail investors may not read the Rule 605 reports, they will still benefit indirectly as the enhanced disclosure will promote competition, improve regulatory oversight, and facilitate use by third-party researchers and academics, who in turn can extract information from the reports and use it to expose issues and problems with today's order routing and execution practices.'' [763] The Commission agrees with the investor advocacy group commenter and continues to view the summary report as a useful means to provide individual investors and other market participants with an overview of execution quality data. The summary report will aid investors by providing information in a more easily digestible format than the detailed Rule 605(a)(1) reports.

Moreover, the changes that the Commission is making to the summary report in response to commenters, including breaking out the statistics into notional size categories and adding average percentage realized and quoted spreads, will provide more information about the type of order flow received by the reporting entity. The increased amount of data required by final Rule 605(a)(2) will add some complexity to the adopted summary report as compared to the proposed summary report, however, based on such information, users of the report will be able to identify reporting entities with more comparable order flow and have greater context to understand the differences in execution quality statistics across market centers or broker-dealers with less comparable order flow.

The summary report contains a selection of execution quality metrics for interested parties to assess, rather than imposing a single metric that might require a subjective judgment or obscure meaningful differences in execution quality among broker-dealers or market centers. Despite being an abbreviated overview of the more detailed Rule 605(a)(1) report, as with the detailed report, independent analysts, consultants, broker-dealers, the financial press, and market centers likely will respond to the needs of investors by analyzing the disclosures and producing even more digestible information using data from the summary report, so that the broader public, including those that may not read the summary report, will benefit.[764] As with the Rule 605(a)(1) detailed report, if a market center or broker-dealer believes that the statistics do not fully reflect its order flow and execution practices, it is encouraged to make any additional information publicly available, outside of the summary report, that it believes will be helpful to investors and other market participants.[765]

1. Required Information

The Commission received comments discussing the calculation and utility of individual proposed statistics in the proposed summary report, along with comments recommending the addition of new statistics or requesting clarification or confirmation of how proposed statistics should be calculated, as described further below.[766]

After review of the comments, the Commission is adopting the statistics in Rule 605(a)(2) largely as proposed, with modifications to the computation of certain statistics. The Commission is also adding new execution quality statistics to the summary report.[767] For the reasons described in section IV.B.1.a) below, the Commission is not requiring that the summary report be equally weighted by symbol based on share volume. Section IV.B.1.b) below discusses each of the execution quality statistics in the summary report, including, where appropriate, how these statistics will be weighted. As described in section IV.B.1.b), the summary report will divide each of market and marketable limit orders into separate categories based on eight notional order size buckets plus an aggregated category for all orders with a notional value of less than $200,000.

The Commission agrees with one industry group that stated it is ''important to ensure that the summary report provides the necessary information to allow for a fair comparison across reporting firms.'' [768] The final summary report will provide statistics that are relevant to evaluating what type of pricing orders received, how quickly orders were executed, and what type of order flow the market center or broker-dealer received. As discussed further in section IV.B.1.b) below, the Commission is including several execution quality statistics beyond those included in the proposal to help ensure that the summary report provides sufficient information for a meaningful comparison across firms.

Some commenters stated that any statistic included in the summary report or necessary to calculate a statistic in the summary report should also be included in the Rule 605(a)(1) report, so that the statistics in the summary report may be derived from the detailed Rule 605(a)(1) report.[769] The Commission agrees and, as discussed further below, is making conforming changes so that the Rule 605(a)(1) detailed report will contain all information necessary to be able to reconstruct the Rule 605(a)(2) summary report. In addition, market participants will be able to use the data contained in the Rule 605(a)(1) reports to create their own summary-level report with any adjustments that they find useful for comparison with and evaluation of a reporting entity's published summary report.

A broker-dealer suggested that the summary report may be more informative if it differentiated between retail investors and professional customers because the nature of each order flow is different and segmentation would allow retail investors to obtain execution quality statistics for similar types of orders.[770] A financial services firm stated that the Commission ''should distinguish Rule 605 data by [s]egmented [o]rder and non-[s]egmented [o]rder flow and display this information separately in both the

[761] Gillmore Letter.

[762] Better Market Letter at 9.

[763] *Id.* at 9–10.

[764] *See* Proposing Release, 88 FR 3786 at 3796 (Jan. 20, 2023); Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75419 (Dec. 1, 2000).

[765] Any such statements will be subject to applicable securities laws and regulations.

[766] *See, e.g.,* Rule 605 Citadel Letter; FIF Letter; Schwab Letter II.

[767] The Commission is including in the summary report the following metrics that were not in the Proposing Release's rule text: (i) average notional order size; (ii) for executions of covered orders, the average midpoint; (iii) for executions of covered order, the average percentage quoted spread; (iv) for executions of covered orders, the average percentage realized spread as calculated 15 seconds after the time of execution; and (v) for executions of covered orders, the average percentage realized spread as calculated 1 minute after the time of execution. These metrics are discussed in greater detail *infra* at section IV.B.1.b).

[768] FIF Letter at 22.

[769] *See id.* at 29; FIF Letter II at 9; FIF Letter III at 3; Schwab Letter II at 32; Schwab Letter III at 4.

[770] *See* Rule 605 Citadel Letter at 8.

detailed Rule 605 reports and the proposed Summary Reports.'' [771] The Commission has decided not to revise the summary report to divide the report between retail investors and professionals or between segmented and non-segmented orders, as suggested by the commenters, for the same reasons that the Commission is not making corresponding changes to the reports required by Rule 605(a)(1).[772]

Another commenter argued that the summary report should limit the orders in the report to those with a notional value of less than $200,000.[773] This commenter argued that the Commission in its economic analysis of the Order Competition Rule Proposing Release [774] and the Proposing Release [775] had limited the scope of retail order flow to orders of less than $200,000, to ''normalize order flow variables for analysis in order to meaningfully compare broker-dealers' execution quality.'' [776] The commenter stated its belief that the summary report should likewise limit the report to orders of a notional value less than $200,000, ''which is a natural breakpoint between size categories.'' [777] In response to this commenter's suggestion, as described in more detail in section IV.B.1.b) below, while the Commission is not establishing such a limit for the summary report as a whole, the Commission is adding execution quality information as divided by notional order size buckets, along with a row of execution quality information that aggregates all orders in a particular category, excluding orders with a notional value of $200,000 or more. This aggregated information will provide users of the summary report a means to compare among market centers' or broker-dealers' execution quality for orders less than $200,000.

(a) Weighting Method

The Commission proposed that within each section of the summary report, each symbol would have been equally weighted based on share volume. The Commission stated in the Proposing Release that equal weighting of each symbol would facilitate the comparability of execution quality statistics among market centers or broker-dealers that receive for execution different mixes of stocks and prevent the nature of the stocks traded from making it more difficult to determine how the reporting entity performed with respect to execution quality for the particular mix of orders that it received for execution.[778]

One industry group, however, stated that the summary report statistics should not be equally weighted by symbol based on share volume because this approach would result in misleading data being provided to customers.[779] This commenter agreed with the Commission that the mix of symbols traded by a firm could impact its reported execution quality statistics, but was concerned that symbol-based weighting would create distortions that ''would significantly outweigh any potential benefits.'' [780] The commenter recommended as an alternative that the Commission require each market center and broker-dealer producing a summary report to include its weighted average execution price as a separate reportable item on the summary report.[781] The commenter stated that its recommended approach would avoid the ''misleading data that would result from symbol-based weighting'' and ''customers can take a broker's weighted average execution price into account when reviewing the summary report data.'' [782] This commenter further recommended that the same approach be used for weighting within and across symbols and, as described further below, that the Commission require the use of spread-based weighting for E/Q and share-based weighting for certain other statistics.[783]

After considering the comments, the Commission is not requiring that the summary report be equally weighted by symbol based on share volume as proposed.[784] The Commission is persuaded that symbol-based weighting could cause distortions in cases where a reporting entity receives a significantly different volume of orders in one symbol as compared to another symbol,[785] and these distortions potentially might not justify any potential benefit of utilizing this weighting method. As discussed further below, the Commission is not adding the share-weighted notional average execution price to the summary report as recommended by the commenter,[786] but the Commission is adding average midpoint for order executions. Similar to the commenter's recommendation, this metric will provide information about whether a reporting entity's order flow was more heavily weighted towards lower-priced stocks or higher-priced stocks. The summary report statistics will also utilize share-based weighting, instead of equally weighting by symbol based on share volume, except as discussed specifically below.

(b) Statistics Included

The summary report required by final Rule 605(a)(2) includes sections for NMS stocks in the S&P 500 Index and for all other NMS stocks. Within each section, the final rule requires that the summary report divide market and marketable limit orders into categories based on eight notional order size buckets and an aggregated bucket for orders with a notional value less than $200,000 (as described below). The Commission is requiring that the summary report include the following statistics as proposed, as described below: (i) percentage of shares executed at the quote or better; (ii) percentage of shares that received price improvement; (iii) average percentage effective spread; and (iv) average execution speed, in milliseconds. The Commission is also requiring that the summary report include the following statistics with modifications from the proposal, as described below: (i) average order size in shares; (ii) share-weighted average percentage price improvement; and (iii) average effective spread divided by the average quoted spread, expressed as a percentage. Finally, the Commission is requiring that the summary report include the following additional statistics that were not part of the

[771] Fidelity Letter at 9.

[772] *See supra* notes 172–174 and accompanying text; note 194 and accompanying text.

[773] *See* Schwab Letter III at 4.

[774] *See* Order Competition Rule Proposing Release, 88 FR 128 at 199 (Jan. 3, 2023) (Table 15—Regression Analysis Showing Relationship Between Execution Quality and PFOF in NMS Common Stocks and ETFs).

[775] *See* Proposing Release, 88 FR 3786 at 3839 (Jan. 20, 2023) (Table 3—Average Wholesaler Execution Quality Received by Retail Broker Quintiles, January-March 2022).

[776] Schwab Letter III at 4.

[777] *Id.*

[778] *See* Proposing Release, 88 FR 3786 at 3823 (Jan. 20, 2023).

[779] *See* FIF Letter at 25–26, 28. This commenter stated that one interpretation of ''equal weighting by symbol based on share volume'' is to use share-based weighting within each symbol and then symbol-based weighting across symbols, but requested clarification. *See id.* at 25. The Commission confirms that this explanation is consistent with the weighting method as proposed.

[780] *See id.* at 27.

[781] *See id.* The commenter stated that weighted average execution price would be computed as follows: first, for each individual execution, multiply the number of shares executed by the execution price; next, sum the results; and last, divide the result by the total number of shares executed. *See id.*

[782] *Id.*

[783] *See id.* at 23, 27, 28–32.

[784] *See supra* section III.B.4.d for a more detailed discussion of comments with respect to weighting of statistics in the detailed reports required under Rule 605(a)(1).

[785] *See* FIF Letter at 25–26 (providing a comparison between two hypothetical firms of average effective over quoted spread with symbol-based weighting).

[786] *See supra* note 781 and accompanying text.

proposal, as described below: (i) average notional order size; (ii) average midpoint; (iii) average percentage quoted spread; (iv) average percentage realized spread as calculated 15 seconds after the time of execution; and (v) average percentage realized spread as calculated 1 minute after the time of execution.

Average order size. The Commission proposed to include in the summary report a metric for average order size.[787] As described below, the Commission is adopting this metric largely as proposed and adding a break-out of execution quality metrics by notional size bucket and an additional order size metric in response to comments.

One industry group recommended that ''average order size in shares for the summary report be calculated (for the covered orders that must be reported in the summary report) by dividing the aggregate number of shares of covered orders by the number of orders.'' [788] This commenter further recommended adding ''average order size in notional value'' to the summary report, which ''can be calculated by a reporting firm (for the covered orders that must be reported in the summary report) by dividing the aggregate notional value of covered orders by the number of orders.'' [789] A couple of financial services firms also recommended presenting order-size categories in the summary report by average notional order size instead of lot size.[790] One of these commenters stated that order notional sizes provide investors a clearer view of the execution experience associated with their order, are more easily compared over time, are more representative of the cost to implement different types of trades, and are more consistent with increased market use of fractional/notional trading.[791] Similarly, the other commenter stated its belief that including ''average notional order size'' [792] in the summary report alongside average order size in shares would allow a user of the summary report to calculate another metric, ''average price per share,'' by dividing ''average notional order size'' by ''average share order size.'' [793]

After reviewing the comments, the Commission is retaining the ''average order size'' metric in the summary report largely as proposed with a modification to state that average order size will be reported in number of shares because the proposed rule was ambiguous about whether average order size would have been measured in number of shares or notional value.[794] The average order size in shares is relevant to understanding the relative size of the orders that the reporting market center, broker, or dealer received for execution.

However, the Commission also agrees with commenters that the average order size in notional value is relevant to understanding relative order size. For example, one broker-dealer stated that certain orders may be harder to execute, ''for example, when market liquidity is scarce or when the customers have difficult (*e.g.,* large-sized) orders to execute.'' [795] The Commission agrees with commenters that differences in a firm's execution quality metrics may correspond to differences in order flow. In particular, smaller orders may receive different execution quality than larger orders because, among other things, available liquidity in a particular security at a particular price is more likely to be sufficient to fill a smaller order. Therefore, the Commission is modifying the proposed summary report to: (1) add a metric for average notional order size; [796] and (2) require categorization of the data by notional order size.[797] Dividing execution quality statistics in the summary reports according to notional order size buckets provides investors with a more nuanced means to differentiate between firms and allows for comparison of execution quality statistics for more similar orders. Moreover, the average notional order size metric provides important context for where a firm's orders tend to fall within the range of a particular notional order size bucket.

With respect to the categorization of the data by notional order size, the statistical information in the summary reports for market orders and marketable limit orders is divided into eight notional order size ranges: less than $250; $250 to less than $1,000; $1,000 to less than $5,000; $5,000 to less than $10,000; $10,000 to less than $20,000; $20,000 to less than $50,000; $50,000 to less than $200,000; and $200,000 or more. These notional order size ranges correspond with the notional order size ranges that are used in the detailed reports required pursuant to Rule 605(a)(1).[798] As discussed in section III.B.1.b) above, the Commission selected these notional order size ranges based on its analysis of CAT data and comments received. Moreover, using the same notional order size ranges for the detailed reports and summary reports allows the statistics in the summary reports to be derived from the detailed reports as suggested by commenters.

As an additional measure of categorization by notional order size, the summary report also includes overall statistics for non-block size market and marketable limit orders—*i.e.,* the statistics in this row are not divided by notional order size range but only include orders smaller than $200,000 in notional value. Capping these overall statistics at $200,000 will prevent extremely large, block size orders from skewing the averages. It will also provide an accessible snapshot of information for investors. Providing overall execution quality statistics will balance providing more detailed execution quality data to market participants with providing an overview of a market center's or broker-dealer's execution quality in a more readily digestible form for investors, other market participants, or interested parties.

Finally, because average order size in both shares and notional value are the average order size received rather than executed, the Commission is modifying the first sentence of Rule 605(a)(2) to remove the words ''executions of'' in the clause referring to summary report ''providing summary statistics on all *executions of* covered orders that are

[787] *See* Proposing Release, 88 FR 3786 at 3823–24 (Jan. 20, 2023); proposed Rule 605(a)(2)(i).

[788] FIF Letter II at 11.

[789] *Id.* This commenter also stated that notional value should be obtained by multiplying the number of shares by the midpoint at the time of order receipt. *See id.*

[790] *See* Fidelity Letter at 9; Schwab Letter III at 3.

[791] *See* Fidelity Letter at 9.

[792] This commenter would calculate ''average notional order size'' by multiplying the number of shares by the midpoint at the time of order entry. *See* Schwab Letter III at 3.

[793] *See id.*

[794] *See* final 17 CFR 242.605(a)(2)(i).

[795] Virtu Letter II at 11.

[796] *See* final 17 CFR 242.605(a)(2)(ii). An industry group recommended that average order size in notional value be calculated ''by dividing the aggregate notional value of covered orders by the number of orders.'' FIF Letter II at 11. Average order size in notional value will be calculated as the cumulative notional value of covered orders divided by the total number of orders, as recommended by the commenter. As discussed above, the Commission is adopting a requirement that the detailed reports required by Rule 605(a)(1) include a cumulative notional value of covered orders metric so that average order size in notional value can be calculated from the summary report. *See supra* notes 376–378 and accompanying text.

[797] *See* final 17 CFR 242.605(a)(2).

[798] *See supra* section III.B.1.b). The Commission is not adopting commenters' suggestion that the notional value of an order should be based on the midpoint. *See supra* notes 789, 792. Instead, the notional value of a market or limit order will be calculated in the same manner for the summary report as it is for the detailed report. *See supra* note 361 and accompanying text.

market and marketable limit orders.'' [799] Instead, to avoid any ambiguity about how each of the statistics are calculated, the Commission is specifying where individual data elements apply to executions of covered orders, as described below.[800]

Percentage of shares executed at the quote or better and percentage of shares that received price improvement. The Commission proposed to include in the summary report metrics for the percentage of shares executed at the quote or better and percentage of shares that received price improvement and is adopting these metrics as proposed.[801] One industry group stated that there is no need to reference ''equal weighting by share volume,'' or any other weighting methodology with respect to the ''percentage of shares executed at the quote or better'' or ''percentage of shares that received price improvement'' metrics, because the weighting is clearly understood from the data element itself.[802] The Commission agrees that these metrics are weighted based on the number of shares executed and that reporting entities will understand this based on the metric as proposed. The Commission is adopting these statistics as proposed, while clarifying in the rule text that the statistics apply to executions of covered orders. These statistics will provide useful information for evaluating what type of pricing orders received.

Share-weighted average percentage price improvement. The Commission proposed to include a metric in the summary report for share-weighted average percentage price improvement per order.[803] As described below, the Commission is adopting this metric largely as proposed and adding a related metric to the detailed report. One industry group stated that it will assume that the proposed metric ''average percentage price improvement per order'' is intended to report price improvement as a percentage of the midpoint (as of the time of order receipt) and further recommended that average price improvement be share-weighted.[804] In addition, for clarity, this commenter recommended that the metric be labeled as ''share-weighted average percentage price improvement'' and the words ''per order'' be removed from the text of proposed Rule 605(a)(2)(iv).[805]

Average percentage price improvement will be measured as a percentage of the midpoint of the national best bid and national best offer at the time of order receipt.[806] In other words, average percentage price improvement is the share-weighted average price improvement for orders executed divided by the share-weighted average midpoint at the time of order receipt for those orders. The Commission agrees with the commenter that further clarity in this regard would be useful. Therefore the Commission is renaming this metric from the proposal to refer to the ''share-weighted average percentage price improvement,'' as suggested by the commenter, so that the use of share-based weighting is explicit, clarifying in the rule text that the share-weighted average percentage price improvement applies to executions of covered orders, and specifying that this statistic is calculated as the cumulative amount that prices were improved less the cumulative amount that prices were executed outside the quote divided by sum of the average midpoint times the number of shares executed.[807] In addition, as suggested by the commenter,[808] the Commission is requiring that the Rule 605(a)(1) detailed report include an additional column setting forth the average midpoint for executions of covered orders.[809] The new defined term for ''average midpoint'' refers to the share-weighted average of the midpoint of the NBB or NBO at the time of order receipt (or, for non-marketable limit orders, beyond-the midpoint limit orders, and orders submitted with stop prices, at the time such orders first become executable).[810] The inclusion of average midpoint for executions of covered orders in the Rule 605(a)(1) detailed report will enable users to derive the share-weighted average percentage price improvement.[811]

Average percentage effective spread. The Commission proposed to include in the summary report a metric for the average percentage effective spread.[812] The Commission is adopting the metric largely as proposed. One industry group stated in connection with the summary report that it agrees with the approach proposed by the Commission for calculating average percentage effective spread.[813] As discussed above, the Commission is modifying the definition of ''average percentage effective spread'' from the definition of such term in the proposal to make use of other defined terms.[814] Although the adopted metric in the summary report utilizes the new definition of ''average percentage effective spread,'' the metric itself is unchanged and the Commission is clarifying in the rule text that the metric applies to executions of covered orders.[815]

---

[799] *See* Proposing Release, 88 FR 3786 at 3823–24 (Jan. 20, 2023); proposed Rule 605(a)(2).

[800] *See* final 17 CFR 242.605(a)(2).

[801] *See* Proposing Release, 88 FR 3786 at 3823–24 (Jan. 20, 2023); proposed Rule 605(a)(2)(ii) and (iii); final 17 CFR 242.605(a)(2)(iv) and (v).

[802] *See* FIF Letter at 31. This commenter stated that ''percentage of shares executed at the quote or better'' would be calculated by dividing the total shares executed at the quote or better by the total shares executed, and ''percentage of shares that received price improvement'' would be calculated by dividing the total number of shares executed with price improvement by the total number of shares executed. *See id.*

[803] *See* Proposing Release, 88 FR 3786 at 3823–24 (Jan. 20, 2023); proposed Rule 605(a)(2)(iv).

[804] *See* FIF Letter at 28–29. *See also* FIF Letter III at 3 (''FIF members understand ['share weighted average percentage price improvement'] to mean the share-weighted price improvement divided by the share-weighted midpoint.'').

[805] *See* FIF Letter at 29. This commenter also recommended that the Commission add a column to the detailed Rule 605(a)(1) report that would provide the share-weighted average midpoint for each row, so that the market center or broker-dealer could derive the denominator for the share-weighted average percentage price improvement calculation. *See id. See also* FIF Letter II at 10; FIF Letter III at 3.

[806] *See* final 17 CFR 242.605(a)(2)(vi).

[807] *See* final 17 CFR 242.605(a)(2)(vi) and final 17 CFR 242.600(b)(9) (defining average midpoint). The cumulative amount that prices were improved is derivable from the Rule 605(a)(1) reports by multiplying, for each row, the cumulative number of shares of covered orders executed with price improvement (required by Rule 605(a)(1)(ii)(E)) by the share-weighted average amount per share that prices were improved (required by Rule 605(a)(1)(ii)(F)). Similarly, the cumulative amount that prices were executed outside the quote is derivable by multiplying, for each row, the cumulative number of shares of covered orders executed outside the quote (required by Rule 605(a)(1)(ii)(J)) by the share-weighted average amount per share that prices were outside the quote (required by Rule 605(a)(1)(ii)(K)). The numerator will be the total cumulative price improvement for every included row, less the total cumulative amount the prices were executed outside the quote for every included row. The denominator is derivable from the Rule 605(a)(1) reports by multiplying, for each row, the total number of shares executed (*i.e.,* the sum of the share counts required by Rule 605(a)(1)(i)(E) and (F)) by the average midpoint (required by Rule 605(a)(1)(i)(Y)). The denominator will be the sum of the total for every included row.

[808] *See supra* note 805.

[809] *See supra* note 591 and accompanying text.

[810] *See* final 17 CFR 242.600(b)(9). The average midpoint for order executions represents the same calculation as the denominator for the percentage-based spread statistics as proposed. *See supra* notes 588–591 and accompanying text.

[811] *See* final 17 CFR 242.605(a)(1)(i)(Y).

[812] *See* Proposing Release, 88 FR 3786 at 3823–24 (Jan. 20, 2023); proposed Rule 605(a)(2)(v).

[813] *See* FIF Letter at 29. The commenter also recommended that for clarity the metric be retitled as ''share-weighted average percentage effective spread.'' *See id.* The Commission disagrees with the commenter that this additional language is needed because the adopted definition of ''average percentage effective spread'' includes the use of share-weighting. *See* final 17 CFR 242.600(b)(10).

[814] *See supra* section III.B.4.b)(2). The ''average percentage effective spread'' is calculated as the average effective spread for order executions divided by the average midpoint for order executions. *See* final 17 CFR 242.600(b)(10).

[815] *See* final 17 CFR 242.605(a)(2)(vii). As discussed above, the Commission is adding a statistic for average midpoint for order executions

Average effective spread divided by average quoted spread (E/Q). The Commission proposed to include a metric in the summary report for average effective spread over average quoted spread, expressed as a percentage.[816] As discussed below, the Commission is adopting this metric largely as proposed and adding a metric for average quoted spread. As discussed above, several commenters stated that the Commission should require firms to calculate average E/Q utilizing spread-based, rather than share-based, weighting.[817] One industry group recommended that the summary report include the share-weighted average percentage quoted spread, in addition to the share-weighted average effective spread.[818] This commenter stated that with these statistics any person could derive effective over quoted spread and so it would not be necessary to include E/Q in the summary report.[819] A financial services firm also suggested that the summary report include ''percentage quoted spread,'' to be calculated by dividing the quoted spread by the midpoint of the NBB and NBO at the time of order entry.[820] This commenter stated that ''[i]n addition to providing transparency into the mix of each broker's order flow, including this metric will allow users to confirm the E/Q calculation on the Summary Report by dividing Percentage Effective Spread by Percentage Quoted Spread.'' [821] This commenter also suggested that the summary report show effective spread and quoted spread and then allow individuals to compute their own E/Q from those two numbers.[822]

After reviewing the comments, the Commission is: (1) adopting average E/Q as a metric on the summary report largely as proposed, while adjusting the weighting methodology from share-based weighting to spread-based weighting as suggested by commenters; [823] and (2) adding average percentage quoted spread as a metric in the summary report, also as suggested by commenters.[824] The Commission is also stating in the rule text for clarity that these metrics apply to executions of covered orders.[825] As discussed above, requiring spread-based weighting for the E/Q statistics will provide a consistent measure of E/Q that will not vary based on the specific symbols to which price improvement is allocated and thereby will facilitate the comparability of price improvement statistics.[826] Further, even though market participants and other interested parties could calculate E/Q on their own if the summary report includes average effective spread and average quoted spread, there is additional utility in having the average E/Q readily accessible on the summary report, particularly because market participants often use E/Q as a measure of execution quality.[827] The inclusion of average quoted spread on the summary report will provide another metric that users of the summary report may use to understand the nature of the reporting firm's order flow.

Average execution speed in milliseconds. The Commission proposed to include a metric in the summary report for average execution speed in milliseconds and is adopting this metric largely as proposed.[828] An industry group stated its understanding that the calculation of ''average execution speed in milliseconds'' would proceed as follows: first, for each individual execution multiply the shares executed by the time to execution; second, sum the results; and finally, divide that sum by the total shares executed.[829] The Commission confirms that reporting entities will calculate the metric as stated by the commenter and to add clarity to the rule text is specifying that this metric applies to executions of covered orders and is a share-weighted average.[830] The proposed metric is relevant to evaluating how quickly orders were executed, and the Commission therefore has decided to adopt the metric as proposed.[831]

Additional statistics in the summary report. In the Proposing Release, the Commission solicited comment on whether any additional execution quality statistics required under proposed Rule 605(a)(1) should be included as an aggregated statistic in the summary report.[832] As described below, in consideration of these comments, the Commission is adding to the summary report metrics for average realized spread as calculated at 15 seconds and 1 minute from time of execution, and a metric for the average midpoint.

An industry group stated that order flow characteristics such as the amount of ''informed'' order flow received by a broker-dealer and the size of an order relative to the average daily volume of a stock are factors outside of the control of order-handling parties but can impact the amount of price improvement received.[833] This commenter further stated that the impact of these order flow characteristics could be measured in part through statistics such as realized spread and price impact and thus recommended that the Commission require firms to include in the summary report the weighted-average realized spread at 15 seconds and at 1 minute after the time of execution.[834] A financial services firm also suggested that percentage realized spread be included in the summary report statistics and argued that this ''simple addition would provide better transparency regarding the distinct

to the detailed report so that the percentage-based spread statistics in the summary report can be derived from the detailed report. *See supra* notes 588–591 and accompanying text.

[816] *See* Proposing Release, 88 FR 3786 at 3823–24 (Jan. 20, 2023); proposed Rule 605(a)(2)(vi).

[817] *See supra* notes 600–608 and accompanying text.

[818] *See* FIF Letter at 29.

[819] *See id.* This commenter stated that if average percentage effective spread and quoted spread are reported then a person could derive the average percentage price improvement for the summary report. *See id.*

[820] *See* Schwab Letter III at 3.

[821] *Id.*

[822] *See* Schwab Letter II at 31.

[823] To implement the change in weighting methodology, the Commission is modifying the description of the average E/Q metric to specify that it is average effective spread *divided by* average quoted spread. As is the case with the average E/Q statistics in the detailed report required by Rule 605(a)(1), this description of the average E/Q statistic for the summary report makes use of adopted defined terms for ''average effective spread'' and ''average quoted spread.'' *See supra* notes 613–615 and accompanying text. *See also* final 17 CFR 242.605(a)(2)(ix); final 17 CFR 242.600(b)(8); final 17 CFR 242.600(b)(12). In contrast, the Commission proposed to utilize a defined term for ''average effective over quoted spread,'' which would have required the calculation of the E/Q for each transaction that would have then been averaged over a month, as weighted by number of shares. *See* Proposing Release, 88 FR 3786 at 3817 (Jan. 20, 2023).

[824] *See* final 17 CFR 242.605(a)(2)(viii) (requiring that average percentage quoted spread be included as a metric in the summary report and providing that average percentage quoted spread means the average quoted spread for order executions divided by the average midpoint for order executions).

[825] *See* final 17 CFR 242.605(a)(2)(viii) and (ix).

[826] *See supra* notes 617–620 and accompanying text.

[827] *See* Proposing Release, 88 FR 3786 at 3970 (Jan. 20, 2023).

[828] *See id.* at 3823–24; proposed Rule 605(a)(2)(vii); final 17 CFR 242.605(a)(2)(xii).

[829] *See* FIF Letter at 31.

[830] The time-to-execution statistics in the detailed report required by Rule 605(a)(1) similarly utilize a share-weighted average. *See* final 17 CFR 242.605(a)(1)(ii)(G), (I), (L); final 17 CFR 242.605(a)(1)(iii)(D).

[831] A broker-dealer suggested that the Commission should only require execution-time statistics for market orders because marketable limit orders may be partly executed or may exceed the consolidated quote size. *See* Rule 605 Citadel Letter at 10. The summary report will include average execution speed for market and marketable limit orders. The Commission is retaining average execution speed for marketable limit orders in the summary report for the same reasons that the Commission is retaining execution-time statistics for marketable limit orders in the detailed report required by Rule 605(a)(1). *See supra* section III.B.3.b.

[832] *See* Proposing Release, 88 FR 3786 at 3825. (Jan. 20, 2023).

[833] *See* FIF Letter at 31.

[834] *See id.* at 32.

characteristics of order flow among brokers which, in turn, affects the average execution quality metrics on the reports.'' [835] Both commenters stated that a person reviewing the summary report could calculate the price impact based on the realized spread and the effective spread.[836]

The Commission agrees with the commenters that viewing the average realized spread in the summary report will be useful to investors. The average realized spread metrics for 15 seconds and 1 minute after the time of execution were proposed for inclusion in the detailed report required pursuant to Rule 605(a)(1) and will similarly allow users of the summary report to differentiate between various types of order flow.[837] Moreover, because the final Rule 605(a)(1) detailed report requires the calculation of average realized spread at multiple time horizons, including 15 seconds and 1 minute, adding these two time horizons for average realized spread to the summary report should impose a minimum burden on reporting entities. Therefore, the Commission is requiring that the summary report include, for executions of covered orders, both the average percentage realized spread as calculated 15 seconds after the time of execution and the average percentage realized spread as calculated 1 minute after the time of execution.[838]

An industry group further suggested adding share-weighted average execution price as a metric to the summary report.[839] Although the Commission agrees with the commenter that the share-weighted average execution price could provide useful information, average execution price is not a metric included in the detailed report required by Rule 605(a)(1) and therefore if this statistic were included in the summary report it would not be derivable from the detailed report, contrary to commenters' suggestions that the metrics in the summary report should be derivable. Therefore, the Commission is adding to the summary report a metric for average midpoint for executions of covered orders because this metric will be included in the detailed report so that other summary report statistics will be derivable from the detailed report and, similar to share-weighted average execution price, average midpoint provides information about the mix of stocks represented in the reported statistics.[840] Thus, the inclusion of the average midpoint will provide those using the summary report for comparison purposes with a means to assess whether differences in the price mix of stocks could be a factor affecting other execution quality statistics of reporting entities.

2. Required Format

As discussed below, commenters supported the production of the summary report in a human-readable format. A financial services firm supported the proposal to require a standardized summary report in a ''user-friendly format.'' [841] A national securities exchange stated that the proposed format would make the data in the summary reports accessible to a wider audience in a standard format to facilitate comparisons.[842] However, one academic believed that while the proposed summary reports ''are most important,'' the Commission's proposal ''did not clearly display what the summary reports would look like.'' [843] Finally, one industry group recommended that CSV,[844] or another format that could be copied into a spreadsheet software program, be used in place of XML for the summary report. According to the commenter, using CSV ''would allow investors to compare summary data across firms more readily.'' [845]

After review of the comments, the Commission is requiring the use of PDF format as proposed and modifying proposed Rule 605(a)(2) to require that market centers and broker-dealers also produce the summary report in CSV format instead of XML format as suggested by the commenter.[846] Making the summary report available in these file formats will allow market centers and broker-dealers to efficiently prepare the summary reports. In addition, investors and other members of the public will benefit from being able to access the summary report in multiple formats. Presently, it is challenging for individual investors to decipher and analyze the detailed Rule 605(a)(1) report. These individual investors will be more readily able to use a summary report to make a more informed choice about selection of a broker-dealer than they can now. Because the summary report is human-readable in PDF format, individual investors will be able to assess the data by reviewing and comparing summary reports without needing technical expertise or relying on an intermediary. Further, independent analysts, consultants, and the financial press may also analyze the summary reports to provide more information to individual investors, including those who do not themselves access the summary reports.

The Commission further agrees with the industry group commenter that investors will benefit from the summary report being provided in CSV format and has modified proposed Rule 605(a)(2) to require that the summary report required therein be provided in CSV format, instead of XML, and also provided using the associated PDF renderer. As would have been the case using XML, the requirement to use the Commission's schema for CSV format will result in the summary report data being provided in a format that is structured and machine-readable, which allows users to more easily process and analyze the data, and provides consistency of format across reports. Requiring a CSV file format also provides market participants and other interested parties with a simple and versatile format that is viewable in many programs. Like XML (and PDF), CSV is ''open standard,'' which is a term that is generally applied to technological specifications that are widely available to the public, royalty-free, at no cost. However, the Commission agrees with the commenter that a CSV file format may allow investors and other members of the public to compare summary data across firms more readily than XML. Investors and other members of the public may find a CSV file format preferable to an XML file format because the data can be more readily viewed and analyzed in widely used spreadsheet applications.

[835] Schwab Letter III at 3.

[836] *See* FIF Letter at 32; Schwab III Letter at 3.

[837] *See supra* section III.B.4.a)(2) for a discussion of the utility of the realized spread statistic.

[838] *See* final 17 CFR 242.605(a)(2)(x) and (xi). As discussed above, the Commission is adding a statistic for average midpoint for order executions to the detailed report so that the percentage-based spread statistics in the summary report can be derived from the detailed report. *See supra* notes 589–592 and accompanying text.

[839] *See* FIF Letter at 27.

[840] *See* final 17 CFR 242.605(a)(2)(iii). Pursuant to the definition of ''average midpoint,'' average midpoint for order executions is a share-weighted average. *See* final 17 CFR 242.600(b)(9).

[841] *See* Vanguard Letter at 4.

[842] *See* Nasdaq Letter at 46.

[843] Angel Letter at 3. This commenter stated that additional efforts need to be made to make sure that the summary reports are ''human-friendly'' and provide useful data for comparing brokers. *See id.*

[844] A CSV (comma-separated values) file is a text file in which commas separate the values in each row.

[845] FIF Letter at 5, 32.

[846] *See* final 17 CFR 242.605(a)(2). Rule 605(a)(4) does not apply to the summary report required by Rule 605(a)(2). This is because final Rule 605(a)(2) requires the use of the Commission's schema for CSV format and associated PDF renderer, and therefore the Rule 605 NMS Plan does not establish the formats and fields for the summary report. Further the summary report is not included in Rule 605(a)(4) because the procedures for preparation and posting of the summary report under Rule 605(a)(2) are contained in Rule 605(a)(2), which sets forth the necessary format for the summary report, and Rule 605(a)(5), which requires internet posting.

Because the Rule 605 summary report consists solely of a series of discrete numeric values in a fixed tabular layout, and does not contain elements in nested structures, the sophisticated validations that XML enables would not have provided significant benefits for the Rule 605 summary report.[847] Instead, the CSV format, which yields much smaller file sizes and therefore more efficient processing and storage of data than the XML format, is equally capable of handling the Rule 605 summary report content. The increased usability of the CSV file format will be more relevant to investors and other members of the public viewing and analyzing the summary report than the broader technical coverage of XML. Therefore, the Commission is requiring the use of a schema for CSV format rather than an XML schema. Further, the requirement that the same data be provided through the use of a PDF renderer helps ensure that the summary report is also available in a human-readable format and consistently presented across operating systems and applications.

3. Investor Testing and Education

An industry group and an association of securities regulators both strongly encouraged the Commission to provide investor education or testing to ensure that the summary report is useful.[848] In addition, an academic stated that additional effort needs to be made to make sure the summary report is ''human-friendly and provide[s] useful data for comparing brokers.'' [849] The industry group further stated that ''the industry has expended significant effort and resources to ensure that retail investors have access to educational materials and support necessary to best inform their use of broker-dealer services'' and stated that the Commission was in the best position to educate investors about the use of summary reports.[850] This commenter suggested providing educational resources to retail investors that would help them understand the summary reports and how such information can be used to inform their investment decisions.[851] This commenter also suggested that investors should understand how to interpret varying data in order to facilitate the most accurate cross-comparisons between broker-dealers' execution quality.[852] The association of securities regulators suggested testing the summary report with investors prior to implementation, such as through focus groups, to confirm that the summary report provides useful information for retail investors.[853] An individual supported investor testing and investor roundtables for all equity market system rules recently proposed by the Commission.[854] Several individuals suggested that the Commission should provide clear guidance on how to read and interpret the amended Rule 605 reports.[855]

The Commission does not agree that prescribed testing or investor focus groups or roundtables are needed at this time. Rule 605 has been in existence for over two decades. Although larger broker-dealers will be required to produce the detailed report under Rule 605(a)(1) for the first time, and both market centers and larger broker-dealers will be required to create and post a summary report under Rule 605(a)(2) for the first time, investors should be broadly familiar with many of the execution quality metrics that the summary report is intended to highlight. Further, many commenters, including individuals, supported the proposed summary report as it provides greater access to execution quality data.[856] Notwithstanding any potential insights into the Rule 605 reports that could be gained from testing or focus groups, delay in the adoption of final Rule 605 would delay the benefits of the amendments from accruing.

Some commenters suggested that the Commission directly provide educational resources to individual investors related to the final Rule 605 amendments. However, many market participants, in addition to the Commission,[857] have undertaken efforts to educate retail investors about securities trading and how to compare broker-dealer execution quality, and the Commission expects that these initiatives will continue to inform retail investors about means to evaluate their broker-dealers' performance, including the utilization of summary report statistics. Individual broker-dealers may provide their own educational resources addressing Rule 605 directly to their customers and other market participants and customers of broker-dealers may ask their broker-dealers questions about the Rule 605 reports. Likewise, broker-dealers can provide information about their firms and the nature of their order flow on their websites or through other communications to customers. Further, as stated above, third parties, including analysts, researchers, and the financial press, may also use the summary reports to analyze and compare execution quality across broker-dealers or market centers and provide such information to individual investors in different formats that provide individual investors with alternative ways to engage with Rule 605 data. The Commission therefore does not believe it is necessary to prescribe investor education at this time. However, the Commission will monitor the implementation of Rule 605, including with regard to whether additional information about investor use or analysis of the summary report would be helpful.

V. Requirements for Making Rule 605 Reports Available to the Public

A. Proposed Approach

Prior to these amendments, the requirements for the dissemination of the market center report required by Rule 605 were set forth in paragraphs (a)(2) and (3) of Rule 605.[858] Preexisting Rule 605(a)(2) required every national securities exchange on which NMS stocks are traded and each national securities association to act jointly in establishing procedures for market centers to make the reports required by Rule 605(a)(1) available to the public in a uniform, readily accessible, and usable electronic form.[859] The Commission proposed to amend preexisting Rule 605(a)(2), which would be reorganized into amended Rule 605(a)(3), so that the proposed summary report would also be made available in accordance with the procedures established by the Rule 605 NMS Plan.[860] Further, preexisting Rule 605(a)(2) provided that, in the event there is no effective national market system plan, market centers shall prepare their reports in a consistent, usable, and machine-readable electronic

[847] *See also infra* sections IX.D.1.b)(3) and IX.E.4.b).

[848] *See* SIFMA Letter II at 30; NASAA Letter at 6.

[849] *See* Angel Letter at 3.

[850] *See* SIFMA Letter II at 30.

[851] *See id.* In particular, one commenter suggested educating investors on price impact (as defined in the Order Competition Proposal). *See* Schwab Letter II at 31.

[852] *See* SIFMA Letter II at 31.

[853] *See* NASAA Letter at 6.

[854] *See* letter from Andrew (Mar. 31, 2023).

[855] *See* Letter Type G at *https://www.sec.gov/comments/s7-29-22/s72922.htm* (suggesting this guidance ''especially for retail investors who may not have a deep understanding of the markets'').

[856] *See supra* note 742.

[857] *See, e.g., https://www.sec.gov/education/investor-education*, *https://www.investor.gov/introduction-investing/investing-basics/how-stock-markets-work/executing-order*. The Commission's Office of Investor Education and Advocacy regularly posts investor alerts and bulletins. In addition, *Investor.gov* is an online resource from the Commission's Office of Investor Education and Advocacy to help individual investors ''make sound investment decisions and avoid fraud.'' *See https://www.investor.gov/about-us*.

[858] *See* Proposing Release, 88 FR 3786 at 3824 (Jan. 20, 2023).

[859] *See id.*

[860] *See id.*

format and make such reports available for downloading from an internet website that is free and readily accessible to the public.[861] The Commission proposed to reorganize this provision into amended Rule 605(a)(4) and modify amended paragraph (a)(4) to explicitly refer to the requirements in amended Rule 605(a)(1).[862]

Rule 605(a)(2), prior to these amendments, also specified that the detailed reports required by Rule 605(a)(1) must be posted on an internet website that is free and readily accessible to the public for a period of three years from the initial date of posting.[863] As proposed, these same requirements would be reorganized into amended Rule 605(a)(5) and would be extended to the summary report required under proposed Rule 605(a)(2).[864]

Finally, prior to these amendments, Rule 605(a)(3) specified that the detailed report required by Rule 605(a)(1) must be made available within one month after the end of the month addressed in the report.[865] The Commission proposed to renumber this provision as amended Rule 605(a)(6) and to extend this requirement to the amended Rule 605(a)(2) report.[866]

B. Final Rule and Discussion

1. Accessibility of Rule 605 Reports

The Commission is updating these provisions of preexisting Rule 605 by reorganizing paragraphs (a)(2) and (3) of preexisting Rule 605 into amended paragraph (a)(3) and new paragraphs (a)(4) through (6) as proposed.[867] In the amended paragraphs, the Commission proposed to apply the website posting, timing, and retention requirements to the proposed Rule 605(a)(2) summary report and to extend Rule 605's procedural requirements to brokers and dealers subject to Rule 605. The Commission received no comments regarding the proposed renumbering and reorganization of preexisting Rule 605(a)(2) and (3), but did receive comments on the substance of proposed Rule 605(a)(3). The Commission is adopting paragraphs (a)(3) through (6) of Rule 605 as proposed. These rule provisions set forth the requirements for making the Rule 605 reports accessible to the public, and retaining these requirements from preexisting Rule 605 will continue to provide interested parties with the ability to access the reports easily and efficiently.

Rule 605(a)(3) directs the SROs to act jointly in establishing procedures for market centers, brokers, and dealers to follow in making available to the public the detailed report under Rule 605(a)(1) and summary report under Rule 605(a)(2). The Rule 605 NMS Plan establishes procedures for market centers to make data available to the public in a uniform, readily accessible, and usable electronic form.[868] The Rule 605 NMS Plan requires each market center to arrange with a single plan participant to act as the market center's Designated Participant.[869] The Rule 605 NMS Plan also requires market centers to post their monthly reports on an internet website that is free of charge and readily accessible to the public.[870] Inclusion of Rule 605(a)(2)'s summary reports within the scope of the Rule 605 NMS Plan will promote consistent administration of Rule 605 and allow the Designated Participant for each reporting entity to play a role with respect to the reports required by Rule 605(a)(1) and (2). As is the case for market centers that are not Participants prior to these rule amendments, the Participants will be required to enforce compliance with the terms of the Rule 605 NMS Plan by their members and persons associated with their members.[871] In addition, formatting for Rule 605 data is governed by the Rule 605 NMS Plan. Among other things, the Rule 605 NMS Plan sets forth the file type and structure of the reports and the order and format of fields, yielding reports that are structured and machine-readable.[872] Because of the amendments to Rule 605, the Rule 605 NMS Plan will need to be updated in order to incorporate references to larger broker-dealers subject to Rule 605 and to account for summary reports and the new data fields required to be reported. The compliance period for amending the Rule 605 NMS Plan, and other implementation details, are discussed in *infra* section VII.

With respect to report formatting, an investor advocacy group stated that header data should be included in the Rule 605 reports, arguing that ''it is impossible to understand the reports'' without looking separately to published Commission guidance.[873] This commenter also stated that Rule 605 reports should continue to be made available in a machine-readable format.[874] The Commission agrees that having more ready access to the information needed to understand the content of the reports could be beneficial for market participants. Because the Rule 605 NMS Plan establishes the procedures for reporting entities to follow in making the report available in a uniform, readily accessible, and usable electronic form, the Participants are well-positioned to determine how to include header information in connection with the updates to the record layout for the detailed Rule 605(a)(1) reports.[875] The Commission encourages the Participants to consider whether header information or a more accessible record layout or key should be part of the procedures for making the reports available to the public, especially as it pertains to the detailed Rule 605(a)(1) reports.[876]

In the event that an amendment to the Rule 605 NMS Plan establishing

[861] *See id.* at 3824, n.475.

[862] *See id.*

[863] *See id.* at 3824.

[864] *See id.* at 3824, n.475.

[865] *See id.* at 3825.

[866] *See id.*

[867] *See* final 17 CFR 242.605(a)(3) through (6); Proposing Release, 88 FR 3786 at 3824–25 (Jan. 20, 2023). The Commission proposed to amend current Rule 605 by reorganizing paragraphs (a)(2) and (3) of current Rule 605 as paragraphs (a)(3) through (6) of proposed Rule 605.

[868] *See* final 17 CFR 242.605(a)(3) and Rule 605 NMS Plan. *See also* Rule 605 NMS Plan Release, 66 FR 19814 at 19815 (Apr. 17, 2001). For a discussion of the implementation of amendments to the Rule 605 NMS Plan pursuant to 17 CFR 242.608 (''Rule 608''), see *infra* section VII.

[869] *See* Rule 605 NMS Plan at section VIII. As of January 2024, the parties to the Rule 605 NMS Plan are the 16 registered national securities exchanges trading NMS stocks and one national securities association (the ''Participants''). Although not all market centers are Participants, the Participants are required to enforce compliance with the terms of the Rule 605 NMS Plan by their members and persons associated with their members. *See* 17 CFR 242.608(c). Each market center must notify its Designated Participant of the website where its reports may be downloaded, and each Designated Participant must maintain a comprehensive list of links for all market centers for which it functions as a Designated Participant. *See* Rule 605 NMS Plan at sections IV, VIII(c).

[870] *See* Rule 605 NMS Plan at section VII.

[871] *See* 17 CFR 242.608(c).

[872] *See* Rule 605 NMS Plan at 2 (''Section V . . . provides that market center files must be in standard, pipe-delimited ASCII format'').

[873] *See* Healthy Markets Letter at 16. *See also* Better Markets Letter at 9, n.26 (''We agree with Healthy Market Association that improved header data would go a long way to making Rule 605 Reports more readable, particularly for retail investors, and suggest the Commission make this technical enhancement to the Rule 605 NMS Plan.'').

[874] *See* Healthy Markets Letter at 16.

[875] If the Plan Participants determine to amend the Rule 605 NMS Plan to incorporate headers into the reports, an amendment must be filed with the Commission pursuant to Rule 608 of Regulation NMS. *See* 17 CFR 242.608(a). Amendments to NMS plans are subject to notice and comment, and may be either effective upon filing pursuant to 17 CFR 242.608(b)(3) or subject to action by Commission order before amendments may be effective, pursuant to 17 CFR 242.608(b)(2).

[876] Under Rule 608(a)(2) of Regulation NMS, the Commission may propose amendments to any effective national market system plan. *See* 17 CFR 242.608(a)(2). The Commission could in the future propose an amendment to the Rule 605 NMS Plan to address issues related to the Rule 605 reports.

procedures for market centers, brokers, and dealers to comply with Rule 605 has not been approved by the Commission prior to the compliance date of the amendments to Rule 605, paragraph (a)(4) of Rule 605 provides that market centers, brokers, and dealers shall prepare their reports in a consistent, usable, and machine-readable electronic format, and make such reports available for downloading from an internet website that is free and readily accessible to the public.[877] Paragraph (a)(5) of Rule 605 requires market centers, brokers, and dealers to keep the reports required by Rule 605(a)(1) and (2) posted on an internet website that is free and readily accessible to the public for a period of three years from the initial date of posting. Finally, paragraph (a)(6) of Rule 605 requires market centers, brokers, and dealers to make their Rule 605(a)(1) and (2) reports available within one month after the end of the month addressed in the reports. The Commission received no comments on its proposal to renumber and update paragraphs (a)(4) through (6) of Rule 605 and is adopting paragraphs (a)(4) through (6) of Rule 605 as proposed, for the reasons stated in the Proposing Release.[878] Final Rule 605 will extend these procedural requirements to the Rule 605(a)(2) summary report so that valuable information on order execution quality will be made available to the public without undue delay.[879] Further, the ability to access Rule 605(a)(1) and (2) reports at the same time and the availability of these reports for the same period of time will aid users of the reports in their review and analysis of execution quality data.[880]

2. Alternatives to Rule 605 Proposal

(a) Centralization of Rule 605 Data

In the Proposing Release, the Commission solicited comment on whether to require centralized posting of Rule 605 reports and discussed as an alternative that instead of, or in addition to, having market centers and larger broker-dealers post Rule 605 reports to their websites, the Commission could require these reporting entities to submit their Rule 605 reports to a centralized electronic system, which would then make these reports available to market participants.[881] The Commission stated that the creation of a centralized electronic system could promote greater transparency by better enabling market participants to access and evaluate the reports of multiple reporting entities because the reports would be available at a single location.[882] However, the Commission recognized that the entity responsible for administering the centralized electronic system would incur compliance costs as a result of the creation and maintenance of such a system, and these costs could be passed on to reporting entities in the form of filing fees or to consumers of Rule 605 reports in the form of access fees.[883]

Specifically, the Commission considered two options for how to implement a centralized electronic system. One option would have been for the Commission to require that the Plan Participants establish procedures pursuant to the Rule 605 NMS Plan to provide for the creation and maintenance of a centralized electronic system to serve as a repository for Rule 605 reports and make such reports available for viewing and downloading in a manner that is free and readily accessible to the public.[884] The second option would have been for the Commission to require that reporting entities disclose Rule 605 information directly to the Commission through the Commission's Electronic Data Gathering, Analysis, and Retrieval (''EDGAR'') system, with the Commission subsequently making the information publicly available on EDGAR.[885]

Several commenters supported the centralized posting of Rule 605 reports (summary and detailed).[886] Some of these commenters stated that providing centralized access to Rule 605 reports would ''facilitate accessibility and comparability of the metrics to the benefit of retail customers and market participants'' [887] and that ''market participants would be more likely to use the data to compare execution quality, leading to increased competition and improvements in execution quality.'' [888] Some of these commenters suggested various means of centralizing Rule 605 reports—having FINRA maintain a public database for Rule 605 reports,[889] creating a central repository for Rule 605 reports to be located on a single page on the Commission's website,[890] or working out the details of a central repository through the Rule 605 NMS Plan.[891] An individual investor suggested that the Commission should require the summary and detailed reports to be posted in a centralized electronic system implemented by the Commission that subjects reporting entities to liabilities and has no access fees.[892] An industry group and an investor advocacy group both specifically discouraged the use of EDGAR as the centralization method,[893] stating that the EDGAR system is ''outdated technology'' [894] and ''inadequate for the task.'' [895]

The Commission has considered the comments but is not adopting a requirement for centralized posting of Rule 605 reports for a number of reasons. While several commenters supported the goal of centralizing Rule

[877] The requirements of Rule 605(a)(4) do not apply to the Rule 605(a)(2) summary report because Rule 605(a)(2) specifies the necessary format for the reports, while Rule 605(a)(5) contains the requirement for internet posting.

[878] *See* Proposing Release, 88 FR 3786 at 3824–25 (Jan. 20, 2023).

[879] *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75425 (Dec. 1, 2000). If a market center or broker-dealer believes that its particular circumstances warrant an exemption from the provisions of the Rule, it may request an unconditional or conditional exemption pursuant to paragraph (b) of Rule 605. Such an exemption will be granted if the Commission determines that it necessary or appropriate in the public interest, and is consistent with the protection of investors. *See* 17 CFR 242.605(b).

[880] *See* Proposing Release, 88 FR 3786 at 3824–25 (Jan. 20, 2023).

[881] *See id.* at 3825, 3894.

[882] *See id.* at 3894. The Commission also stated that a centralized system could enable programmatic checks that the Rule 605 reports are appropriately standardized, formatted, and complete before posting. *See id.*

[883] *See id.*

[884] *See id.* at 3895.

[885] *See id.* at 3896. Under this alternative, entities would submit Rule 605 information to the Commission, but would not file Rule 605 information with the Commission. Under the Exchange Act, documents filed with the Commission are subject to heightened liability for misstatements contained therein as compared to documents otherwise provided to the Commission (*e.g.,* documents furnished to the Commission). *See* 15 U.S.C. 78ff.

[886] *See* BlackRock Letter at 4; Angel Letter at 3; Fidelity Letter at 8; Healthy Markets Letter at 16; Nasdaq Letter at 46; SIFMA Letter II at 25; J.T. Letter.

[887] Fidelity Letter at 8.

[888] Nasdaq Letter at 46. *See also* BlackRock Letter at 4.

[889] *See* Healthy Markets Letter at 16.

[890] *See* Fidelity Letter at 8.

[891] *See* Angel Letter at 3.

[892] *See* J.T. Letter. This commenter stated that it is ''essential to ensure that these reports are appropriately standardized, formatted, and completed before acceptance through programmatic checks.'' *Id.*

[893] *See* FIF Letter at 33; Healthy Markets Letter at 16.

[894] *See* FIF Letter at 33.

[895] *See* Healthy Markets Letter at 16. Another commenter objected to the standardization and centralization of Rule 605 reports and stated that ''[g]iving away vast amounts of information to free riders (*e.g.,* activists, MEME stock insurgents, and foreign adversaries) increases vulnerabilities'' such as ''MEME events and other irrational exuberance.'' Data Boiler Letter at 27. The Commission does not agree that the standardization and centralization of Rule 605 reports would increase these so-called ''vulnerabilities'' simply by making the reports viewable at one central location in a consistent format because it is unclear how the execution quality information contained in Rule 605 reports would lead to these outcomes.

605 reports, commenters did not have a consensus view on how to accomplish centralization. Further, two commenters expressed specific concerns with the Commission using EDGAR as a centralized repository. The Commission acknowledges that centralization of Rule 605 data, by providing standardization to the reports, could help to make it easier for market participants to access and evaluate Rule 605 reports. However, developing a centralized repository and procedures for reporting entities to follow, whether done by the Commission or by Plan Participants, could potentially result in implementation time delays and require the expenditure of considerable technology and personnel resources. Further, although a centralized repository could lower search cost for market participants, even without centralization, Rule 605 reports will be required to be readily available and accessible.[896]

The changes to Rule 605 discussed herein will expand the scope of the reports and improve the usefulness of the execution quality statistics provided and made public. For example, the addition of a reporting requirement for larger-broker dealers will provide investors with information that they could use to compare the execution quality provided by different broker-dealers. The current disclosure requirements set forth in the amended rule and under the Plan will help ensure that implementation of final Rule 605 will proceed in a timely manner.[897]

(b) Generation of Order Execution Quality Reports Using CAT Data

As an alternative to the proposed Rule 605 amendments, the Commission asked for comment on using CAT data to have either the Commission or the CAT NMS Plan Processor[898] provide execution quality information to the public at monthly (or more frequent) intervals. This alternative would have effectively eliminated the need for market centers and larger broker-dealers to prepare Rule 605 reports.[899]

A few commenters supported the use of CAT data to produce Rule 605 reports.[900] An investment advisory firm stated that utilizing CAT data to create a report and making such reports easily accessible in one location ''will likely result in a meaningful increase in transparency for investors.'' [901] An asset management firm stated that if every reporting firm generates its own reports, there would be ''needless duplication of the costs and burdens associated with the implementation and ongoing maintenance of disclosures,'' and that ''a centralized processor for Rule 605 reports would also eliminate the inevitable inconsistencies or errors which arise when independent systems are responsible for creating reports.'' [902] Another broker-dealer specified that ''for the sake of consistency and transparency, FINRA is best positioned to provide these reports'' through the use of CAT data.[903] Several commenters also stated that a central Rule 605 report processor would lower compliance burdens for broker-dealers.[904] An industry group stated that if FINRA/CAT is not used to produce all Rule 605 reports, but FINRA prepares its own Rule 605 data for regulatory purposes, such FINRA data/report should be made available to the relevant firm.[905]

The Commission recognizes the value in having one entity calculate the statistics required under Rule 605 and produce execution quality disclosures because it could result in more standardized data. This in turn could help facilitate one of the primary goals of the Rule 605 amendments—to enhance order execution quality reporting to better enable investors to compare and evaluate execution quality among different market centers and larger-broker-dealers. This approach could also allow for the publication of execution quality data for all broker-dealers instead of just those that meet the customer account threshold. However, there are potentially significant costs and time delays associated with implementation of this alternative. The obstacles associated with authorizing and enabling FINRA CAT to prepare execution quality disclosures could hinder the ability of investors and market participants more broadly to have ready access to enhanced execution quality information. Rule 605, as adopted, will require updated disclosure within a comparatively shorter timeframe.[906] However, the Commission will continue to monitor this alternative in the context of the implementation of CAT and may in the future consider whether execution quality disclosure utilizing CAT data is practicable or advisable.

If the Commission in the future determines that CAT data should be utilized to produce execution quality disclosures, the Commission could also consider whether to eliminate the requirement that market centers and broker-dealers themselves produce Rule 605 reports in that context.

An industry group stated that ''[t]o the extent FINRA/CAT are not utilized to produce Rule 605 reports, the Commission or FINRA should be required to provide a publicly available data template that specifies *exactly* how a market center or broker-dealer's Rule 605 reports should be produced.'' [907] The commenter further stated that ''[d]oing so would establish a standardized metric consistent with regulators' expectations and reduce any regulatory risks reporting entities may face from having to make independent interpretations of various reporting requirements.'' [908] Although the Commission will not publish an exact data template for the detailed reports, the NMS Plan required by Rule 605(a)(3) will establish procedures for making the detailed report available to the public in a ''uniform, readily accessible, and usable electronic form.'' [909] Further, Rule 605(a)(2) requires the summary report to be made available using the schema for CSV published on the Commission's website.[910] In addition, the Commission is providing herein a detailed discussion of the final rule, including responses to issues and questions raised by commenters. Therefore, reporting entities will have

[896] *See* final 17 CFR 242.605(a)(5).

[897] In May 2023, FINRA requested comment on whether to require its members to provide Rule 605 reports to FINRA for centralized publication. *See* FINRA Regulatory Notice 23–10 (May 31, 2023) (''Regulatory Notice''). FINRA stated in the Regulatory Notice that the proposed requirement to provide Rule 605 reports to FINRA would supplement, not replace, firm's current obligations under Rule 605. *See* Regulatory Notice at 3. Comments received on FINRA Regulatory Notice 23–10 are *available at https://www.finra.org/rules-guidance/notices/23-10#comments.*

[898] As set forth in the National Market System Plan for the Consolidated Audit Trail (''CAT NMS Plan''), the CAT NMS Plan Processor is required to develop and, with the prior approval of the Operating Committee, implement policies, procedures, and control structures related to the CAT System that are consistent with 17 CFR 242.613(e)(4), and Appendix C and Appendix D of the CAT NMS Plan. *See* Securities Exchange Act Release No. 79318 (Nov. 15, 2016), 81 FR 84696 at 84704, n.136 (Nov. 23, 2016) (order approving the CAT NMS Plan).

[899] *See* Proposing Release, 88 FR 3786 at 3897 (Jan. 20, 2023).

[900] *See* Angel Letter at 3; Black Rock Letter at 4; Fidelity Letter at 8; FIF Letter at 32; Healthy Markets Letter at 16; SIFMA Letter II at 27; State Street Letter at 2; Tastytrade Letter at 4; LPL Financial Letter at 4.

[901] LPL Financial Letter at 4.

[902] BlackRock Letter at 4.

[903] Tastytrade Letter at 4.

[904] *See* Angel Letter at 3; Black Rock Letter at 4; Fidelity Letter at 8; SIFMA Letter II at 27; State Street Letter at 2.

[905] *See* SIFMA Letter II at 27; *see also* Healthy Markets Letter at 16 (''we recommend that as part of its access to CAT data to create 605 reports as part of their regulatory oversight/surveillance, FINRA should make its report cards publicly available'').

[906] *See infra* section VII.

[907] SIFMA Letter II at 26.

[908] *Id.* at 26–27.

[909] Final 17 CFR 242.605(a)(3).

[910] *See* final 17 CFR 242.605(a)(2).

the information needed to produce Rule 605 reports in a uniform manner.

VI. Existing Commission Exemptive Relief and Staff Statements

Upon the compliance date of the amendments to Rules 600 and 605, the Commission exemptive relief and staff statements listed below will be withdrawn. To the extent any staff statement is inconsistent with or conflicts with the requirements of Rule 600 or Rule 605, as amended, even if not specifically identified below, those statements are superseded.

Name	Date	Topic
Market Systems Exemptive Letter, Opening Exemption only	June 22, 2001	Orders received during regular trading hours at a time when an NBBO is being disseminated but prior to the dissemination of the primary listing market's first firm, uncrossed quotations for a trading day.
Large Order Exemptive Relief	June 22, 2001	Any order with a size of 10,000 shares or greater.
2001 FAQ, Questions 19, 24, and 27 only	June 25, 2001	Orders received prior to dissemination of quotations by primary listing SRO, riskless principal orders, and exemption for block orders.
2013 FAQ, Question 2 only	Feb. 25, 2013	Non-exempt short sale orders.

As discussed in section III.A.1, the Commission is incorporating the Opening Exemption into the definition of covered order with respect to market or limit orders received during regular trading hours at a time when an NBBO is being disseminated.[911] The Commission did not receive any comments opposing the proposed incorporation of the Opening Exemption into rule text or the rescission of the Opening Exemption in the 2001 Exemptive Letter. The Commission is rescinding the Opening Exemption as proposed, for the reasons discussed in the Proposing Release and in section III.A.1. The rescission of the Opening Exemption supersedes a staff FAQ.[912]

In addition to the Opening Exemption, the Market Systems Exemptive Letter included a separate exemption from Rule 605 for orders received during a time when the consolidated best bid and offer (''BBO'') reflects a spread that exceeds $1 plus 5% of the midpoint of the consolidated BBO (''Spread Width Exemption'').[913] As proposed, the Commission is not modifying or rescinding the Spread Width Exemption. Orders received during a time when the consolidated BBO reflects a spread that exceeds $1 plus 5% of the midpoint of the consolidated BBO ''could be the result of potentially erroneous quotes or of abnormal trading conditions'' and their inclusion ''could significantly affect the comparability and reliability of the execution quality measures in market center monthly reports.'' [914]

As discussed in section III.B.1, commenters supported the inclusion of larger-sized orders, which necessarily requires the recission of the Large Order Exemptive Relief.[915] The Commission is rescinding the Large Order Exemptive Relief as proposed, for the reasons discussed in the Proposing Release and in section III.B.1. The rescission of the Large Order Exemptive Relief supersedes the relevant staff FAQ.[916]

Finally, two additional staff FAQs are specifically superseded by Rule 605, as amended, and the guidance contained in this release.[917] First, the final rule incorporates a provision that supersedes current staff statements regarding the treatment of riskless principal orders. Specifically, adopted Rule 605(a)(1)(i)(D) provides that the number of shares of covered orders executed at the receiving market center, broker, or dealer excludes shares that the market center, broker, or dealer executes on a riskless principal basis.[918] Second, as proposed, the Commission is providing guidance that non-exempt short sale orders will not be special handling orders unless a price test restriction is in effect for the security.[919] The FAQs will be updated accordingly consistent with these changes.

VII. Transition Matters

The Commission is providing a transition period between when the amendments to Rule 605 are adopted and when the changes are fully implemented. As discussed above, the Rule 605 NMS Plan establishes procedures for market centers to make data available to the public in a uniform, readily accessible, and usable electronic form.[920] In addition, formatting for Rule 605 data is governed by the Rule 605 NMS Plan, which sets forth, among other things, the file type and structure of the reports and the

[911] *See supra* section III.A.1.b).

[912] *See* Staff Legal Bulletin No. 12R, ''Frequently Asked Questions About Rule 11Ac1–5'' (June 22, 2001) (''2001 FAQs''), Question 19.

[913] *See* Market Systems Exemptive Letter at 2.

[914] *Id.*

[915] *See supra* notes 351–355 and accompanying text.

[916] *See* 2001 FAQs, Question 27.

[917] *See* 2013 FAQs, Question 2; and 2001 FAQs, Question 24.

[918] One commenter requested confirmation that execution quality metrics reported under Rule 605 include execution quality information for riskless principal orders. *See supra* note 688 and accompanying text.

[919] *See supra* section III.A.2.b).

[920] *See* prior 17 CFR 242.605(a)(2) and Rule 605 NMS Plan. *See also* Rule 605 NMS Plan Release, 66 FR 19814 at 19815 (Apr. 17, 2001).

order and format of fields.[921] As described in section V.B.1 above, the Commission is adopting paragraph (a)(3) of Rule 605 as proposed to direct the SROs to act jointly in establishing procedures for market centers, brokers, and dealers to follow in making Rule 605 reports available to the public. Because of the amendments to Rule 605 that the Commission is adopting, the Rule 605 NMS Plan will need to be updated to: (1) incorporate references to broker-dealers subject to Rule 605; (2) account for summary reports that will be required under Rule 605(a)(2); and (3) incorporate the new data fields that will be required under Rule 605(a)(1) for the detailed reports.[922] In addition, larger broker-dealers and market centers will need time to test and implement programming and systems changes in order to comply with Rule 605 as amended.

The Proposing Release did not include a proposed compliance date for final Rule 605, but several commenters recommended that the Commission provide a sufficient implementation period for the proposed Rule 605 amendments, including an industry group that recommended a minimum of one year and an industry group that recommended a minimum of one year from ''approval of applicable Plan amendments.'' [923] One of these industry groups suggested that the Commission should not require the inclusion of any data relating to the best available displayed price ''until the best odd-lot order to buy and the best odd-lot order to sell have been included in the SIP and firms have had a reasonable time period, subsequent to such inclusion, to incorporate this data into their Rule 605 reports.'' [924] This industry group also stated that the implementation timetable for final Rule 605 should ''commence from the date that the Commission publishes guidance in response to interpretive questions from industry members'' regarding the adopted reporting requirements.[925] However, an investor advocacy group recommended implementation of the proposed changes to Rule 605 ''without delay.'' [926] In addition, a national securities exchange stated that deferring ''key implementation details'' to the Participants ''may introduce additional complications and further delay implementation of the Rule 605 Proposal since NMS Plan Participants would first need to reach agreement and then file amendments to the Rule 605 NMS Plan with the Commission, which the Commission would need to approve.'' [927]

The amendments to Rule 605 discussed herein shall become effective 60 days after the date of publication in the **Federal Register** (''Effective Date''). The compliance date shall be 18 months after the Effective Date (''Compliance Date'').[928] This amount of time is consistent with the commenter's request that the Commission provide a minimum implementation period of one year following adoption of amendments to Rule 605.[929] The Commission also recognizes that preexisting market centers and vendors will need time to update their systems and processes to ensure that data responsive to the amended requirements are correctly collected and formatted, and that larger broker-dealers and market centers newly subject to Rule 605 will need time to create such systems and processes. Although two commenters referred to a potentially longer timeframe for implementation,[930] the adopted timeframe will allow the benefits of the amended rule to be achieved sooner and therefore the Commission is adopting the implementation timeframe discussed in this section. After considering the comments, the Commission agrees that implementation of Rule 605 as amended should not be unnecessarily delayed because the modifications to Rule 605 that the Commission is adopting will expand its scope and improve the usefulness of the execution quality statistics that reporting entities will make available pursuant to Rule 605.

As part of the implementation process, and pursuant to the requirement in paragraph (a)(3) of Rule 605 as amended directing the SROs to act jointly in establishing procedures for market centers, brokers, and dealers to follow in making Rule 605 reports available to the public, the Rule 605 NMS Plan Participants (16 national securities exchanges and one national securities association) will need to file with the Commission a proposed Rule 605 NMS Plan amendment updating the Plan to reflect the amendments made herein to Rule 605, pursuant to Rule 608(a)(1) of Regulation NMS. The NMS Plan Participants are the appropriate parties to update the Rule 605 NMS Plan provisions given their experience in administering the Rule 605 NMS Plan since its approval by the Commission in 2001. Many of the detailed issues relating both to the format of the reports under Rule 605 as amended, and to the means of access to the reports, are appropriately addressed in the context of approval of an amendment to the

[921] *See* Rule 605 NMS Plan Release, 66 FR 19814 at 19815 (Apr. 17, 2001) (''Section V . . . provides that market center files must be in standard, pipe-delimited ASCII format'').

[922] The Rule 605 NMS Plan details procedures for market centers to follow and, among other things, specifies the order and format of fields in a manner that aligns with Rule 605(a)(1). *See* Rule 605 NMS Plan generally and section VI.(a) of the Rule 605 NMS Plan. As is currently the case for market centers that are not Participants, the Participants will be required to enforce compliance with the terms of the Rule 605 NMS Plan by their members and persons associated with their members. *See* 17 CFR 242.608(c).

[923] *See* letter from Andrew M. Saperstein, Co-President, Morgan Stanley (Mar. 31, 2023) (''Morgan Stanley Letter'') at 7 (''The proposed amendments to Rule 605 involve a host of changes, including the introduction of new order types in scope, which will require broker-dealers and their vendors to adopt new processes and controls.''); SIFMA Letter II at 27 (recommending a minimum implementation period of one year and ''ideally two years'' following adoption of proposed Rule 605 ''to allow for the industry, SROs, and the Commission to ensure that revised Rule 605 reports are produced in a consistent way''); FIF Letter at 5, 33 (proposing that the implementation period should be a minimum of one year from the Commission's approval of applicable Plan amendments).

[924] FIF Letter at 33.

[925] FIF Letter III at 5 (''If the Commission does not publish proposed specifications prior to adopting a final rule, FIF members recommend that any implementation timetable commence from the date that the Commission publishes guidance in response to interpretive questions from industry members relating to the reporting requirements that the Commission adopts.'').

[926] *See* Healthy Markets Letter at 16. An industry group and a broker-dealer recommended implementing changes to Rule 605 before any of the other changes to the U.S. equity market structure that the Commission has proposed in order to provide a baseline for measuring market quality. *See* FIF Letter at 1, 33 (recommending implementation of proposed Rule 605 reporting changes at least one year prior to other changes); Morgan Stanley Letter at 2 (recommending a staggered approach to changes to U.S. equity market structure, starting with changes to Rule 605). *See also supra* note 79 and accompanying text (discussing other commenters' views on Rule 605 sequencing).

[927] NYSE Letter at 8.

[928] With respect to the compliance date, commenters requested that the Commission consider interactions between the proposed rule and other recent Commission rules. *See supra* note 79. In determining compliance dates, the Commission considers the benefits of the rules as well as the costs of delayed compliance dates and potential overlapping compliance dates. For the reasons discussed throughout the release, to the extent that there are costs from overlapping compliance dates, the benefits of the rule justify such costs. *See infra* sections IX.C.1.d) and IX.D.2.a)(5) for a discussion of the interactions of final Rule 605 with certain other Commission rules.

[929] *See* SIFMA Letter II at 27.

[930] *See id.* (stating the Commission should provide for an implementation period of ''ideally two years following adoption of the Rule 605 Proposal'') and FIF Letter at 33 (stating the Commission's implementation period should be a ''minimum of one year from the Commission's approval of applicable Plan amendments''). Amendments to NMS plans are subject to notice and comment, and may be either effective upon filing pursuant to 17 CFR 242.608(b)(3) or subject to action by Commission order before amendments may be effective, pursuant to 17 CFR 242.608(b)(2).

Rule 605 NMS Plan.[931] However, while the Rule 605 NMS Plan Participants will need to determine how to address certain technical elements of Rule 605,[932] the modifications that will need to be made by the Rule 605 NMS Plan generally will be dictated by Rule 605 as amended (*e.g.,* updates to the list of fields included in the reports required by Rule 605(a)(1)).

In accordance with Rule 605 as amended, the Rule 605 NMS Plan amendment will need to establish procedures for market centers, brokers, and dealers to follow in making Rule 605 reports publicly available.[933] Notice of the proposed amendment to the Rule 605 NMS Plan and the opportunity for comment will be provided.[934]

In addition, market centers, brokers, and dealers will need to make necessary preparations to be in a position to comply with Rule 605 as amended by the Compliance Date.[935] The Compliance Date strikes an appropriate balance between: (1) affording brokers, dealers, and market centers sufficient time to program their systems and implement business process changes necessary to comply with the new rules; and (2) requiring that the execution quality statistics in their Rule 605 reports become available to investors in a timely manner.

The Compliance Date is designed to allow time for both an amendment to the Rule 605 NMS Plan and time for brokers, dealers, and market centers time to comply with Rule 605 as amended.[936]

Notwithstanding the Compliance Date, reporting entities will not be able to calculate the price improvement statistics relative to best available displayed price that will be required to be included in the detailed reports required by Rule 605(a)(1) for marketable order types, marketable stop orders, and midpoint-or-better order types until odd-lot order information is made available pursuant to an effective transaction reporting plan or effective national market system plan.[937] The MDI Rules included odd-lot information in the data that will be made available within the national market system. Although the Commission adopted the MDI Rules, the MDI Rules have not been implemented.[938] Once odd-lot order information is made available pursuant to an effective national market system plan, market centers, brokers, and dealers will need time to make any program updates and changes to their business processes that are necessary to calculate the price improvement statistics relative to the best available displayed price. In order for odd-lot order information to be made available pursuant to an effective national market system plan, participants will need to file with the Commission a proposed NMS plan or a proposed amendment to an NMS plan pursuant to Rule 608(a)(1) of Regulation NMS. Any such filing will be subject to public comment and Commission approval by order before the effectiveness of such plan or plan amendments pursuant to Rule 608(b)(2) of Regulation NMS. A Commission order approving a proposed plan or plan amendment making odd-lot information available will provide market participants notice of when odd-lot order information will be required to be made available. Further, to the extent that odd-lot information is collected, consolidated, and disseminated by the effective national market system plan(s), market participants will be provided notice of the availability of such information through usual communication channels that may be established by the competing consolidator(s) or that are used by exclusive SIPs, to the extent exclusive SIPs collect, consolidate, and disseminate odd-lot information pursuant to an effective national market system plan. Market centers, brokers, and dealers will have six months after odd-lot order information sufficient to calculate the best available displayed price is made available pursuant to an effective national market system plan to start including price improvement statistics relative to the best available displayed price in their Rule 605 reports.

VIII. Paperwork Reduction Act

Certain provisions of the rule amendments contain ''collection of information'' requirements within the meaning of the Paperwork Reduction Act of 1995 (''PRA'').[939] The Commission requested comment on the collection of information requirements in the Proposing Release and submitted relevant 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. The Commission is altering an existing collection of information and applying such collection of information to new categories of respondents. The title of such existing collection of information is: Rule 605 of Regulation NMS (f/k/a Rule 11Ac1–5).[940] 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.

Views of commenters relevant to the Commission's analysis of the reporting burdens imposed by the collection of information for Rule 605 as proposed are discussed below. In addition, certain estimates have been modified, as necessary, to conform to the adopted amendments and to reflect the most recent data available to the Commission.

A. Summary of Collection of Information

The amendments create burdens under the PRA by: (1) adding new categories of respondents to the existing collection of information and (2) modifying the requirements of such existing collection of information. The

[931] For example, in the Proposing Release, the Commission discussed potential alternatives to the website posting of Rule 605 reports, including, among other things, requiring Rule 605 NMS Plan Participants to amend the Rule 605 NMS Plan to create a centralized electronic system repository for Rule 605 reports. *See* Proposing Release, 88 FR 3786 at 3895–96 (Jan. 20, 2023).

[932] Because an amendment to the Rule 605 NMS Plan will address certain technical elements of Rule 605, the Commission does not agree that it is necessary to commence implementation after publication of any Commission guidance. *See* FIF Letter III at 5. As noted above, amendments to NMS plans are subject to notice and comment. *See supra* note 930.

[933] Because final Rule 605(a)(2) requires the use of the Commission's schema for CSV and the associated PDF renderer, the Rule 605 NMS Plan will not establish the formats and fields for the summary reports.

[934] *See* 17 CFR 242.608(b).

[935] If the Rule 605 NMS Plan does not incorporate the necessary changes to Rule 605 in advance of the Compliance Date, final Rule 605(a)(4) will govern and the Compliance Date will still apply. As described further above in section V.B.1, final Rule 605(a)(4) will require that in the event that there is no effective national market system plan establishing required procedures, market centers, brokers, and dealers shall prepare their reports in a consistent, usable, and machine-readable electronic format, in accordance with the requirements in final Rule 605(a)(1), and make such reports available for downloading from a website that is free and readily accessible to the public.

[936] *See supra* note 923 and accompanying text.

[937] *See* final 17 CFR 242.605(a)(1)(ii)(M) through (Q).

[938] The Commission has outlined a phased transition plan for the implementation of the MDI Rules, including the implementation of odd-lot order information to be disseminated by competing consolidators. *See* Proposing Release, 88 FR 3786 at 3820, n.422 (Jan. 20, 2023). The Commission is still considering whether to adopt the proposed changes in the Minimum Pricing Increments Proposal to accelerate the implementation of the odd-lot information definition and have odd-lot order information disseminated by the exclusive SIPs. *See* Minimum Pricing Increments Proposing Release, 87 FR 80266 at 80295–99 (Dec. 29, 2022). If, in the future, the Commission accelerates implementation of this aspect of the MDI Rules, implementation of the modifications to the odd-lot definition and dissemination of odd-lot order information pursuant to an effective national market system plan would proceed on a revised timeframe as designated by the Commission at such time.

[939] 44 U.S.C. 3501 *et seq.*

[940] OMB Control Number 3235–0542.

amendments do not create any new collections of information.

The categories of new respondents subject to Rule 605, as amended, are larger broker-dealers and new market centers, consisting of SDPs and entities that act as market centers for orders that were previously not covered by Rule 605, *e.g.,* orders smaller than 100 shares.

The amendments modify both the scope of the standardized monthly reports required under Rule 605 and the required information. Rule 605, as amended: (1) expands the definition of ''covered order'' to include certain orders submitted outside of regular trading hours, certain orders submitted with stop prices, and non-exempt short sale orders; (2) modifies the existing order size categories to base them on notional value as well as whether an order is for less than a share, for an odd-lot, or for a round lot or greater rather than number of shares; (3) creates four new order type categories (marketable IOCs, executable market orders submitted with stop prices, executable marketable limit orders submitted with stop prices, and executable non-marketable limit orders submitted with stop prices) and replaces three existing categories of non-marketable order types with four new categories of order types (midpoint-or-better limit orders, midpoint-or-better IOCs, executable NMLOs, and NMLO IOCs); (4) modifies current time-to-execution reporting buckets; (5) modifies realized spread statistics to require realized spread to be calculated after 50 milliseconds, 1 second, 15 seconds, 1 minute, and 5 minutes; and (6) requires new statistical measures of execution quality including average effective spread divided by quoted spread, percentage effective and realized spread statistics, a size improvement benchmark and statistic, and certain statistical measures that could be used to measure execution quality of NMLOs. The amendments require all reporting entities to make a summary report available that will be formatted using the most recent versions of the schema for CSV format and the associated PDF renderer as published on the Commission's website. Finally, as a result of the amendments to Rule 605, Rule 605 NMS Plan Participants will need to amend the Rule 605 NMS Plan to account for the new data fields.

B. Proposed Use of Information

The purpose of the information collection is to make information about order execution practices available to the public and allow investors, broker-dealers, and market centers (which include exchange markets, OTC market makers, and ATSs) [941] to undertake a comparative analysis of these practices across markets. Broker-dealers may use the information to make more informed choices in deciding where to route orders for execution and to evaluate their internal order handling practices. Investors may use the information to evaluate the order handling practices of their broker-dealers. Market centers may use the information to compete on the basis of execution quality.

C. Respondents

The collection of information obligations of Rule 605 applies to larger broker-dealers and market centers that receive covered orders in national market system securities (collectively, ''reporting entities''). The Commission estimates that there are approximately 228 reporting entities (91 OTC market makers, plus 16 national securities exchanges, 1 national securities association, 87 exchange market makers, and 33 ATSs) under Rule 605 prior to these amendments.[942] However, under the amendments, the Commission estimates there will be 343 reporting entities (91 OTC market makers, 85 broker-dealers that introduce or carry 100,000 or more customer accounts,[943] 16 national securities exchanges, 1 national securities association, 87 exchange market makers, 33 ATSs,[944] plus 30 new market center respondents [945]) that will be subject to the collection of information obligations of Rule 605. Each of these respondents will be required to respond to the collection of information on a monthly basis.

In addition, the amendments to Rule 605 will require the Rule 605 NMS Plan Participants (16 national securities exchanges and 1 national securities association) to prepare and file an amendment to the Rule 605 NMS Plan.

D. Total PRA Burdens

Rule 605, as amended, will require broker-dealers and market centers to make available to the public monthly order execution reports in electronic form. Broker-dealers and market centers retain most, if not all, of the underlying raw data necessary to generate these reports in electronic format or, if they do not, may obtain this information from publicly available data sources.[946] Consequently, Rule 605 will not require new data collection or recordkeeping burdens. Respondents could either program their systems to generate the statistics and reports, or transfer the data to a service provider (such as an independent company in the business of preparing such reports or an SRO) that would generate the statistics and reports.

The currently approved PRA for prior Rule 605 estimates that each respondent spends 6 hours a month to collect the data necessary to generate the reports, or 72 hours per year.[947] In the Proposing Release, the Commission estimated that each respondent would spend 8 hours a month, or 96 hours per year, on an ongoing basis, to comply with Rule 605 as proposed to be amended.[948]

---

[941] *See* final 17 CFR 242.600(b)(55).

[942] The PRA for preexisting Rule 605 estimates 319 reporting entities (153 OTC market makers, plus 24 national securities exchanges, 1 national securities association, 80 exchange market makers, and 61 ATSs). The Commission's method of estimating the reporting entities for the Commission's currently approved PRA for prior Rule 605 was over-inclusive. For example, it included national securities exchanges and ATSs that do not trade NMS stocks and broker-dealers that may trade NMS stocks but are not market makers. Based on updated estimates of the number of respondents, the Commission now estimates that there are only 228 current reporting entities.

[943] These 85 brokers-dealers include 39 broker-dealers that act as introducing brokers. The Commission initially estimated there would be 85 broker-dealers that introduce or carry 100,000 or more customer accounts, which included 37 broker-dealers and 48 carrying broker-dealers. *See* Proposing Release, 88 FR 3786 at 3826 (Jan. 20, 2023). The Commission updated this estimate based on the FYE 2022 FOCUS Reports received by the Commission and data from CAT for calendar year 2022. *See infra* Table 13.

[944] As of Nov. 21, 2023, there are 33 NMS Stock ATSs that have filed an effective Form ATS–N with the Commission.

[945] These 30 new market center respondents consist of 20 market centers that will need to produce reports as a result of including fractional share orders within the scope of Rule 605 and 10 SDPs. The Commission initially estimated there would be 38 new market center respondents, which included 8 entities that would operate qualified auctions. *See* Proposing Release, 88 FR 3786 at 3826 (Jan. 20, 2023). Because final Rule 605 does not include a requirement that entities operating qualified auctions report separately, the Commission is revising its estimate to include 30 new market center respondents.

[946] National securities exchanges, national securities associations, and registered brokers and dealers are subject to existing recordkeeping and retention requirements including 17 CFR 240.17a–1 (''Rule 17a–1'') (for SROs); 17 CFR 240.17a–3 (''Rule 17a–3'') and 240.17a–4 (''Rule 17a–4'') (for broker-dealers). *See* Rules 17a–1, 17a–3, and 17a–4. The Commission's estimates include Rule 605's requirement that reporting market centers and broker-dealers keep Rule 605 reports posted on an internet website that is free and readily accessible to the public for a period of three years from the initial date of posting on the internet website. *See* final 17 CFR 242.605(a)(5).

[947] *See infra* note 953.

[948] *See* Proposing Release, 88 FR 3786 at 3826–27 (Jan. 20, 2023).

One commenter stated that the proposal did not include burdens related to business-line personnel or technical staff.[949] Further, one commenter stated that the Commission's compliance cost estimates were too low because the Commission neglected to take into account dedicated staff time needed for data reconciliation and validation and other ongoing compliance costs.[950] The commenters provided no data and provided no alternative estimates of the cost of preparing the monthly reports.

In response to the commenters, the Commission is adjusting its estimated annual burdens to account for work to be performed by technical staff, as described below. In addition, the Commission is adjusting the hourly rates used to monetize burden hours in order to account for recent inflation rates.

The Commission estimates that the initial and ongoing burdens will be different for those respondents that are already required to prepare reports and for new respondents. The Commission estimates that Rule 605 amendments will result in an initial burden for current respondents of 50 hours per respondent[951] for systems updates to ensure that data responsive to the amended requirements is correctly collected and formatted. The initial burden estimate represents the work that will need to be done by existing respondents to modify their systems to collect data required under the amendments to Rule 605 and generate the monthly reports. The estimate includes time required to program and test automated systems to collect the necessary data, as well as review and approval by compliance personnel. The Commission does not believe the information required to be aggregated and included in Rule 605 reports, as amended, will require preexisting respondents to acquire new hardware or systems to process the information required in the reports. The Commission further estimates that the Rule 605 amendments will result in an ongoing monthly burden of 11 hours per respondent to collect the necessary data and to prepare the required Rule 605 reports, for a total annual burden of 132 hours per respondent.[952] This estimate represents an increase of 3 hours per respondent over the Commission's initial estimate because it accounts for technical staff time that will be required to verify automated processes are functioning as intended and post and prepare the required reports, or transfer data to a service provider to generate the reports.[953] This estimate has been revised from the Proposing Release in response to commenters who stated that the Commission did not adequately account for technical staff.[954] With an estimated 228 respondents already subject to Rule 605, the total initial burden to comply with the Rule 605 amendments is estimated to be 11,400 hours while the monthly reporting requirement is estimated to be 30,096 hours per year (228 × 132). The burdens for respondents currently reporting under Rule 605 are likely to be lower than those of new reporting entities because currently reporting entities already have systems in place to collect the data necessary to generate reports under the current rule. These estimates include the impact of preparing and making summary reports available using the most recent versions of the schema for CSV format and the associated PDF renderer as published on the Commission's website.

The Commission estimates that Rule 605 amendments will result in an initial burden for new respondents of 100 hours for each respondent[955] for systems updates to ensure that data responsive to the amended requirements is correctly gathered and formatted. This burden is higher than the estimated burden for current respondents because new respondents do not currently have in place the systems to collect the information required for current Rule 605 reports. These respondents will likely require additional time to collect the relevant information. In addition, this estimate includes additional time for programming and testing automated systems to collect the necessary data and additional hours for review and approval by compliance personnel. Once the relevant data are collected, respondents could either program their systems to generate the reports or transfer the data to a service provider that will generate the reports. Respondents will likely not be required to acquire new hardware or other technological resources to be able to collect the data required by the amended rule given that respondents already have computing systems in place to, for example, transmit and process order information, and such systems could be leveraged to collect the required data. Further, to the extent a respondent does not have the technological capabilities or resources to generate the reports in-house, such respondents will likely utilize a service provider, as discussed below.

[949] *See* Data Boiler Letter at 21.

[950] *See* Robinhood Letter at 42 (stating that annual costs of up to $42,000 per year is ''an underestimation of annual costs'').

[951] The Commission estimates the monetized initial burden for this requirement to be $4,577,100. The Commission derived this estimate based on per hour figures from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff 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: [(Sr. Programmer at $399 for 25 hours) + (Sr. Systems Analyst at $343 for 10 hours) + (Compliance Manager at $373 for 10 hours) + (Director of Compliance at $588 for 5 hours)] = $20,075 per respondent for a total initial monetized burden of $4,577,100 ($20,075 × 228 respondents).

[952] The Commission estimates the monetized annual burden for this requirement to be $11,775,744. The Commission derived this estimate based on per hour figure from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff 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: [((Compliance Attorney at $440 for 6 hours) + (Compliance Manager at $373 for 2 hours) + (Programmer at $301 for 2 hours) + (Systems Analyst at $316 for 1 hour)) × 12 reports per year] = $51,648 per respondent for a total annual monetized burden of $11,775,744 ($51,648 × 228 respondents).

[953] The Commission's currently approved PRA for prior Rule 605 (OMB Control Number 3235–0542), last updated in Apr. 2022, estimates that current respondents each will spend 6 hours per month to collect the data necessary to generate the reports, or 72 hours per year. Although the amendments to Rule 605 will require additional data fields and the generation of summary reports, the data collection and report generation process will be an automated process that will not require substantial additional burden hours after initial set-up.

[954] *See supra* notes 949–950 and accompanying text. Specifically, although the commenters did not provide an estimate of the costs or time burdens that would be attributable to work performed by technical staff, the Commission is allocating 2 hours to a programmer and 1 hour to a systems analyst to account for technical assistance that may be necessary to ensure automated processes are functioning as intended.

[955] The Commission estimates the monetized initial burden for this requirement to be $4,617,250. The Commission derived this estimate based on per hour figure from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff 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: [(Sr. Programmer at $399 for 50 hours) + (Sr. Systems Analyst at $343 for 20 hours) + (Compliance Manager at $373 for 20 hours) + (Director of Compliance at $588 for 10 hours)] = $40,150 per respondent for a total initial monetized burden of $4,617,250 ($40,150 × 115 respondents).

The Commission estimates that the Rule 605 amendments will result in an ongoing monthly burden of 11 hours to collect the necessary data and to prepare the required Rule 605 reports, for a total annual burden of 132 hours per respondent.[956] With an estimated 115 new respondents subject to Rule 605, the total initial burden to comply with the Rule 605 amendments is estimated to be 11,500 hours while the monthly reporting requirement is estimated to be 15,180 hours per year (115 × 132). These estimates include the impact of preparing and making summary reports available using the most recent versions of the schema for CSV format and the associated PDF renderer as published on the Commission's website.

Table 2: Respondent Burdens for Producing Rule 605 Reports

Respondent Type	Number of Respondents	Burden Type	Burden per Respondent (Hours)	Number of Responses per Year	Total Burden Hours (Number of Respondents x Burden per Respondent)[a]
OTC Market Makers	91	Initial	50		4,550
		Annual	11	12	12,012
Exchange Market Makers	87	Initial	50		4,350
		Annual	11	12	11,484
Exchanges	16	Initial	50		800
		Annual	11	12	2,112
Associations	1	Initial	50		50
		Annual	11	12	132
ATSs	33	Initial	50		1,650
		Annual	11	12	4,356
Totals for Current Respondents	**228**	**Initial**	**50**		**11,400**
		Annual	**11**	**12**	**30,096**
Broker-Dealers with ≥100,000 customer accounts	85	Initial	100		8,500
		Annual	11	12	11,220
Non-market center broker-dealers	20	Initial	100		2,000
		Annual	11	12	2,640
SDPs	10	Initial	100		1,000
		Annual	11	12	1,320
Total Burden for New Respondents	**115**	**Initial**	**100**		**11,500**
		Annual	**11**	**12**	**15,180**

[a] In the case of annual burdens, the Total Burden Hours is equal to the burden per respondent multiplied by the number of responses per year.

[956] The Commission estimates the monetized annual burden for this requirement to be $5,939,520. The Commission derived this estimate based on per hour figure from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff 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: [((Compliance Attorney at $440 for 6 hours) + (Compliance Manager at $373 for 2 hours) + (Programmer at $301 for 2 hours) + (Systems Analyst at $316 for 1 hour)) × 12 reports per year] = $51,648 per respondent for a total annual monetized burden of $5,939,520 ($51,648 × 115 respondents).

The Commission estimates that in lieu of preparing both summary and detailed monthly reports in-house, an individual respondent could retain a service provider to prepare its monthly reports for between approximately $3,000 and $3,500 per month or approximately $36,000 to $42,000 per year.[957] This per-respondent estimate is based on the rate that a reporting entity could expect to obtain if it negotiated on an individual basis. Based on the $3,000 to $3,500 estimate, the monthly cost to the 343 respondents to retain service providers to prepare reports will be between approximately $1,029,000 and $1,200,500 ((343 × $3,000) and (343 × $3,500), respectively), or a total annual cost of between approximately $12,348,000 and $14,406,000 (($1,029,000 × 12) and ($1,200,500 × 12), respectively).

Finally, the 16 national securities exchanges and 1 national securities association will need to amend the Rule 605 NMS Plan to account for the new data fields required to be reported and to include references to larger broker-dealers in addition to market centers. The Commission is modifying the estimates for the initial burden and costs to the SROs to file the amendment to eliminate the per respondent burden for each SRO and instead estimate the burden for the SROs collectively because the respondents would file this amendment jointly, rather than individually, in connection with their status as participants in the effective national market system plan.[958] The Commission estimates that there will be a one-time (or initial) burden of 85 hours [959] to amend the Rule 605 NMS Plan to account for the new reporting fields and reporting parties. The Commission does not estimate that there will be any ongoing annual burden associated with the Rule 605 NMS Plan amendment to account for the new reporting fields and reporting parties. The Commission has based its estimate of SRO burden hours to amend the Rule 605 NMS Plan on the burden hours for existing NMS plans, while also taking into account the limited nature of the updates to the Rule 605 NMS Plan that will be required under the amendments to Rule 605.

The Commission estimates that there will be outsourcing of legal time to develop and draft the Rule 605 NMS Plan amendment in order to account for additional data fields and reporting parties. The Rule 605 NMS Plan amendment will be an update to the list of formats and fields to track the data elements set forth in the Rule and add references to broker-dealers subject to the Rule, and therefore the Commission estimates the hours necessary to develop and draft the amendment will be significantly lower than other recent NMS plan amendments. The Commission estimates that the plan participants will outsource 34 hours of legal time to prepare and file an amendment to the Rule 605 NMS Plan, at an average hourly rate of $575.[960] The Commission estimates that the aggregate one-time reporting burden for preparing and filing an amendment to the Rule 605 NMS Plan will be approximately $19,550 in external costs from outsourced legal work [(at $575 for 34 hours = $19,550)].

The Commission currently estimates a total initial burden of 23,019 hours for all respondents and a total annual burden of 45,276 hours for all respondents.[961]

IX. Economic Analysis

A. Introduction

The Commission is mindful of the economic effects that may result from these amendments to Rule 605, including the benefits, costs, and the effects on efficiency, competition, and capital formation.[962] The following economic analysis identifies and considers the costs and benefits—including the effects on efficiency, competition, and capital formation—that could result from these amendments to Rule 605.

In 2000, when the Commission adopted Rule 11Ac1–5, which was later redesignated as Rule 605, it stated that the rule should facilitate comparisons across market centers and provoke more vigorous competition on execution quality and broker-dealer order routing performance.[963] However, under prior Rule 605 reporting requirements, market participants have not been able to observe the variations across broker-dealers in terms of the execution quality achieved by their order routing services using standardized and publicly available execution quality reports. Furthermore, in the subsequent decades, substantial changes in equity markets, including increases in trading speeds and fragmentation, have made it so that Rule 605 reports have become less informative than they were when Rule 605 was adopted. These amendments to Rule 605, including expanding the scope of reporting entities, modernizing the content of Rule 605 reports, and broadening the reports' accessibility, will increase the relevance and use of the information contained in the reports, and promote competition among market centers and broker-dealers. This increase in competition is expected to ultimately lead to improved execution quality for investors.

The Commission recognizes that these amendments to Rule 605 will entail additional costs to market centers and broker-dealers of disclosing the required

[957] This estimate is the same as the Commission's estimate in the Proposing Release. The Commission's currently approved PRA for prior Rule 605 estimates that the retention of a service provider to prepare a monthly report would cost $2,978 per month, or approximately $35,736 per year. Although the individual line items required by Rule 605, as amended, are different than prior Rule 605 or proposed Rule 605, the Commission does not believe that the overall cost of creating the required reports will differ substantially from these estimates. The Commission received no comments regarding its estimate of the external cost to retain a service provider. As discussed above, a commenter stated that the Commission underestimated annual compliance costs in the Proposing Release because the Commission's estimate of up to $42,000 per year in annual costs failed to account for staff time and other ongoing compliance costs. *See supra* note 950. In response to comments, the Commission increased its annual burden estimate. *See supra* notes 952 and 956.

[958] Although the Commission is now estimating the collective burden for the SROs to make the necessary amendments to the Rule 605 NMS Plan, the Commission's estimate of total initial burden hours and external costs remains consistent with the estimate in the Proposing Release. The Commission did not receive any comment on these burden hour estimates and external cost estimates.

[959] The Commission estimates the monetized initial burden for this requirement to be $43,605. The Commission derived this estimate based on per hour figure from SIFMA's Management & Professional Earnings in the Securities Industry 2013, modified by Commission staff 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: [(Attorney at $501 for 68 hours) + (Assistant General Counsel at $561 for 17 hours)] = a total initial monetized burden of $43,605.

[960] The Commission's estimates of the relevant wage rates for outside legal services take into account staff experience, a variety of sources including general information websites, and adjustments for inflation.

[961] (11,400 + 11,500 + 119) = 23,019 initial burden hours. (24,624 + 12,420) = 37,044 annual burden hours. The Commission estimates the monetized initial burden for all respondents to be $9,257,505 ($4,577,100 + $4,617,250 + $63,155) and the monetized annual burden for all respondents to be $17,715,266 ($11,775,744 + $5,939,520).

[962] 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. *See* 15 U.S.C. 78c(f). 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 will 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. *See* 15 U.S.C. 78w(a)(2).

[963] *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75417 (Dec. 1, 2000).

execution quality information. Market centers will face initial compliance costs when updating their methods for preparing Rule 605 reports, and broker-dealers that were not required to publish Rule 605 reports prior to these amendments will face initial compliance costs, including, but not limited to, developing the systems and processes and organizing the resources necessary to generate the reports pursuant to Rule 605, and ongoing compliance costs to publish Rule 605 reports each month.

The Commission has considered and is describing the economic effects of these amendments to Rule 605 and wherever possible has quantified the likely economic effects of these amendments. The Commission has incorporated data and other information, such as academic literature, to assist in the analysis of the economic effects of these amendments. However, because the Commission does not have, and in certain cases does not believe that it reasonably can obtain, data that may inform on certain economic effects, the Commission is unable to quantify those economic effects. Further, even in cases where the Commission has some data, the number and type of assumptions necessary to quantify certain economic effects would render any such quantification unreliable. Our inability to quantify certain costs, benefits, and effects does not imply that such costs, benefits, or effects are less significant.

B. Market Failure

The information disclosed under Rule 605 has provided significant insight into execution quality at different market centers.[964] However, the utility of some of the metrics in Rule 605 reports has eroded because such metrics have not kept up with the substantial changes in equity markets since the initial adoption of Rule 605's predecessor in 2000.[965] As a result, Rule 605 is less able to address the market failures identified in the Rule 11Ac1–5 Adopting Release, including market centers' limited incentives to produce publicly available, standardized execution quality reports.[966] While some metrics remain robust, particular metrics required to be reported by Rule 605 prior to these amendments have become less useful for comparing execution quality across market centers than they were when the predecessor of Rule 605 was initially adopted. Further, some metrics that will be useful in today's market were not required to be reported prior to these amendments. These market changes have limited the degree to which the metrics reported under prior Rule 605 promoted competition among market centers and improved execution quality.[967] To enhance the value of Rule 605 reports, the Commission is updating the disclosure of order execution information and expanding the scope of reporting entities under Rule 605, which will result in a variety of improvements to market participants' access to information about execution quality.

The Commission does not believe that improvements to the preexisting Rule 605 metrics are likely to be achieved through a market-based solution.[968] Even if all market centers were incentivized to voluntarily produce updated statistics for competitive or reputational reasons (*e.g.,* they may lose business if their competitors provide reports and they do not), under current rules, there is little incentive for all market centers to agree on a standardized set of updated statistics. For example, market centers may be incentivized to design ad hoc reports to highlight areas where they believe they compare well to their competitors. Without a standardized set of statistics, it would be difficult for market participants to easily compare execution quality across market centers.

Furthermore, it may be difficult for certain market participants to compute accurate and relevant execution quality metrics from data sources other than Rule 605 reports, due to the lack of granularity and significant time delay of many other publicly available datasets, which can lead to imprecise or stale measures. This limits certain market participants' ability to conduct analyses that examine and compare execution quality across market centers to inform investors. Moreover, even if execution quality information were voluntarily reported by market centers, there may also be limits to market participants' incentives to access it. For example, even if a subset of market centers is able to coordinate on and produce a standardized set of voluntary execution quality metrics, the ability of market participants to use this measure to make comparisons across reporting entities would depend on the subset of reporting entities that choose to report it. If this subset is not of a significant enough size, there may be few incentives for market participants to access the information.[969] Therefore, this rulemaking to modernize the information required to be reported by all Rule 605 reporting entities will prove beneficial.[970]

[964] *See supra* note 17.

[965] In 2018, while amending Rule 606, the Commission also modified Rule 605 to require that the public order execution quality report be kept publicly available for a period of three years but did not change the content of the reports. *See supra* note 45 and corresponding text.

[966] *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75414–15 (Dec. 1, 2000).

[967] Several commenters stated that there are limitations to preexisting Rule 605 in light of significant market changes since 2000. *See, e.g.,* Vanguard Letter at 3 (stating that ''though [Rule 605] provides a helpful baseline level of disclosure, it predates Regulation NMS and has not kept pace with advancements in technology and changes in market behavior''); Healthy Markets Letter at 16 (stating that ''[t]he metrics [in Rule 605]—which are decades-old—are wildly outdated''); Better Markets Letter at 1 (stating that ''[Rule 605] has fallen well behind the dramatic changes in the structure of the markets and the advances in technology''); McHenry et al. Letter at 3 (stating that ''our equity markets have changed dramatically since Rule 605 was adopted in 2000 . . . the data reported under Rule 605 no longer provides an accurate measure of execution quality, particularly price improvement, for retail investors''). In addition, one commenter stated that Rule 605 reports are ''incomplete'' and stated that they ''present an inaccurate picture of execution quality.'' Virtu Letter II at 1–2. One commenter believes that ''the current execution quality reports deliver sufficient comparative information on execution quality.'' TradeStation Letter at 6. For the reasons discussed throughout this release, in this section and in section IX.D.1, the Commission believes that there are currently limits to the usefulness of Rule 605 for market participants, and that market participants will benefit from these updates to Rule 605.

[968] In the Rule 11Ac1–5 Adopting Release, the Commission stated that, while some market centers may have voluntarily made order execution information privately available to independent companies or broker-dealers, the information in these reports generally had not been publicly disseminated. To the extent such information had been made available, not all of it was useful or in a form that would allow for cross-market comparisons. *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75431 (Dec. 1, 2000).

[969] For example, in 2015, a working group associated with the Financial Information Forum developed a standardized template that firms may use when publicly disclosing summary information about execution quality for retail investor orders in exchange-listed stocks (''FIF Template''). *See Retail Execution Quality Statistics,* Fin. Info. F., *available at https://fif.com/tools/retail-execution-quality-statistics.* While the FIF Template represents a standardized set of execution quality statistics, only one wholesaler currently produces reports using the FIF Template. *See also infra* notes 1084–1085 and accompanying text (discussing the limited number of firms that have produced reports utilizing the FIF Template at various points in time). While it is unclear whether the lack of widespread uptake of the FIF Template was due to a lack of incentives for reporting entities to report or due to a lack of consumption by market participants, in either case these market failures are addressed by the current amendments to Rule 605, which require updates to the information reported under Rule 605 by all reporting entities. The amendments additionally increase the usefulness and accessibility of Rule 605 reports by expanding the scope of reporting entities to include larger broker-dealers, and by requiring summary execution quality reports.

[970] *See supra* section III describing the amendments modifying the scope of orders covered and information required to be disclosed pursuant to Rule 605.

In addition to modernizing the content of Rule 605, expanding the scope of entities that will be required to prepare Rule 605 reports to include larger broker-dealers will result in benefits that are unlikely to be achieved absent the amendments.[971] Broker-dealers and their customers are subject to a classic principal-agent relationship in which the customer (the principal) submits an order to a broker-dealer (the agent) to handle its execution on the customer's behalf; however, information asymmetries prevent the customer from being able to directly observe the broker-dealer's handling of the customer's order.[972] This limits the extent to which broker-dealers need to compete for customers or order flows on the basis of execution quality, which may result in lower execution quality for their customers.

As with market centers, most broker-dealers also do not necessarily have incentives to produce public and standardized execution quality reports and, therefore, are subject to the same market failures identified in the Rule 11Ac1–5 Adopting Release and described above. Furthermore, as discussed above in the context of market centers, even if broker-dealers are incentivized to produce execution quality reports, for example for marketing purposes or to protect against reputation loss, there are few incentives for broker-dealers to provide execution quality information that is standardized.[973] As a result, individual investors and, to some extent, institutional investors,[974] have limited access to standardized information that could be used to compare how execution quality varies across broker-dealers.[975] Without standardized reporting requirements, broker-dealers may provide their customers with different metrics, such that customers would not be able to make comparisons among broker-dealers on the basis of execution quality. Additionally, even if broker-dealers provide their customers with the same metrics, they may use different methodologies to calculate these metrics, such that they would not be easily comparable. Both of these factors would limit customers' abilities to compare execution quality across broker-dealers.

One commenter stated that vendors could provide a market-based solution for producing comprehensive metrics and could compete for business.[976] The Commission disagrees that a vendor-based market solution would achieve the same benefits as these amendments to Rule 605. Vendors would not have access to information that is granular enough to produce execution quality metrics similar to the ones required by Rule 605 reporting requirements without getting data from market centers and broker-dealers. As discussed above, market centers and broker-dealers do not necessarily have incentives to provide public and standardized execution quality information, and those who choose not to contribute data may do so because they believe it is in their interest to keep their data out of public view.[977] This makes it unlikely that a commercial data vendor will be able to produce an execution quality data product that is comprehensive and free from selection biases.[978] Absent a requirement for reporting entities to publish standardized execution quality reports, competing vendors would likely have incomplete data or produce non-standardized metrics while market centers and broker-dealers might select the vendors that make them look the best. As a result, this market-based solution would be less valuable for comparing execution quality across market centers and broker-dealers. Furthermore, while competing vendors would likely be able to offer a data product summarizing the information contained in Rule 605 reports, it is not necessarily the case that these summary reports would be ''free and readily accessible to the public,'' as required by the amended rule.[979]

C. Baseline

The baseline is the status quo against which the costs, benefits, and the effects on efficiency, competition, and capital formation of these amendments are measured. This baseline consists, first, of the regulatory baseline, which frames both investors' access to execution quality information under Rule 606 and preexisting Rule 605 and market participants' access to market data, both currently and as expected under the

[971] A ''larger broker-dealer'' is a broker-dealer that meets or exceeds the ''customer account threshold,'' as defined in final 17 CFR 242.605(a)(7). *See supra* note 61; *see also supra* section II.A (describing the amendments expanding the scope of Rule 605 reporting entities to include larger broker-dealers).

[972] Similar information asymmetries were recognized in the Rule 11Ac1–5 Adopting Release, which stated that ''the decision about where to route a customer order is frequently made by the broker-dealer, and broker-dealers may make that decision, at least in part, on the basis of factors that are unknown to their customers.'' Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75433 (Dec. 1, 2000).

[973] *See, e.g., supra* note 969 for a discussion of the FIF Template. There are also some broker-dealers that disclose their own execution quality metrics on their respective websites, but the disclosures tend to differ in ways that make them difficult to compare, *e.g.,* reporting different metrics, using different methodologies, or different samples of stocks. *See also Order Execution Quality,* TD Ameritrade, *available at https://www.tdameritrade.com/tools-and-platforms/order-execution.html* (last updated 2024); *Execution Quality,* E*TRADE, *available at https://us.etrade.com/trade/execution-quality* (last updated 2024); *Our Execution Quality,* Robinhood, *available at https://robinhood.com/us/en/about-us/our-execution-quality/* (last updated 2024). Several commenters stated that the execution quality metrics produced by broker-dealers are ''not universal'' (*see* Vanguard Letter at 4) and ''haphazard and generally not comparable across brokers'' (*see* Professor Schwarz et al. Letter at 3).

[974] While some institutional investors are likely to have access to alternative sources of execution quality information, such as Rule 606(b)(3) reports and transaction cost analysis, the information on execution quality that is individually collected by institutional investors is typically nonpublic and highly individualized, and therefore limited to the execution quality obtained from broker-dealers with which the institutional investors currently do business. Since Rule 605 reports are public, institutional investors can use these reports to assess the execution quality of the broker-dealers and market centers with which they do not currently do business. *See infra* section IX.C.2.c) for further discussion.

[975] Institutional and individual investor customers of broker-dealers may differ in their abilities to request execution quality information from their broker-dealers. *See infra* sections IX.C.2.b) and IX.C.2.c) for further discussion.

[976] *See* Data Boiler Letter at 5 and 18.

[977] Even if there are reputational reasons for a reporting entity to provide its execution quality data to a vendor, for example, because a decision not to report would serve as a signal of poor execution quality, the relevance of this as an incentive to report depends on whether market participants are incentivized to access the information in the first place. The benefits to market participants from accessing execution quality information, and therefore their incentives to do so, are limited if the execution quality information only contains a limited subset of reporting entities. *See, e.g.,* the discussion of the limited uptake of the FIF Template in note 969, *supra,* and corresponding text. In theory, this could result in multiple equilibria, in which either all market participants are incentivized to access execution quality data and all reporting entities are incentivized to report, or no market participants are incentivized to access execution quality data and no reporting entities are incentivized to report. Since the benefits from execution quality transparency are diffused across many market participants, while the costs of reporting are concentrated among a smaller subset of entities, it is likely that the cost effect will dominate, such that the latter equilibrium is more likely. The latter equilibrium is also similar to what was observed with the limited uptake of the FIF Template. *See supra* note 969.

[978] Market participants that voluntarily contribute data to commercial datasets ''self-select'' the data that they would like to be included in the dataset. It is widely acknowledged in the empirical economics literature that the practice of having entities under study self-select into the dataset very likely leads to biased data. *See, e.g.,* James J. Heckman, *Selection Bias and Self-Selection, in* Econometrics 201–224 (John Eatwell, et al., eds., Palgrave Macmillan 1990).

[979] For example, while it is likely that data vendors would make summary reports available for a fee, final 17 CFR 242.605(a)(5) requires that reporting entities keep the required summary execution quality reports ''posted on an internet website that is free and readily accessible to the public for a period of three years from the initial date of posting on the internet website.''

unimplemented MDI Rules.[980] The regulatory baseline also consists of other recently adopted rules. In addition, the baseline consists of the usage of preexisting Rule 605 execution quality information by market participants. Next, the baseline discusses issues with market participants' ability to use preexisting Rule 605 information to evaluate and compare execution quality across reporting entities prior to these amendments. Lastly, this baseline describes the state of the markets for brokerage and trading services and the extent to which Rule 605's ability to promote competition on the basis of execution quality, both among broker-dealers and among market centers, may have been limited prior to these amendments. The economic analysis considers existing regulatory requirements, including recently adopted rules, as part of its economic baseline against which the costs and benefits of the amended rule are measured.[981]

1. Regulatory Baseline

(a) Disclosure Requirements Under Preexisting Rule 605

Rule 605 requires reporting entities to make available, on a monthly basis, standardized information concerning execution quality for covered orders in NMS stocks; prior to these amendments, these reporting entities included only market centers.[982] Aggregated execution quality information on covered orders is reported for each individual security, with the information for each security broken out into multiple order type and size categories.[983] This format allows market participants to partially control for differences in market centers' order flow characteristics when assessing execution quality information, facilitating more apples-to-apples comparisons of execution quality across market centers. This is important because a particular market center's order flow may be made up of a different mixture of securities, order types, and order sizes, which may impact or constrain that market center's overall execution quality.[984] In addition, some of the information required to be reported by Rule 605, such as the realized spread, does not measure execution quality directly but serves the purpose of providing context to execution quality metrics and ascertaining how entities handle orders during different market conditions.[985]

In addition, the execution quality information required by Rule 605 pertains to several different aspects of execution quality, namely, execution prices, execution speeds, and fill rates. Prior to these amendments, this information on execution prices included, for market orders and marketable limit orders, the average effective spread,[986] number of shares executed at prices better than the quote, at the quote, or outside the quote,[987] as well as average dollar amount per share that orders were executed at prices better than the quote or outside the quote.[988] Information on execution speeds included, for all order types, the cumulative number of shares executed within different time-to-execution buckets[989] and, for market and marketable limit orders, the share-weighted average time to execution of orders executed better than the quote, at the quote, or outside the quote.[990] Information that could be used to calculate fill rates included, for all order types, the cumulative number of shares of covered orders, the cumulative number of shares of covered orders executed at the receiving market center, and the cumulative number of shares of covered orders executed at any other venue.[991]

The Rule 605 NMS Plan establishes procedures for market centers to make data available to the public in a uniform, readily accessible, and usable electronic form.[992] The Plan also requires market centers to post their monthly reports on an internet website that is free of charge and readily accessible to the public.[993] Generally, reports are posted on market centers' own websites; however, they may be posted on a third-party vendor site if a market center uses a vendor to prepare its reports.[994] Among other things, the Plan sets forth the file type and structure of the reports and the order and format of fields, yielding reports that are structured and machine-readable.[995]

(b) Disclosure Requirements Under Rule 606

Under Rule 606, broker-dealers are required to identify the venues, including market centers, to which they route customer orders for execution.[996] Specifically, with respect to held orders, 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

[980] *See* MDI Adopting Release, 86 FR 18596 (Apr. 9, 2021).

[981] *See, e.g., Nasdaq* v. *SEC,* 34 F.4th 1105, 1111–15 (D.C. Cir. 2022). This approach also follows Commission staff guidance on economic analysis for rulemaking. *See* Memorandum from SEC Div. of Risk, Strategy Fin. Innovation & Off. Of Gen. Couns. To Staff of the Rulewriting Divisions and Offices (Mar. 16, 2012), *available at https://www.sec.gov/divisions/riskfin/rsfi_guidance_econ_analy_secrulemaking.pdf* (''The economic consequences of proposed rules (potential costs and benefits including effects on efficiency, competition, and capital formation) should be measured against a baseline, which is the best assessment of how the world would look in the absence of the proposed action.''); *id.* at 7 (''The baseline includes both the economic attributes of the relevant market and the existing regulatory structure.''). The best assessment of how the world would look in the absence of the proposed or final action typically does not include recently proposed actions, because doing so would improperly assume the adoption of those proposed actions.

[982] *See* prior 17 CFR 242.605.

[983] *See* prior 17 CFR 242.605(a)(1). These size categories were: 100 to 499 shares; 500 to 1,999 shares; 2000 to 4,999 shares; and 5,000 or greater shares. *See* prior 17 CFR 242.600(b)(13).

[984] For example, larger order sizes are typically more difficult to ''work'' than smaller order sizes, so the execution quality information of a market center that tends to handle larger order sizes would likely be more constrained than that of a market center that tends to handle smaller order sizes. Several commenters discussed the importance of being able to make apples-to-apples comparisons of execution quality to help ensure that differences in execution quality are not driven by factors such as stock characteristics and different clientele. *See, e.g.,* TradeStation Letter at 7, stating that ''differences [in retail client personas] cause execution quality data to be difficult to compare on an apples-to-apples basis because, for example, trade and execution data generated from buy-and-hold investors' orders differs vastly from the same data generate[d] from active traders' orders;'' and Virtu Letter II at 13, stating that ''[f]actors like the mix of stocks a broker handles and the trading strategies of its customers can make one broker's order flow more costly to fulfill and/or challenging to execute than another's and therefore explain potential differences in execution quality between brokers.''

[985] *See infra* note 1229 and accompanying text for a discussion of realized spread as a measure of market makers' ability to provide liquidity during adverse market conditions.

[986] *See* prior 17 CFR 242.605(a)(1)(ii)(A).

[987] *See* prior 17 CFR 242.605(a)(1)(ii)(B), (C), and (G), respectively.

[988] *See* prior 17 CFR 242.605(a)(1)(ii)(C) and (H), respectively.

[989] Prior to amendment, the time-to-execution categories defined in Rule 605 were shares executed from 0 to 9 seconds, shares executed from 10 to 29 seconds, shares executed from 30 to 59 seconds, shares executed from 60 to 299 seconds, and shares executed from 5 to 30 minutes. *See* prior 17 CFR 242.605(a)(1)(i)(F) through (J).

[990] *See* prior 17 CFR 242.605(a)(1)(ii)(D), (F), and (I), respectively.

[991] *See* prior 17 CFR 242.605(a)(1)(i)(B), (D), and (E). The fill rate can be calculated as Fill Rate = (Cumulative Number of Shares Executed at Receiving Market Center + Cumulative Number of Shares Executed at Other Venues)/(Cumulative Number of Covered Shares).

[992] *See* Rule 605 NMS Plan Release, 66 FR 19814 (Apr. 17, 2001).

[993] *See supra* note 869 for further discussion.

[994] *See* Rule 605 NMS Plan at section VII & n.3.

[995] *See* Rule 605 NMS Plan Release, 66 FR 19814 at 19815 (Apr. 17, 2001) (''Section V . . . provides that market center files must be in standard, pipe-delimited ASCII format'').

[996] *See* 17 CFR 242.606(a)(1).

arrangements.[997] In addition, Rule 606(b)(1) requires broker-dealers to provide to their customers, upon request, reports that include high-level customer-specific order routing information, such as the identity of the venues to which the customer orders were routed for execution in the prior six months and the time of the transactions, if any, that resulted from such orders.[998] For orders submitted on a held basis, the reports required by Rule 606 do not contain any execution quality information.

When the Commission adopted the predecessor to Rule 606, it was intended to supply investors with information on where their orders are routed, which could be used along with information from Rule 605 about the quality of execution from the market centers to which their orders are routed.[999] In theory, investors should be able to use Rule 606 reports to identify the market centers to which their broker-dealers are routing orders, and then use Rule 605 to estimate the execution quality offered by those market centers.[1000] These market centers' aggregated execution quality metrics could then be used as a proxy for the execution quality that broker-dealers achieved for their customers' orders.

Following amendments to Rule 606 in 2018,[1001] broker-dealers are subject to requirements to provide information about the execution quality that they achieved for not held orders, which are typically used by institutional investors.[1002] Specifically, Rule 606(b)(3) requires broker-dealers to produce reports pertaining to order handling upon the request of a customer that places, directly or indirectly, one or more orders in NMS stocks that are submitted on a not held basis, subject to a de minimis exception.[1003] These reports include aggregated execution quality metrics such as fill rate, percentage of shares executed at the midpoint, and percentages of total shares executed that were priced on the side of the spread more favorable to the order and on the side of the spread less favorable to the order.[1004]

(c) 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,[1005] and the regulatory baseline includes these changes to the current arrangements for consolidated market data. However, as discussed in more detail below, the MDI Rules have not been implemented, and so they have not yet affected market practices. 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.

The Commission received comments regarding uncertainty over the market effect of the MDI Rules, once implemented, and how this will affect the baseline assumptions of Rule 605, as amended.[1006] Accordingly, this section will first briefly summarize the regulatory structure for consolidated market data prior to the implementation of the MDI Rules. It then will discuss the current status of the implementation of the MDI Rules and provide an assessment of the potential effects that the implementation of the MDI Rules can have on the baseline estimations.

(1) Regulatory Structure for Consolidated Market Data Prior to the MDI Rules

Consolidated market data are made widely available to investors through the national market system, a system set forth by Congress in section 11A of the Exchange Act[1007] and facilitated by the Commission in Regulation NMS.[1008] Market data are collected by exclusive SIPs,[1009] which consolidate that information and disseminate an NBBO and last sale information. For quotation information, only the 16 national securities exchanges that currently trade NMS stocks provide quotation information to the SIPs for dissemination in consolidated market data.[1010] FINRA has the only SRO display-only facility (the Alternative Display Facility, or ADF). No broker-dealer, however, currently uses it to display quotations in NMS stocks in

[997] *See id.* These reports must provide information, for each venue identified, on the net aggregate amount of any payment for order flow received, payment from any profit-sharing relationship received, transaction fees paid, and transaction rebates received, both as a total dollar amount and per share, for each of the following non-directed order types: (A) market orders; (B) marketable limit orders; (C) non-marketable limit orders; and (D) other others. *See* 17 CFR 242.606(a)(1)(iii).

[998] *See* 17 CFR 242.606(b)(1).

[999] *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75435 (Dec. 1, 2000), stating that ''[s]upplied with information on where their orders are routed, as well as information about the quality of execution from the market centers to which their orders are routed, investors will be able to make better informed decisions with respect to their orders.''

[1000] *See infra* section IX.C.3.a)(1) for a discussion of current issues with using information from Rule 606 reports to infer the execution quality of broker-dealers.

[1001] *See generally* 2018 Rule 606 Amendments Release, 83 FR 58338 (Nov. 19, 2018).

[1002] An analysis included in the 2018 Rule 606 Amendments Release looked at orders submitted from customer accounts of 120 randomly selected NMS stocks listed on NYSE during the sample period of Dec. 5, 2016, to Dec. 9, 2016, consisting of 40 large-cap stocks, 40 mid-cap stocks, and 40 small-cap stocks. The analysis found that among the orders received from the institutional accounts, about 69% of total shares and close to 39% of total number of orders in the sample are not held orders, whereas among the orders received from the individual accounts, about 19% of total shares and about 12% of total number of orders in the sample are not held orders. *See* 2018 Rule 606 Amendments Release, 83 FR 58338 at 58393 (Nov. 19, 2018); *see also id.* at 58345 (stating that by using the not held order distinction, Rule 606(b)(3) as adopted will likely result in more Rule 606(b)(3) disclosures for order flow that is typically characteristic of institutional customers—not retail customers—and will likely cover all or nearly all of the institutional order flow). In contrast, held orders are typically used by individual investors. *See, e.g., id.* at 58372 (stating that retail investors' orders are typically submitted on a held basis and are typically smaller in size).

[1003] *See* 17 CFR 242.606(b)(3). In addition, Rule 606(b)(5)'s customer-level de minimis exception exempts broker-dealers from providing upon request execution quality reports for customers that traded on average each month, for the prior six months, less than $1,000,000 of notional value of not held orders in NMS stocks through the broker-dealer. *See* 17 CFR 242.606(b)(5).

[1004] *See* 17 CFR 242.606(b)(3)(ii).

[1005] *See* MDI Adopting Release, 86 FR 18596 (Apr. 9, 2021).

[1006] *See* Schwab Letter at 2; Tastytrade Letter at 2 & n.1; DOJ Letter at 6–7.

[1007] *See* 15 U.S.C. 78k–1(a)(1)(C).

[1008] 17 CFR 242.600 through 242.614.

[1009] *See* MDI Adopting Release, 86 FR 18596 at 18598–99 (Apr. 9, 2021) (describing that the exclusive SIPs, among other things, disseminate core data, which currently consist of: (1) the price, size, and exchange of the last sale; (2) each exchange's current highest bid and lowest offer and the shares available at those prices; and (3) the NBBO). A securities information processor (''SIP'') is defined in section 3(a)(22)(A) of the Exchange Act. *See* 15 U.S.C. 78c(a)(22)(A). Further, an ''exclusive processor'' (also known as an exclusive SIP) is defined in section 3(a)(22)(B) of the Exchange Act. *See* 15 U.S.C. 78c(a)(22)(B).

[1010] 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 No. 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); Securities Exchange Act Release No. 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. *See id.* at 10407.

consolidated market data.[1011] Disseminated quotation information includes each exchange's current highest bid and lowest offer and the shares available at those prices, as well as the NBBO. For transaction information, currently all national securities exchanges that trade NMS stocks, as well as FINRA, provide real-time transaction information to the SIPs for dissemination in consolidated market data. Such information includes the symbol, price, size, and exchange of the transaction, and it includes odd-lot transactions.

(2) Unimplemented Market Data Infrastructure Rules

Among other things, the unimplemented MDI Rules update and expand the content of consolidated market data to include: (1) certain odd-lot information;[1012] (2) information about certain orders that are outside of an exchange's best bid and best offer (*i.e.,* certain depth of book data);[1013] and (3) information about orders that are participating in opening, closing, and other auctions.[1014] The MDI Rules also introduce a four-tiered definition of round lot that is tied to a stock's average closing price during the previous month.[1015] For stocks with prices greater than $250, a round lot is defined as consisting of between 1 and 40 shares, depending on the tier.[1016] The MDI 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.[1017] These competing consolidators are not required to offer a product containing all elements of consolidated market data, but are able to develop the consolidated market data products that their subscribers demand.[1018]

In the MDI Adopting Release, the Commission established a transition period for the implementation of the MDI Rules.[1019] The Commission's approval of such amendments will be the starting point for the rest of the MDI implementation schedule.[1020] After approval of the MDI Plan Amendments, the next step will be a 180-day development period, during which competing consolidators can register with the Commission.[1021] Based on the times provided in the transition plan for implementation of the MDI Rules, the Commission estimated that the full implementation of the MDI Rules will be at least two years after the Commission's approval of the plan amendment(s) required by Rule 614(e).[1022]

The Operating Committees of the CTA/CQ Plan and UTP Plan filed the MDI Plan Amendments on November 5, 2021.[1023] The Commission disapproved the proposed amendments on September 21, 2022.[1024] As a result, the participants to the effective national market system plan(s) will need to develop and file new proposed amendments as required by Rule 614(e), before the implementation period prescribed by the phased transition plan can commence. Because the implementation of the MDI Rules has been delayed, the end date of the implementation period cannot be estimated with greater certainty.

Given that the MDI Rules have not yet been implemented, they have not affected market practice and therefore data that would be required for a 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 described in the MDI Adopting Release as they relate to the baseline for the adoption of these amendments.[1025]

The Commission anticipated that the new round lot definition will result in narrower NBBO spreads for most stocks with prices greater than $250 because, for these stocks, fewer odd-lot shares will need to be aggregated together (possibly across multiple price levels[1026]) to form a round lot and qualify for the NBBO.[1027] The reduction in spreads will be greater in higher-priced stocks because the definition of a round lot for these stocks will include fewer shares, such that even fewer odd-lot shares will need to be aggregated together.[1028] 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

[1011] On Dec. 16, 2022, FINRA filed with the Commission a proposed rule change to add IntelligentCross ATS as a new entrant to the ADF. On Aug. 24, 2023, the Division of Trading and Markets approved FINRA's proposed rule change pursuant to delegated authority. On Aug. 25, 2023, the Deputy Secretary of the Commission notified FINRA that, pursuant to Commission Rule of Practice 431, the Commission would review the Division of Trading and Markets' action pursuant to delegated authority and that the Division of Trading and Markets' action pursuant to delegated authority was stayed until the Commission orders otherwise. *See* Securities Exchange Act Release No. 96550 (Dec. 20, 2022), 87 FR 79401 (Dec. 27, 2022) (FINRA proposed rule change to add IntelligentCross ATS as a new entrant to the ADF); Securities Exchange Act Release No. 98212 (Aug. 24, 2023), 88 FR 59958 (Aug. 30, 2023) (release approving FINRA's proposal by the Division of Trading and Markets pursuant to delegated authority). Securities Exchange Act Release No. 98642 (Sept. 29, 2023) (Commission order staying the Division of Trading and Markets' approval pursuant to delegated authority until the Commission orders otherwise).

[1012] *See* final 17 CFR 242.600(b)(69); MDI Adopting Release, 86 FR 18596 at 18613 (Apr. 9, 2021).

[1013] *See* MDI Adopting Release, 86 FR 18596 at 18625 (Apr. 9, 2021).

[1014] *See id.* at 18630.

[1015] *See id.* at 18617.

[1016] *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.

[1017] *See id.* at 18637.

[1018] *See id.* at 18608, 18671–72.

[1019] *See id.* at 18698–18701.

[1020] *See id.* at 18698.

[1021] *See id.* at 18699–18700.

[1022] *See id.* at 18700–18701; Minimum Pricing Increments Proposing Release, 87 FR 80266 at 80295 (Dec. 29, 2022). The transition time frame includes the implementation of the round lot definition, which is scheduled to occur at the end of the transition plan. The Commission has proposed to accelerate the implementation of the odd-lot information and round lot definition. *See id.* at 80295–99. As this proposal has not been adopted, it is not part of the baseline of the Rule 605 amendments. *See supra* note 981.

[1023] The Operating Committees of CTA Plan and UTP Plan filed proposed amendments on Nov. 5, 2021, which were published for comment in the **Federal Register**. *See* 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).

[1024] *See* 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).

[1025] *See* MDI Adopting Release, 86 FR 18596 at 18741–18799 (Apr. 9, 2021).

[1026] The calculation of the NBBO includes odd-lots that, when aggregated, are equal to or greater than a round lot. Under final 17 CFR 242.600(b)(26)(ii), ''such aggregation shall occur across multiple prices and shall be disseminated at the least aggressive price of all such aggregated odd-lots.'' For example, if there is one 50-share bid at $25.10, one 50-share bid at $25.09, and two 50-share bids at $25.08, the odd-lot aggregation method would show a protected 100-share bid at $25.09.

[1027] For example, if there is one 20-share bid at $250.10, one 20-share bid at $250.09, and two 50-share bids at $250.08, prior to MDI the NBB would be $250.08, as even aggregated together the odd-lot volume would not add up to at least a round lot. After MDI, the NBB would be $25.09, as the odd-lot aggregation method would show a protected 40-share round lot bid at $25.09.

[1028] *See supra* note 1026. 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 18596 at 18743 (Apr. 9, 2021).

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.[1029] 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 in which direction such odd-lot imbalances in higher priced stocks currently exist, so it is uncertain of the extent or direction of the change.[1030]

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.[1031] To the extent that this occurs, there could be an increase in the frequency with which marketable orders must walk the book 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 new round lot definition will result in fewer odd-lot orders in stocks with prices greater than $250, as some orders that were defined as odd-lots prior to the MDI Rules are now defined as round lots. At the same time, 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 did not have access to this information prior to the MDI Rules.[1032] However, the magnitude of this effect depends on the extent to which market participants who rely solely on SIP data and lack information on odd-lot quotes choose to receive the odd-lot information and trade on it. 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.[1033]

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.[1034] Broker-dealers may choose to receive market data from competing consolidators, who may offer different consolidated market data products at different prices or at different latencies or with different amounts of data content.[1035] Competing consolidators will be required to disclose information about their consolidated market data products, including the services they will offer, the prices for such services as well as performance metrics, which will assist a broker-dealer in selecting an appropriate competing consolidator.[1036] The Commission states in the MDI Adopting Release that it believes that competition among consolidators will support high quality consolidated market data.[1037] Furthermore, while competing consolidators are not required to offer a product containing all elements of consolidated market data, the Commission states that it believes that one or more competing consolidators will be incentivized to offer a consolidated market product containing all of the data elements.[1038]

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.[1039] 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.[1040] However, the Commission stated that it was uncertain about the magnitude of both of these effects.[1041] 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, national securities exchanges and ATSs have a number of order types that are based on the NBBO, 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.[1042] 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.[1043] However, the Commission stated that it was uncertain of the magnitude of these effects.[1044]

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.[1045] 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 executing individual investor orders might decline,[1046] and to make

[1029] For example, if the NBB is $260 and the NBO 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, calculations of effective spread will be lower for buy orders but higher for sell orders.

[1030] *See* MDI Adopting Release, 86 FR 18596 at 18750 (Apr. 9, 2021).

[1031] However, this effect will depend on how market participants adjust their order submissions. *See id.* at 18746 for further discussion.

[1032] *See id.* at 18754.

[1033] *See id.*

[1034] *See id.* at 18725.

[1035] *See id.* at 18606.

[1036] *See id.*

[1037] *See id.* at 18661.

[1038] *See id.* at 18752.

[1039] *See id.* at 18744.

[1040] *See id.* at 18596, 18754.

[1041] *See id.* at 18745, 18754.

[1042] *See id.* at 18748.

[1043] *See id.*

[1044] *See id.*

[1045] *See id.* at 18747.

[1046] Individual investor orders typically feature lower adverse selection than other types of orders, such as institutional orders. All else equal, it is generally more profitable for any liquidity provider, including wholesalers, to execute against orders with lower adverse selection risk, due to the reduced risk that prices will move against the liquidity provider. *See, e.g.,* David Easley, Nicholas M. Kiefer & Maureen O'Hara, *Cream-Skimming or*

Continued

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 it 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.[1047] If wholesalers do change how they conduct business, it 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.

(d) Other Recently Adopted/Proposed Rules

Several commenters requested that the Commission consider interactions between the economic effects of the proposal to amend Rule 605 and other recent Commission proposals.[1048] In addition to interaction between this rulemaking and the MDI Adopting Release, discussed *supra,* commenters stated that there could be interactions between this rulemaking and another proposal [1049] that has since been adopted, the Settlement Cycle Adopting Release,[1050] which affects the same market participants as the amendments to Rule 605. Commenters stated that implementing the rules together would impact industry resources, or that the rules had uncertain interacting effects.[1051] This rule was not included as part of the baseline in the Proposing Release because it was not adopted at the time of the Proposing Release. In response to commenters, this economic analysis considers potential economic effects arising from any overlap between the compliance period for the final amendments and that of the Settlement Cycle Adopting Release.[1052]

In addition, commenters stated that there were overlapping compliance costs between the final amendments and the proposals that have not been adopted: in particular, the Order Competition Rule Proposing Release, the Regulation Best Execution Proposing Release, and the Minimum Pricing Increments Proposing Release.[1053] Numerous commenters accordingly recommended an incremental or sequential approach to the Commission's market structure proposals.[1054] To the extent the Commission takes final action on any or all of those proposals, the baseline in each of those subsequent rulemakings will reflect the existing regulatory requirements at that time.

In a related comment, one commenter stated that the other market structure proposals should be delayed for a period sufficient to analyze the metrics under the amended Rule 605 reporting requirements, to establish an updated baseline for the other rules' benefits and costs and—if the other rules are adopted—to accurately measure their impact.[1055] This comment pertains to the timing of adoption and baseline assumptions of the other market structure proposals and will be considered in connection with those proposals.

2. Use of Reports Under Rule 605 Prior to Rule Amendments

(a) Relevance of Execution Quality Information

When a customer places an order in an NMS stock with a broker-dealer, the broker-dealer acts as an agent on behalf of that customer, to whom the broker-dealer owes a duty of best execution.[1056] These broker-dealers can generally decide how to route that order for execution to an exchange, a wholesaler, or an ATS, where the trade may be executed or potentially routed further. These market centers, among other things, match traders with counterparties, provide a framework for price negotiation and provide liquidity to those seeking to trade. In this way, individual and institutional investors are subject to a principal-agent relationship in which an order submitter (the principal) submits an order to an agent to handle on its behalf, in this case the broker-dealer. Since information asymmetries prevent the principal from being able to directly observe the agent's handling of the order, this creates possible conflicts of interest in which the agent's incentives may not align with the interests of the

Profit-Sharing? The Curious Role of Purchased Order Flow, 51 J. Fin. 811 (1996).

[1047] *See* MDI Adopting Release, 86 FR 18596 at 18748 (Apr. 9, 2021).

[1048] *See, e.g.,* Nasdaq Letter at 6 (''the Commission must be careful to consider both the individual and combined effects of its Proposals''); SIFMA AMG Letter at 4 (''the cumulative effects of multiple, major changes to the market structure necessarily compound, making the need for careful analysis of their intersections indispensable'').

[1049] Securities Exchange Act Release No. 94196 (Feb. 9, 2022), 87 FR 10436 (Feb. 24, 2022) (Shortening the Securities Transaction Settlement Cycle).

[1050] Securities Exchange Act Release No. 96930 (Feb. 15, 2023), 88 FR 13872 (Mar. 6, 2023) (Shortening the Securities Transaction Settlement Cycle) (''Settlement Cycle Adopting Release''). The Settlement Cycle Adopting Release shortens the standard settlement cycle for most broker-dealer transactions from two business days after the trade date to one business day after the trade date (''T+1''). To facilitate orderly transition to a shorter settlement cycle, the rule requires same-day confirmations, allocations, and affirmations for processing transactions subject to the rule, and requires records of each confirmation received, and of any allocation and each affirmation sent or received, with a date and time stamp for each indicating when it was sent or received. With certain exceptions, the rule has a compliance date of May 28, 2024. *See* Settlement Cycle Adopting Release, 88 FR 13872 at 13918, section VII (Mar. 6, 2023).

[1051] *See* SIFMA AMG Letter at 3; Chamber of Commerce Letter at 3; Fidelity Letter at 4, n.4; BlackRock Letter at 17; Rebekah Goshorn Jurata, General Counsel, American Investment Council, at 9, n.30 (Aug. 8, 2023), *available at https://www.sec.gov/comments/s7-29-22/s72922-245802-509962.pdf* (''American Investment Council'').

[1052] Since proposing this rule, the Commission adopted Securities Exchange Act Release No. 99477 (Feb. 6, 2024) (Further Definition of ''As a Part of a Regular Business'' in the Definition of Dealer and Government Securities Dealer) (''Dealer Definition Amending Release''). Commenters identified the proposed rule as having interacting effects with Rule 605. *See* Chamber of Commerce Letter at 3; Fidelity Letter at 4, n.4; BlackRock Letter at 2 & n.6, 17 (*citing* Securities Exchange Act Release No. 94524 (Mar. 28, 2022), 87 FR 23054 (Apr. 18, 2022)). The Dealer Definition Amending Release adopts new rules to further define the phrase ''as a part of a regular business'' as used in the statutory definitions of ''dealer'' and ''government securities dealer.'' The Commission believes there are no potential significant effects from overlapping requirements to comply with the amendments to Rule 605. Under Rule 605(a)(7), as adopted, a broker-dealer which is not a market center is subject to the final rule only if it ''introduces or carries 100,000 or more customer accounts through which transactions are effected for the purchase or sale of NMS stocks.'' By contrast, under the Dealer Definition Amending Release, the affected parties are liquidity providers that introduce or carry no customer accounts, that will be required to register as dealers. As a result, the Commission does not anticipate the compliance costs associated with these amendments to Rule 605 to be incurred directly by those who are impacted by the Dealer Definition Amending Release.

[1053] *See, e.g.,* SIFMA Letter II, at 2–3, 8–9, 11–13, 16–21 & app. E. In addition to the three other market structure proposals, commenters also stated interacting effects with another proposal that has not yet been adopted, Securities Exchange Act Release No. 94062 (Jan. 26, 2022), 87 FR 15496 (Mar. 18, 2022) (Amendments Regarding the Definition of ''Exchange'' and Alternative Trading Systems (ATSs) That Trade U.S. Treasury and Agency Securities, National Market System (NMS) Stocks, and Other Securities). *See, e.g.,* Chamber of Commerce Letter at 3; Fidelity Letter at 4 nn.4, 10.

[1054] *See, e.g.,* SIFMA AMG Letter at 2, 18; STA Letter at 9–10.

[1055] *See* Rule 605 Citadel Letter at 1–2, 4; *see also* Equity Market Structure Citadel Letter at 15, 21; Equity Market Structure Citadel Letter II at 1–3.

[1056] Some investors may not value order-level execution quality in all cases. For example, it is the Commission's understanding that when an institutional customer submits a large order to be executed on behalf of one account (*e.g.,* a single mutual fund or pension fund), it expects the broker-dealer that handles and executes such large order to do so in a manner that ensures best execution is provided to the ''parent'' order. *See infra* section IX.C.4.a)(1)(b) for further discussion.

principal.[1057] Since the broker-dealers typically do not directly observe market centers' executions of their routed orders,[1058] similar information asymmetries exist between broker-dealers and the market centers to which they route customer orders.

Standardized execution quality information, such as the information available from Rule 605 reports, alleviates these information asymmetries.[1059] First, it provides broker-dealers access to information about the execution quality of market centers, which they can use to inform their routing decisions.[1060] Secondly, in conjunction with broker-dealer routing information from Rule 606 reports,[1061] preexisting Rule 605 allowed investors access to information about the execution quality achieved by the market centers to which their broker-dealers typically route.[1062]

Information on the execution quality obtained by broker-dealers is particularly important for investors. As broker-dealers that route customer orders have many choices about how and where to route orders for execution,[1063] their routing decisions affect the execution quality that their customers' orders receive, leading to significant variations in execution quality across broker-dealers. For example, a broker-dealer may route a marketable IOC order to a market center that is not posting any liquidity at the NBBO (in which case the order would be cancelled), or a broker-dealer may route a NMLO to a market center that is not attracting any trading interest (in which case the NMLO would likely be cancelled at the end of day, if not earlier). The authors of one recent academic working paper ran an experiment in which they placed identical simultaneous market orders across various broker-dealers; they found that the execution quality of these orders differed significantly in terms of average price improvement and effective spreads.[1064] The authors argue that these differences in execution quality across broker-dealers are economically significant, as they estimate that every basis point difference in execution quality is equivalent to an annual cost to investors of $2.8 billion.[1065] The evidence that there are significant differences in execution quality across broker-dealers suggests that without access to standardized information about broker-dealer execution quality, it is difficult for investors to compare these differences when choosing a broker-dealer.

Some information asymmetries are not fully addressed through the use of aggregated execution quality information, such as that available through Rule 605 (both prior to and after these amendments), because the principal is not able to use these data to observe the execution quality that the agent achieved for the principal's individual orders. However, the principal is able to receive a signal of the execution quality that the agent has achieved for comparable orders over a certain time period. This signal can be a useful proxy that investors and their broker-dealers can use to assess and compare the execution quality that they can expect to receive across market centers. Despite being aggregated, Rule 605 reports have indeed been useful. One academic study examining the introduction of Rule 605 found that the routing of marketable order flow by broker-dealers became more sensitive to changes in execution quality across market centers after Rule 605 reports became available.[1066] The authors attribute this effect to broker-dealers factoring in information about the execution quality of market centers from Rule 605 reports when making their order routing decisions.

Market participants have access to some public information about the execution quality of market centers from sources other than Rule 605. For example, some wholesalers and ATSs produce order flow and execution quality statistics other than those required under Rule 605 and make them available either on their websites or as part of their ATS–N filings.[1067] However, these sources are either not standardized [1068] or are not available

[1057] If there were no information asymmetries and the principal could perfectly observe the agent's handling of its order, and if there is competition among agents, then the principal-agent relationship would not necessarily result in a situation where the agent's incentives may not align with the principal's, as the principal would be able to directly observe the agent's actions and switch to another agent.

[1058] *See supra* note 972, noting that a similar principal-agent problem was recognized in the Rule 11Ac1–5 Adopting Release, 65 FR 75414 (Dec. 1, 2000).

[1059] Several commenters stated that execution quality information from Rule 605 reports is generally useful, including as a ''valuable source of information which the investing public reviews to compare and evaluate executions'' (*see* BlackRock Letter at 3); as a ''valuable feature of the equities markets and provides investors the ability to make informed decisions about where to send their orders'' (*see* SIFMA Letter II at 25); and as ''the primary tool for measuring the quality of order execution in our equity markets'' (*see* McHenry et al. Letter at 3).

[1060] This was supported by comment. *See, e.g.,* Healthy Markets Letter at 15 (''Timely, reliable, and useful statistics about order execution information from trading venues is essential to empowering investors and their brokers with the information they need to make sound order routing decisions'').

[1061] *See infra* section IX.C.3.a)(1), which discusses issues with the usage of Rule 606 broker-dealer routing information and Rule 605 execution quality information to infer the execution quality achieved by broker-dealers.

[1062] Some market participants may have access to sources of execution quality information that reduce these information asymmetries and may serve as an alternative to Rule 605 data. *See infra* sections IX.C.2.b) through IX.C.2.d) for a detailed discussion. Any source of ex post execution quality information is unlikely to eliminate this information asymmetry entirely, as it is likely infeasible for any principal to perfectly observe ex ante or even in real time how an agent will perform in executing its order.

[1063] *See infra* section IX.C.4.b)(1) for a discussion of fragmentation in the market for trading services.

[1064] *See* Christopher Schwarz et al., *The 'Actual Retail Price' of Equity Trades* (working paper Sept. 14, 2022), *available at https://ssrn.com/abstract=4189239* (retrieved from SSRN Elsevier database) (''Schwarz et al. (2023)''). The authors find that this dispersion is due to off-exchange wholesalers systematically giving different execution prices for the same trades to different brokers. *See also* Bradford (Lynch) Levy, *Price Improvement and Payment for Order Flow: Evidence from A Randomized Controlled Trial* (working paper June 27, 2022), *available at https://ssrn.com/abstract=4189658* (retrieved from SSRN Elsevier database) (''Levy (2022)''). Levy (2022) also conducts a randomized controlled trial that involves trading random stocks at random times across random brokers and comparing execution quality across direct market access and PFOF-based brokers. The author found variation in the extent of price improvement provided by PFOF-based brokers, with the broker deriving high PFOF revenues providing less price improvement to customer orders compared to the broker deriving low PFOF revenue. Levy (2022) also stated that one limitation of Schwarz et al. (2023) is that they limited their study to $100 orders, so it is unclear whether execution statistics of $100 orders generalize to those of the average retail trader. However, Schwarz et al. (2023) also observe differences in the price improvement offered by broker-dealers in a more limited sample of $1,000 orders they place. Both these studies include only 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. At the same time, an analysis by the Commission found that wholesalers provide different execution quality to different retail brokers depending on the adverse selection risk of their orders; *see* Table 3 of the Proposing Release, 88 FR 3786 at 3839 (Jan. 20, 2023). Additionally, analysis submitted by two commenters also showed that for a given broker-dealer, execution quality can also vary across different wholesalers. *See* Huang et al. Letter at 27 and Professor Spatt et al. Letter at 30–32.

[1065] *See id.* at 27.

[1066] *See* Boehmer et al., *supra* note 16.

[1067] If an ATS provides one or more of its subscribers with aggregate platform-wide order flow and execution statistics that are not otherwise required disclosures under Rule 605, that ATS is required either to attach that information to its Form ATS–N, or to certify that the information is available on its website. *See* Item 26 of Form ATS–N, *available at https://www.sec.gov//files/formats-n.pdf.*

[1068] For example, reports contain different execution quality metrics or, if they contain the same execution quality metrics, these metrics are

Continued

across all market centers [1069] such that Rule 605 remains an important source of standardized information about market center execution quality. At the same time, while Rule 605 data have been used by some market participants, such as broker-dealers and investment advisers as part of their review of execution quality, and by academics, analysts and the financial press, the use of these data by both individual and institutional investors to directly evaluate and compare execution quality across market centers has been limited. The following sections will discuss the use of data under preexisting Rule 605 by individual investors, institutional investors, and other market participants.

(b) Usage of Rule 605 Reports by Individual Investors

The extent to which individual investors directly access Rule 605 reports has likely been limited. Several commenters to the Proposing Release stated that individual investors have limited or no usage of Rule 605 data.[1070] This limited usage is likely for two reasons.

First, since Rule 605 reporting requirements did not extend to broker-dealers that were not market centers prior to these amendments,[1071] investors' ability to use preexisting Rule 605 to assess and compare the execution quality that they receive from their broker-dealers has been limited. Information about the execution quality received by market centers is only or mostly relevant for investors to the extent that investors can combine this information with information about broker-dealer routing practices from Rule 606 reports to infer the execution quality of their broker-dealers. As will be discussed in detail later in this analysis, if broker-dealers receive different execution quality from a given market center, combining Rule 606 and preexisting Rule 605 data is not necessarily informative about an individual broker-dealer's average execution quality at that market center, since a market center's Rule 605 report is aggregated across all of its broker-dealer customers.[1072] This has likely limited the incentive for broker-dealer customers, including individual investors, to access Rule 605 reports. Second, to the extent that information in Rule 605 reports has been relevant to individual investors such that they are incentivized to access them, Rule 605 reports are designed to be machine readable, rather than human readable. While machine-readable data are useful for facilitating further processing and analysis,[1073] they are not easily consumable by market participants who do not have the access to necessary software or programming skills. This may limit the accessibility of Rule 605 reports, particularly for those individual investors who lack access to these resources.[1074] Such individual investors may instead prefer to consume human-readable reports or summary statistics. In the Rule 11Ac1–5 Adopting Release, the Commission anticipated that, rather than individual investors obtaining and digesting Rule 605 reports themselves, independent analysts, consultants, broker-dealers, the financial press, and market centers would analyze the information and produce summaries that respond to the needs of investors.[1075] Although the Commission is unable to observe the full extent to which this has occurred, third parties have produced information based on Rule 605 reports that is meant for public consumption. For example, data obtained from Rule 605 reports have been used by academics to study a variety of topics related to execution quality, including liquidity measurement, exchange competition, zero-commission trading, and broker-dealer execution quality.[1076] Rule 605 data have also been used in the financial press.[1077]

Unlike institutional investors,[1078] individual investors typically have limited access to alternative sources of standardized execution quality information that could be used to compare across broker-dealers other than information obtained (directly or indirectly) from reports under prior Rule 605.[1079] The requirement in Rule 606(b)(3) for broker-dealers to provide individualized reports of execution quality to their customers upon request does not extend to held orders, which are those most used by individual investors,[1080] and contains a customer-level de minimis exception that likely excludes most individual investors.[1081] In addition, many individual investors likely do not have access to the data processing tools and/or sufficiently granular datasets that are required to calculate their own execution quality statistics, which makes it difficult for them to compare how execution quality varies across broker-dealers.[1082] One exception is the recent effort by a few

calculated using different methodologies, different samples of stocks, and/or different time horizons, making it difficult to compare across reporting entities. For example, some ATSs produce execution quality information on a monthly basis (*see, e.g., Unlocking Global Liquidity,* UBS, *available at https://www.ubs.com/global/en/investment-bank/electronic-trading/equities/unique-liquidity.html*) (last visited Jan. 25, 2024, 4:26 p.m.), while at least one ATS operator produces reports on a quarterly basis (*see, e.g., JPM–X & JPB–X U.S. Quarterly Summary,* J.P. Morgan, *available at https://www.jpmorgan.com/solutions/cib/markets/jpm-x-jpb-x-us-quarterly-summary*) (last visited Jan. 25, 2024, 5:05 p.m.).

[1069] While the FIF Template provides a standardized template for summary information about execution quality for retail investor orders in exchange-listed stocks, the Commission understands that currently only one retail broker voluntarily provides reports using the FIF Template. *See supra* note 973.

[1070] *See, e.g.,* Direct Edge Letter at 10, stating that ''Rule 605 is not a meaningful factor in how retail investors decide which brokers to use and how to place and route orders;'' *see also* comments discussed in the Proposing Release, 88 FR 3786 at 3833, n.541–542 (Jan. 20, 2023).

[1071] Prior to these amendments, a broker-dealer may have been subject to Rule 605 reporting requirements to the extent that the broker-dealer was acting as or operates a market center. However, such reports were required to cover the orders that the broker-dealer handled within its capacity as a market center. *See* Proposing Release, 88 FR 3786 at 3798, n.179–180 (Jan. 20, 2023) and corresponding text, for further discussion.

[1072] *See infra* section IX.C.3.a)(1) for a detailed discussion.

[1073] *See* discussion in *supra* section IX.C.2.c).

[1074] Several commenters described a similar assessment of usability of Rule 605 reports for individual investors. *See, e.g.,* Robinhood Letter at 41, stating that ''[Rule 605 data] has proven not to be a particularly useful format for individual investors;'' and TastyTrade Letter at 4, stating that ''neither [Rule 606 nor Rule 605] report is easily digestible nor often, if ever, used by retail customers.''

[1075] *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75419 (Dec. 1, 2000).

[1076] *See, e.g.,* Ruslan Y. Goyenko et al., *Do Liquidity Measures Measure Liquidity?,* 92 J. Fin. Econ. 153 (2009); Edward D. Watson & Donovan Woods, *Exchange Introduction and Market Competition: The Entrance of MEMX and MIAX,* 54 Glo. Fin. J. (2022) 100756; Pankaj K. Jain et al., *Trading Volume Shares and Market Quality: Pre- and Post-Zero Commissions* (working paper Feb. 15, 2023), *available at https://ssrn.com/abstract=3741470* SSRN 3741470 (retrieved from SSRN Elsevier database); Schwarz et al. (2023), *supra* note 1064; Anne Haubo Dyhrberg et al., *The Retail Execution Quality Landscape* (working paper Dec. 10, 2022), *available at https://ssrn.com/abstract=4313095* SSRN 4313095 (retrieved from SSRN Elsevier database).

[1077] *See, e.g.,* Bill Alpert, *Who Makes Money on Your Stock Trades,* Barron's (Feb. 28, 2015) (retrieved from Factiva database) (stating that ''we ran each market maker's Rule 605 execution reports through statistical-analysis scripts that we wrote in the widely used open-source math software known as 'R.' '').

[1078] *See* discussion in *infra* section IX.C.2.c).

[1079] There are also some broker-dealers that disclose their own execution quality metrics on their respective websites, but the disclosures are not standardized and tend to differ in ways that make them difficult to compare, such as reporting different metrics, using different methodologies, or using different samples of stocks. *See supra* note 973.

[1080] *See supra* note 1002 describing an analysis showing that not held orders made up only 19% of total shares and about 12% of total number of orders among the sample of orders received from the individual accounts.

[1081] *See supra* note 1003 describing the customer-level de minimis exception of Rule 606(b)(5).

[1082] *See infra* section IX.C.3.a)(1) discussing several analyses that find significant differences in execution quality across retail brokers.

broker-dealers and wholesalers to make available voluntary summary disclosures of execution quality in exchange-listed stocks for individual investors using the FIF Template.[1083] Although the reports produced using the FIF Template may be useful, this disclosure is voluntary, and only a few firms are making or have made such disclosures. The Commission understands that only three retail brokers began producing reports using the FIF Template in 2015 on a quarterly basis. One of these broker-dealers was acquired and stopped producing these reports in 2017, and another stopped producing these reports in 2018. Only one retail broker currently produces reports using the FIF Template.[1084] Likewise, the Commission understands that there is currently only one wholesaler producing reports using the FIF Template.[1085]

(c) Usage of Rule 605 Reports by Institutional Investors

The Commission understands that, while the usage of Rule 605 reports by institutional investors has been limited by several factors, Rule 605 reports nevertheless contain information about execution quality that has been useful for institutional investors.

First, the ability of institutional investors to use preexisting Rule 605 to assess and compare the execution quality that they receive from their broker-dealers has been limited, for several reasons. First, Rule 605 reports only contain information about the execution quality of investors' held orders. Not held orders, which are excluded from the definition of ''covered order,'' [1086] are excluded from Rule 605 metrics.[1087] As many institutional orders tend to be not held,[1088] this may limit the extent to which Rule 605 reports contain relevant information for institutional investors. Second, to the extent that institutional investors make use of held orders,[1089] the ability of institutional investors to use Rule 605 reports in combination with Rule 606 reports to assess the execution quality of broker-dealers has been limited for the same reasons described above.[1090] This has likely limited the incentives for some institutional investors to access Rule 605 reports.

Second, even if institutional investors are incentivized to access execution quality information such as that in Rule 605 reports, institutional investors typically have access to alternative sources of execution quality information. Many institutional investors regularly conduct, directly or through a third-party vendor, transaction cost analysis (''TCA'') of their orders to assess execution quality against various benchmarks. Institutional investors that perform their own in-house analyses of execution quality or obtain analyses of execution quality from third-party vendors may have been less likely to rely on information from Rule 605 reports. Furthermore, Rule 606(b)(3) requires broker-dealers to provide some of their customers with individualized reports of execution quality of not held orders upon request.[1091] Since not held orders, which are not covered by Rule 605 reporting requirements,[1092] are most likely to be utilized by institutional investors,[1093] Rule 606(b)(3) provides institutional investors with another alternative source of information about the execution quality of their orders. Given the large size of most institutional investors and their businesses, institutional investors may also have sufficient bargaining power such that broker-dealers have strong incentives to provide them with execution quality information of their held orders when asked. However, any ad hoc reports that institutional investors may receive from their broker-dealers containing information about their held orders may not be sufficiently standardized to allow for easy comparisons across broker-dealers or market centers.

At the same time, the information on execution quality that is collected by institutional investors from these alternative sources may only cover the institutions' own orders, and as such could be highly individualized and nonpublic.[1094] Therefore, institutional investors may not be able to use these individualized reports to compare their broker-dealers' execution quality to that of broker-dealers with which they do not currently have a relationship, or to examine the execution quality of a market center to which their broker-dealers do not currently route orders.[1095] In contrast, because Rule 605 reports are public, institutional investors can use these reports to assess the execution quality of the broker-dealers and market centers with which they do not currently do business.

To the extent that institutional investors do utilize Rule 605 reports, the Commission believes that, due to their typically greater resources, institutional investors may be more likely than individual investors to access Rule 605 reports directly. Rule 605 reports are machine-readable, which makes them useful for facilitating further processing and analysis by market participants that have access to the resources necessary for handling large amounts of raw data,

[1083] *See supra* note 973 and accompanying text for further discussion of the FIF Template.

[1084] *See Retail Execution Quality Statistics,* Fin. Info. F., *available at https://fif.com/tools/retail-execution-quality-statistics* (last visited Jan. 18, 2024); *Retail Execution Quality Statistics Q2—2022, Fidelity*, *available at https://www.fidelity.com/bin-public/060_www_fidelity_com/documents/FIF-FBS-retail-execution-quality-stats.pdf* (last visited Jan. 26, 2024).

[1085] *See* Retail Execution Quality Statistics, *supra* note 1084; *Retail Execution Quality Statistics—Wholesale Market Maker Perspective,* Two Sigma, *available at https://www.twosigma.com/businesses/securities/execution-statistics/* (2024). The Commission is aware of at least two wholesalers that formerly produced reports using the FIF Template, but both stopped in Q3 2019.

[1086] *See* prior 17 CFR 242.600(b)(22). Currently, there are no requirements for aggregated information about the execution quality of not held orders to be made public. The potential ability for customers and broker-dealers to use aggregated order handling information for not held orders to better understand broker-dealers' routing behavior or compare broker-dealers' order routing performance is limited because of the disparate behavior of customers when using not held orders. *See, e.g.,* 2018 Rule 606 Amendments Release, 83 FR 58338 at 58369–70 (Nov. 19, 2018), in which the Commission stated that, in contrast to held orders, not held order flow is diverse and customers may provide specific order handling instructions to their broker-dealers, limit the order handling discretion of their broker-dealers, or have specific needs that impact the broker-dealers' handling of these orders.

[1087] *See supra* note 1003 and accompanying text discussing broker-dealer requirements under Rule 606(b)(3) to provide individualized reports of execution quality upon request for not held orders.

[1088] *See supra* note 1002 discussing an analysis showing that institutional investors are more likely than individual investors to use not held orders.

[1089] For example, large institutional ''parent'' orders are often split into multiple smaller ''child'' orders, which may be handled as held orders and reflected in Rule 605 reports. Institutional investors may incorporate information from Rule 605 reports into their TCA when evaluating the performance of their broker-dealers' Smart Order Router (''SOR'') algorithms. *See infra* section IX.C.4.a)(1)(b) discussing the use of SORs by broker-dealers to split a large institutional ''parent'' order into multiple ''child'' orders in a way that achieves the best execution for the parent order.

[1090] *See supra* note 1072 and *infra* section IX.C.3.a)(1).

[1091] *See supra* section IX.C.1.b) discussing broker-dealer reporting requirements under Rule 606; *see also supra* note 1003 describing the customer-level de minimis exception of Rule 606(b)(5).

[1092] The exclusion of held orders from Rule 605 reporting requirements is not affected by these amendments.

[1093] *See supra* note 1002 discussing an analysis showing that institutional investors are more likely than individual investors to use not held orders.

[1094] In 2018, the Commission proposed but ultimately did not adopt a requirement that broker-dealers that handle orders subject to the customer-specific disclosures required by Rule 606(b)(3) issue a quarterly public aggregated disclosure on order handling. *See* 2018 Rule 606 Amendments Release, 83 FR 58338 at 58369 (Nov. 19, 2018).

[1095] Some broker-dealers may make aggregate execution quality information from their customer's orders available to other institutional investors. However, for the reasons described in *supra* section IX.B, this information may not be standardized.

such as many institutional investors. However, the Commission understands some institutional investors may use aggregated statistics or summaries of Rule 605 reports prepared by third parties, who make these reports available, possibly for a fee.

(d) Other Users of Rule 605 Reports

While the direct usage of Rule 605 reports by individual and institutional investors may have been limited, Rule 605 reports have been used by other market participants, including analysts and researchers,[1096] as well as financial service providers, such as investment advisers and broker-dealers, that are subject to best execution obligations.

The Commission understands that investment advisers and broker-dealers typically use Rule 605 reports as part of their internal review of execution quality. As fiduciaries, investment advisers owe their clients a duty of care and a duty of loyalty.[1097] The duty of care includes, among other things, the duty to seek best execution of a client's transactions where the investment adviser has the responsibility to select broker-dealers to execute client trades.[1098] Broker-dealers also have an obligation to seek best execution of customer orders.[1099] The Commission understands that these financial service providers often have Best Execution Committees that periodically review order execution quality, and typically use Rule 605 reports as part of their review.[1100]

3. Disclosure Requirements Under Preexisting Rule 605

The information disclosed under preexisting Rule 605 has provided significant insight into execution quality at different market centers. However, market participants' access to information about execution quality under Rule 605 has been limited in several areas. Specifically, broker-dealers that are not market centers have not been required to report under Rule 605, which has limited market participants' ability to assess and compare the execution quality that broker-dealers obtain for their customers. Furthermore, changes in equity market conditions and technological advancements since Rule 11Ac1–5 was adopted in 2000, such as an increase in the number of high-priced stocks,[1101] the corresponding greater use of odd-lots, and the greater speed of trading in some stocks, have led to a situation in which certain aspects of Rule 605 reports are no longer as well-tailored to current market conditions.

(a) Scope of Reporting Entities Under Preexisting Rule 605 Reporting Requirements

The scope of entities that were required to report under Rule 605 prior to these amendments did not include broker-dealers that only route customer orders externally, rather than executing customer orders internally, because they did not meet the definition of a market center. As a result, it has been difficult for market participants to use available execution quality statistics to compare execution quality across these broker-dealers. Furthermore, to the extent that firms operating two separate market centers commingled execution quality information about multiple market centers in Rule 605 reports, this has made it difficult for market participants to assess the execution quality of each market center individually.

(1) Broker-Dealers

Prior to these amendments, broker-dealers that were not market centers were not required to prepare Rule 605 reports,[1102] which has limited market participants' ability to assess and compare the execution quality that broker-dealers obtain for their customers.

Rules 605 and 606 operate together to allow investors to evaluate what happens to their orders after investors submit their orders to a broker-dealer for execution.[1103] If a market center's Rule 605 reports are representative of the aggregate execution quality that any given broker-dealer receives from that market center, then a customer of a broker-dealer can use that broker-dealer's Rule 606 reports to identify the venues to which the broker-dealer regularly routes orders for execution and use Rule 605 reports to get information on aggregate order execution quality at those market centers.[1104] However, if the aggregate execution quality from a given market center varies across broker-dealers, combining Rule 606 and Rule 605 data will not be informative about the execution quality of individual broker-dealers' average execution quality.[1105]

[1096] *See, e.g., supra* notes 1076–1077, describing the use of Rule 605 data in academic literature, in comment letters related to Commission and SRO rulemaking, and the financial press.

[1097] *See* Investment Advisers Act Release No. 5248 (June 5, 2019), 84 FR 33669 (July 12, 2019) (Commission Interpretation Regarding Standard of Conduct for Investment Advisers) (''IA Fiduciary Interpretation'').

[1098] *See, e.g.,* Investment Advisers Act Rule 206(3)–2(c). The Commission previously has described the contours of an investment adviser's duty to seek best execution. *See* IA Fiduciary Interpretation, 84 FR 33669 at 33674–75 (July 12, 2019). In addition, the Commission has brought a variety of enforcement actions against registered investment advisers in connection with their alleged failure to satisfy their duty to seek best execution. *See, e.g., In the Matter of Aventura Capital Management, LLC,* Investment Advisers Act Release No. 6103 (Sept. 6, 2022) (settled action); *In the Matter of Madison Avenue Securities, LLC,* Investment Advisers Act Release No. 6036 (May 31, 2022) (settled action).

[1099] *See, e.g.,* Regulation NMS Adopting Release, 70 FR 37496 at 37537 (June 29, 2005); *Newton* v. *Merrill, Lynch, Pierce, Fenner & Smith, Inc.,* 135 F.3d 266, 269–70, 274 (3d Cir. 1998), *cert. denied,* 525 U.S. 811 (1998); *Certain Market Making Activities on Nasdaq,* Securities Exchange Act Release No. 40900, 53 SEC 1150, 1162 (1999) (settled case) (*citing Sinclair* v. *SEC,* 444 F.2d 399 (2d Cir. 1971); *Arleen Hughes,* 27 SEC 629, 636 (1948), *aff'd sub nom. Hughes* v. *SEC,* 174 F.2d 969 (D.C. Cir. 1949)).

[1100] *See, e.g.,* Citigroup Letter II at 7 (stating that, ''under the current market structure, broker-dealers closely review and analyze Rule 605 statistics as part of their regular and rigorous review for best execution'').

[1101] *See, e.g., infra* note 1133.

[1102] Prior to these amendments, a broker-dealer may have been subject to Rule 605 reporting requirements to the extent that the broker-dealer was acting as or operates a market center. *See supra* note 1071 for further discussion.

[1103] *See supra* note 999 and accompanying text.

[1104] *See supra* section IX.C.1.b) for a discussion of broker-dealers' current reporting requirements under Rule 606.

[1105] Several commenters stated that market participants' ability to use Rule 606 and Rule 605 reports to assess and compare broker-dealers' execution quality is currently limited. *See, e.g.,* Vanguard Letter at 3–4; Nasdaq Letter at 43; Virtu Letter II at 11; *see also supra* note 1070, describing a commenter who stated that Rule 605 reports are generally not a meaningful factor in how retail investors decide which brokers to use and how to place and route orders.

Specifically, combining this data will not be informative because a market center's Rule 605 report is aggregated across all of its broker-dealer customers, meaning that it is not possible to determine how execution quality varies across individual broker-dealers at a particular market center.[1106] This is an important consideration given evidence that execution quality can differ significantly across broker-dealers, and that this dispersion is at least partially due to off-exchange wholesalers systematically giving different execution prices for the same trades to different brokers.[1107]

(2) Reporting Entities That Operate SDPs

Prior to these amendments, the commingling of SDP activity in Rule 605 reports with other market center activity, by market centers that also operate SDPs, may have obscured or distorted information about the market centers' execution quality, making it more difficult for market participants to observe the execution quality of each separate trading venue. For example, an SDP that accepts IOC orders will offer different order execution quality than other market centers.[1108] These types of SDPs are sometimes called ''ping pools,'' [1109] reflecting that institutional investors use these venues to ''ping'' (*i.e.,* submit a small order in search of hidden liquidity on) SDPs, often using IOC orders.[1110] IOC orders typically have different execution profiles than other types of orders, including lower fill rates.[1111] Combining information on orders submitted to a market center's SDP ''ping pool'' along with its other orders will therefore effect a downward skew on the market center's fill rates, and analogously an upward skew on the SDP's fill rates.[1112] This may particularly be the case for wholesalers who combine the orders submitted to their SDPs with orders that are internalized or executed on a riskless principal basis,[1113] since SDP activity represents a significant portion of their trading volume.[1114] Also, since information on executions in SDPs largely reflects institutional orders, combining information on SDP orders along with other orders will tend to obscure information that is particularly relevant for institutional investors or broker-dealers handling institutional investors' orders in assessing differences across these market centers. To the extent that institutional investors have been less able to observe and compare differences in execution quality across market centers as a result, this may have reduced incentives for these market centers to compete for institutional investor orders on the basis of execution quality.

(b) Coverage of Orders Under Preexisting Rule 605 Reporting Requirements

Prior to these amendments, Rule 605 reporting requirements excluded execution quality information about some order sizes and types that are relevant to market participants.

[1106] For example, consider two broker-dealers, Broker-Dealer 1 and Broker-Dealer 2, which both route orders to a market center (''Market Center A'') according to these broker-dealers' Rule 606 reports. Assume that the orders routed by Broker-Dealer 1 receive consistently below-average execution quality from the wholesaler, while the orders routed by Broker Dealer 2 receive consistently above-average execution quality. If a customer of Broker-Dealer 1 were to examine Market Center A's Rule 605 report to get a sense of the average execution quality that its broker-dealer achieves for its orders, the customer would see only the execution quality statistics aggregated across Broker-Dealers 1 and 2, which would likely reveal that Market Center A offers about average levels of execution quality. However, this would not reveal the worse execution quality that Broker-Dealer 1, and therefore the customer of Broker-Dealer 1, is receiving from the market center.

[1107] *See supra* note 1076 for a discussion of Schwarz et al. (2023), an academic paper finding that OTC market maker execution quality of identical orders differed significantly across different broker dealers, and that this dispersion was due to off-exchange wholesalers systematically giving different execution prices for the same trades to different brokers. *See also* Table 3 of the Proposing Release, 88 FR 3786 at 3839 (Jan. 20, 2023), showing that wholesalers provide different execution quality to different retail brokers depending on the adverse selection risk of their orders.

[1108] *See supra* section II.C.2 for additional discussions on different types of SDPs.

[1109] *See, e.g.,* Annie Massa, *Trader VIP Clubs, 'Ping Pools' Take Dark Trades to New Level,* Miami Daily Bus. J. (Jan. 17, 2018) (retrieved from Factiva database).

[1110] *See, e.g.,* Rule 605 Citadel Letter at 7, stating that ''[m]any wholesale broker-dealers execute immediate-or-cancel ('IOC') orders for non-retail investors (including pension plans, insurance companies, and other asset managers), particularly through the use of a single-dealer platform ('SDP').''

[1111] *See infra* section IX.C.3.c)(9) for discussion of differences between marketable IOC order executions and the executions of other marketable order types.

[1112] *See, e.g.,* Rule 605 Citadel Letter at 7, stating that ''[a]t the moment, depending on the structure of the broker-dealer, these IOC orders [executed on SDPs] may be aggregated with retail orders for reporting purposes, even though the execution profile is very different and could negatively skew a wholesale broker-dealer's execution quality metrics.''

[1113] *See infra* section IX.C.3.c)(10) for a discussion of how the treatment of wholesalers' riskless principal trades in Rule 605 reports may also obscure information on execution quality.

[1114] *See infra* note 1312 and accompanying text, describing that the combined trading volume of the affiliated SDPs of the two most active wholesalers accounted for over 4% of total U.S. consolidated trading volume in Q1 2023.

To estimate the percentage of shares that have been excluded from Rule 605 reporting requirements and the driving factor behind their exclusion (*i.e.,* whether they are excluded based on their submission time, type, or size), the Commission analyzed data from the Tick Size Pilot B.I Market Quality dataset,[1115] which had much broader reporting requirements than Rule 605 prior to these amendments,[1116] for a period from April 2016 to March 2019. As a first step, approximately 25% of orders were estimated to have been excluded from Rule 605 requirements as they were flagged as having special handling requests.[1117] A breakdown of the remaining submitted share volume (*i.e.,* after excluded special handling orders) is presented in Figure 4,[1118] and shows that around 2.2% of shares were excluded from preexisting Rule 605 reporting requirements due to having effective times outside of regular trading hours. A further 51.6% of shares were excluded from Rule 605 reports because they were of an order type that was excluded from reporting requirements prior to these amendments.[1119] An additional 11.3% of the remaining order volume was excluded from Rule 605 reports because of the exclusion of orders less than 100 shares and larger-sized orders from reporting requirements prior to these amendments. This leaves only around a third of share volume that was eligible to be included in Rule 605 reports prior to these amendments.[1120]

BILLING CODE 8011–01–P

[1115] *See* Securities Exchange Act Release No. 72460 (June 24, 2014), 79 FR 36840 (June 30, 2014) (Order Directing the Exchanges and the Financial Industry Regulatory Authority To Submit a Tick Size Pilot Plan) (''Tick Size Pilot Plan''). The Tick Size Pilot B.I Market Quality dataset contains information for approximately 2,400 small cap stocks for a period from Apr. 2016 to Mar. 2019. As the Tick Size Pilot data only collected data for small cap stocks, results using this dataset are not necessarily representative of all stocks.

[1116] *See* FINRA, Appendix B and C Requirements and Technical Specifications, *available at https://www.finra.org/sites/default/files/Appendix_B_C_Reporting_Requirements_version2.pdf.* Order types that are included in the Tick Size Pilot dataset that are not covered by Rule 605 include Resting Intermarket Sweep orders, Retail Liquidity Providing orders, Midpoint Passive Liquidity orders, Not Held orders, Clean Cross orders, Auction orders, and orders that became effective when an invalid NBBO was in effect. Order sizes included in the Tick Size Pilot dataset that are not covered by Rule 605 include orders for between 1–99 shares and orders for 10,000+ shares. *See also* FINRA, Tick Size Pilot Program, Appendix B and C Statistics Frequently Asked Questions, *available at https://www.finra.org/sites/default/files/Tick-Size-Pilot-Appendix-B-and-C-FAQ.pdf* (''Tick Size Pilot FAQs''), answer to Question 2.1. Furthermore, the Tick Size Pilot dataset includes separate statistics for orders submitted outside of regular trading hours (trading sessions E and BE). *See* Tick Size Pilot FAQs, answer to Question 4.11.

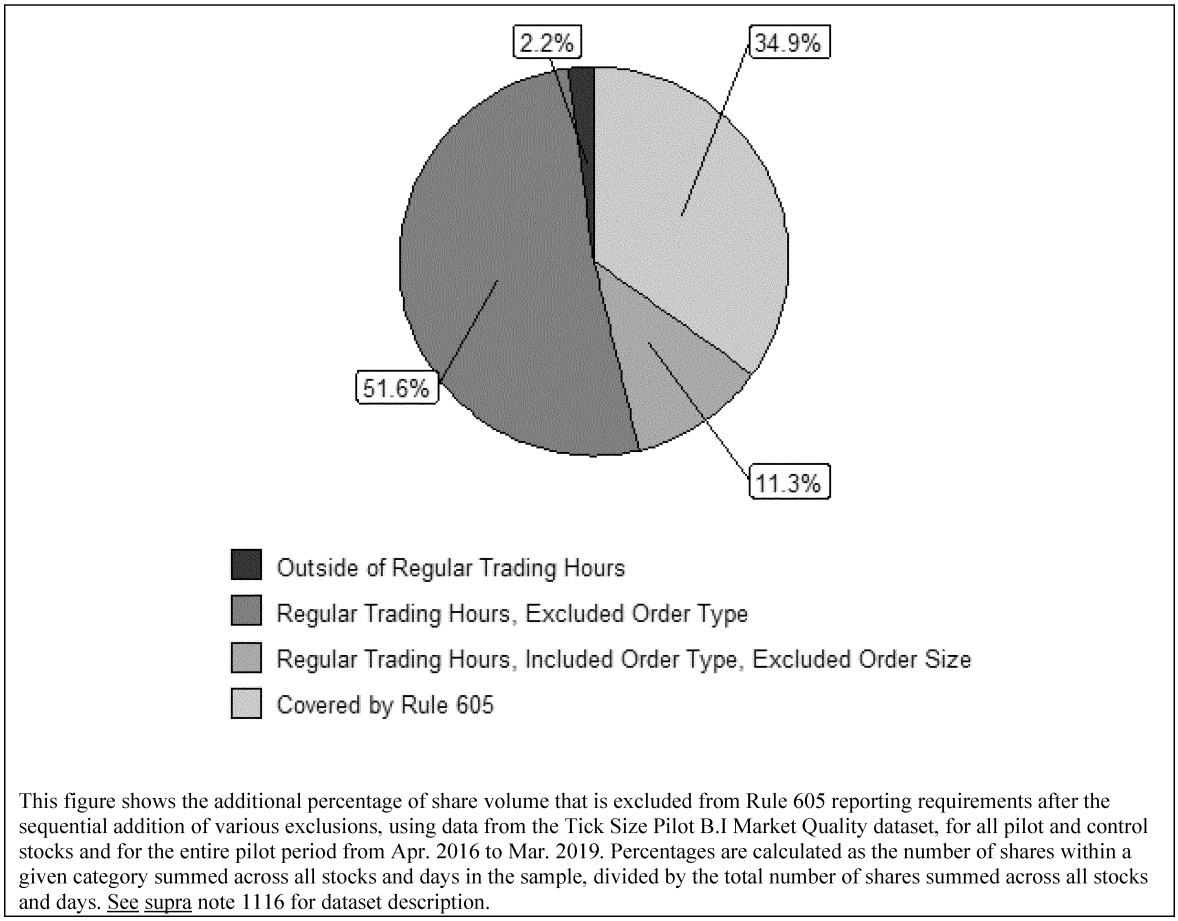
[1117] These orders will continue to be excluded following the amendments to Rule 605, as the amended definition of covered orders will continue to exclude orders subject to special handling. *See* final 17 CFR 242.600(b)(27).

[1118] The same figure can be found in the Proposing Release; *see* Proposing Release, 88 FR 3786 at 3840 (Figure 2) (Jan. 20, 2023).

[1119] Of the shares excluded on the basis of order type, the largest percentage (73.6%) are excluded because they are not-held orders.

[1120] An additional percentage of this order flow is also excluded from coverage due to the exclusion of stop-loss orders and non-exempt short sales, but these are not one of the listed order types in the Tick Size Pilot dataset and therefore it is not possible to exclude them. *See* Appendix B and C Requirements and Technical Specifications, *supra* note 1116. In addition, an analysis in the Proposing Release examined changes over time in one market center's Rule 605 coverage (as compared to its execution volume in TAQ), and found that Rule 605 coverage was on a slightly downward trend between mid-2012 and Feb. 2021, when an estimated 50% of shares executed during regular market hours were included in Rule 605 reports. *See* Figure 3 of the Proposing Release, 88 FR 3786 at 3841 (Jan. 20, 2023). An analysis of more recent data found that this number rose somewhat in 2023, to around 64% as of Aug. 2023.

Figure 4: Rule 605 Coverage, by Submission Time, Order Type, and Order Size, Apr. 2016 to Mar. 2019



This figure shows the additional percentage of share volume that is excluded from Rule 605 reporting requirements after the sequential addition of various exclusions, using data from the Tick Size Pilot B.I Market Quality dataset, for all pilot and control stocks and for the entire pilot period from Apr. 2016 to Mar. 2019. Percentages are calculated as the number of shares within a given category summed across all stocks and days in the sample, divided by the total number of shares summed across all stocks and days. See supra note 1116 for dataset description.

The following sections will discuss the various facets of preexisting Rule 605 reporting requirements that led to the exclusion of orders from Rule 605 reports prior to these amendments, as well as the extent to which these orders are relevant for assessing execution quality. This includes orders that were excluded on the basis of size, as well as other orders that were excluded such as stop orders, non-exempt short sale orders, and orders submitted outside of regular trading hours.

(1) Orders Less Than 100 Shares and Larger-Sized Orders

Prior to these amendments, orders of certain sizes were excluded from Rule 605 reporting requirements, including orders for less than 100 shares and larger-sized orders.[1121] Taken together, data on the usage of orders of these sizes imply that a large percentage of orders and trades was excluded from preexisting Rule 605 reporting requirements on the basis of order size, thus limiting the ability of reporting entities to compete for customers on the basis of execution quality.

(a) Orders Less Than 100 Shares

Due to preexisting Rule 605's exclusion of orders sized smaller than 100 shares, which excluded all odd-lot orders and, in some cases, round lot orders where a round lot was less than 100 shares, information about an important segment of order flow has been missing from Rule 605 reports.[1122]

The rise in the use of odd-lot orders is a phenomenon that has been well-documented in modern markets.[1123] An analysis of data from the SEC's MIDAS analytics tool [1124] confirms that the use of odd-lots has increased substantially as a percentage of total on-exchange trades within the past decade. Figure 5 [1125] plots monthly averages of odd-lot

[1121] *See* prior 17 CFR 242.605(a)(1). The size categories in preexisting Rule 605 included: 100 to 499 shares; 500 to 1,999 shares; 2,000 to 4,999 shares; and 5,000 or greater shares. *See* prior 17 CFR 242.600(b)(13); *see also supra* note 9 discussing the Large Order Exemptive Relief, which grants exemptive relief to any order with a size of 10,000 shares or greater.

[1122] The idea that Rule 605 reports have been missing an important segment of order flow because of the preexisting exclusion of orders less than 100 shares was supported by comment. *See, e.g.,* Rule 605 Citadel Letter at 11; Better Markets Letter at 3; and Virtu Letter II at 9. In addition, citing an earlier comment letter examining how the inclusion of odd-lots would impact execution quality metrics, one commenter stated that the lack of information about odd-lots in preexisting Rule 605 ''has created perverse reporting issues.'' Healthy Markets Letter at 17, *citing* Healthy Markets 2019 Letter (Mar. 5, 2019), *available at https://www.sec.gov/comments/4-729/4729-5020185-182987.pdf.*

[1123] *See, e.g.,* Proposing Release, 88 FR 3786 at 3808, n.273 (Jan. 20, 2023). Until the round lot definition adopted pursuant to the MDI Rules is implemented, round lots continue to be defined in exchange rules. For most NMS stocks, a round lot is defined as 100 shares. Following the implementation of the MDI Rules, for stocks with prices greater than $250, a round lot will be defined as consisting of between 1 and 40 shares, depending on the tier. *See supra* note 1016 for a definition of these tiers.

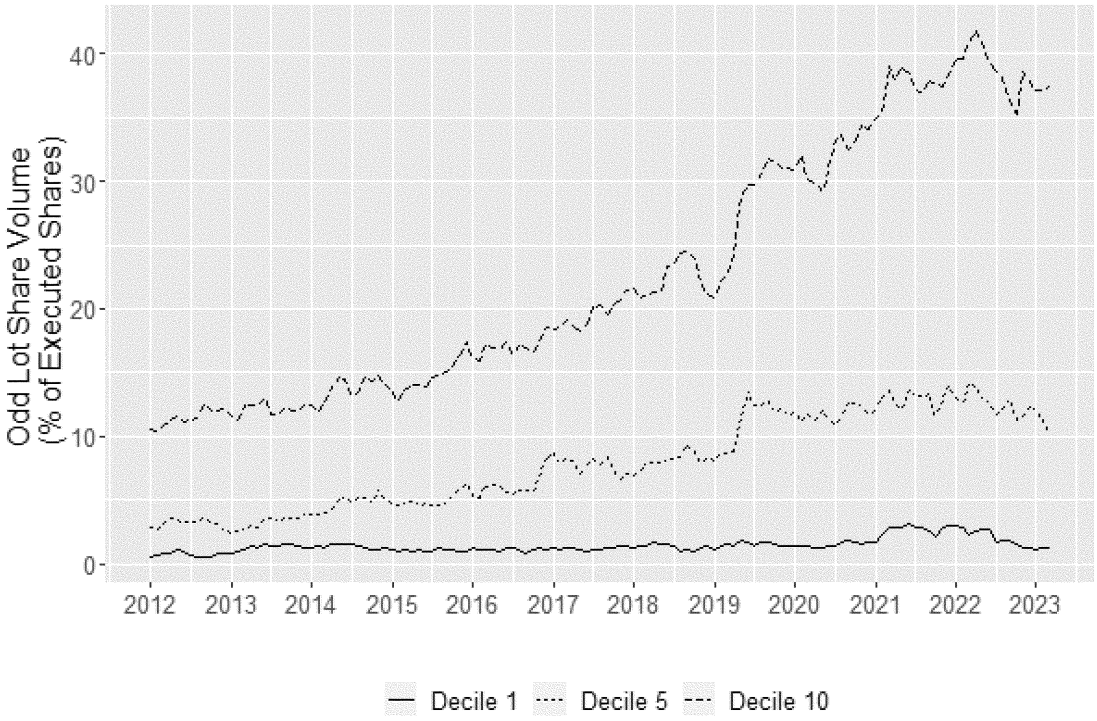
[1124] *See Summary Metrics by Decile and Quartile,* SEC (2023), *available at https://www.sec.gov/marketstructure/downloads.html.* This analysis uses data between Jan. 2012 and Mar. 2023.

[1125] The data used in this analysis have been updated since the Proposing Release to include a more recent time period. *See* Proposing Release, 88 FR 3786 at 3842 (Figure 4) (Jan. 20, 2023), which presents the same analysis for the period of Jan. 2012 to Mar. 2022. Between Mar. 2022 and Mar. 2023, we observe small overall declines in odd-lot share volumes. However, these differences due to

Continued

share volumes across stock price deciles, showing that executed odd-lot shares as a percentage of total executed shares have increased sharply between 2012 and 2023, for high-priced stocks in particular.[1126] Specifically, the figure shows that odd-lot share volume increased from around 0.6% to 1.25% for the lowest-price stocks (Decile 1), and from 10.6% to 37.5% for the highest-priced stocks (Decile 10).[1127]

Figure 5: Odd-Lot Share Volumes by Stock Price Deciles, Jan. 2012 to Mar. 2023



This figure plots odd-lot shares executed on national securities exchanges as a percentage of total on-exchange executed shares, across stock price deciles for the period from Jan. 2012 to Mar. 2023. For brevity the plot contains data for the smallest (Decile 1), median (Decile 5) and largest (Decile 10) stock price deciles. See supra note 1124 for dataset description. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. See supra note 1123 and section IX.C.1.c)(2).

There is evidence that these high percentages are not only the case for odd-lot trades, but for odd-lot orders as well. Using data from January to March 2021, a recent academic working paper found that the rate of orders sized between 1 and 100 shares ranges from 5.6% of all submitted orders for less than 500 shares in the lowest-priced stocks, to 46.9% of all such orders in the highest-priced stocks.[1128] This is supported by an analysis of the distribution of order sizes using order submission data from MIDAS for a sample of 80 stocks [1129] during the month of Mar. 2023.[1130] Confirming

updates to the dataset did not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that odd lots represent a significant percentage of executed share volume.

[1126] The number of executed odd-lot shares may be higher following the implementation of the MDI Rules due to the availability of odd-lot quotes in consolidated market data, which may result in numbers that are different from those reported here. For stocks priced above $250, the change in the definition of round lots may in result in fewer executed odd-lot shares, as more odd-lot trades will be incorporated into the definition of round lots. *See supra* section IX.C.1.c)(2) for further discussion.

[1127] *See, e.g.,* Virtu Letter II at 7 (quoting Phil Mackintosh, *Odd Facts About Odd Lots,* NASDAQ (Apr. 22, 2021, 10:23 a.m. EDT), *available at https://www.nasdaq.com/articles/odd-facts-about-odd-lots-2021-04-22*), that ''over the past nine years the proportion of odd-lot trades has roughly tripled, and in high-priced stocks, odd-lots have increased to 70% of all trades.'' Another commenter stated that, based on data from TAQ, ''two-thirds of all trades represent odd-lots.'' Professor Schwarz et al. Letter at 4.

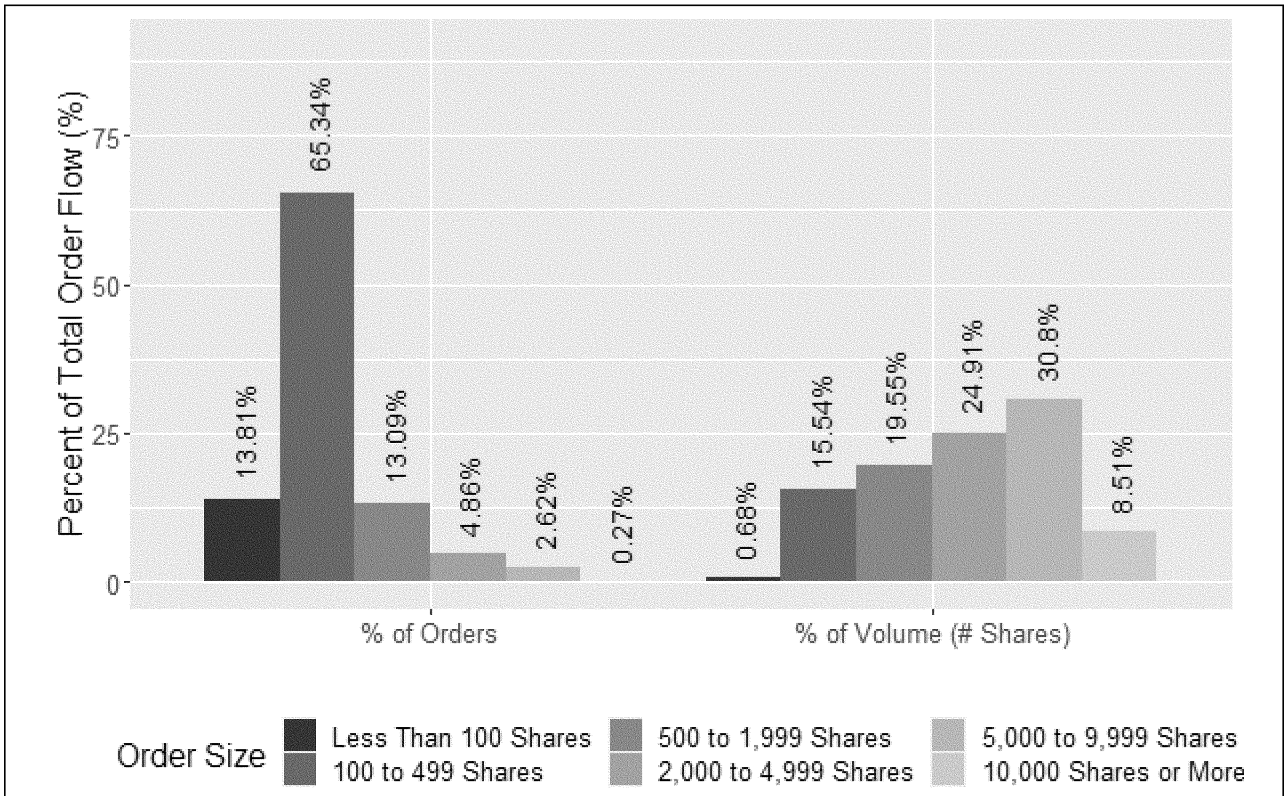
[1128] *See* Bartlett, et al (2022), *supra* note 33. The authors divide their sample of stocks into five price-based buckets, with stocks in the lowest-priced group defined as those priced at $20.00 or less, and stocks in the highest-priced group priced at $250.00 or more.

[1129] This sample of 80 stocks was constructed from the sample of 400 stocks described in *infra* note 1181, in which a random sample of 5 stocks was selected from each of the 16 combinations of market capitalization group and price quartile.

[1130] This dataset consists of NMLO order submission data collected from MIDAS and includes the posted orders and quotes on 11 national securities exchanges, for a sample of 80 stocks, across all trading days in Mar. 2023. For more details on this dataset, *see https://www.sec.gov/marketstructure/midas-system. See supra* note 1129 for information about the sample selection. The MIDAS dataset has some limitations. First, MIDAS data include only on-exchange, non-marketable limit orders that do not execute immediately, and thus do not include some orders that are included in Rule 605 data both prior to and after these amendments, such as market and marketable limit orders, inside-the-quote NMLOs that execute immediately, IOC orders, and off-exchange orders. Furthermore, MIDAS data include some order types that were excluded from Rule 605 prior to these amendments but that are not possible to distinguish in MIDAS data, such as short sale orders, as well as some order types that are excluded from Rule 605 data both prior to and after

results from Figure 5 examining the time series of odd-lot order rates, Figure 6 [1131] shows that odd-lot orders make up a significant percentage of orders (13.81%), although these orders are only a small percentage of total submitted share volume (0.68%).[1132]

Figure 6: Distribution of NMLOs across Order Size Buckets, Mar. 2023



This figure plots the percentage of NMLOs that can be categorized into the preexisting Rule 605 order size categories, using order submission data from MIDAS. Percentages are calculated as the number of orders (resp. shares) within a given order size category summed across all stocks and days in the sample, divided by the total number of orders (resp. shares) summed across all stocks and days. See supra note 1130 for dataset description.

BILLING CODE 8011–01–C

these amendments, such as orders with special handling requests. Second, in order to identify the NBBO at the time of order receipt, this dataset uses timestamps assigned to orders by MIDAS, which may differ from the order submission times at the exchange. The magnitude of this difference is typically a few hundred microseconds, and thus in this context the effects of this difference are expected to be minor. Lastly, there are some orders in MIDAS for which no corresponding execution or cancellation message can be identified; these orders are discarded from the dataset. Relative to the Proposing Release, this dataset has been updated to account for a more recent time period, and also reflects several corrections; *see* Proposing Release, 88 FR 3786 at 3842, n.634 (Jan. 20, 2023). First, the data has been corrected to include orders associated with more than one order cancellation message, which were inadvertently excluded from the data in the Proposing Release and may have undercounted orders. Second, the dataset excludes several groups of orders that were included in the Proposing Release. Orders received during the first five minutes of the trading day (2.4% of orders) are excluded to avoid including orders received before there is a valid non-crossed quote following the opening at the primary market center, which are not defined as covered orders under amended Rule 605; *see* amended Rule 600(b)(27). Orders received when the NBBO is locked or crossed (1.6% of orders) are also discarded to simplify the analysis. *See* 2001 FAQs, Question 7, for staff statements regarding covered orders received when the NBBO is locked or crossed. The exclusion of orders received during the first five minutes of the trading day and orders received when the NBBO is locked or crossed is similar to what is done in academic literature; *see, e.g.* Hagströmer, *infra* note 1244. Lastly, we exclude orders associated with more than one order submission message (1.6% of orders). These represent orders that are modified after their submission. Identifying and assigning an outcome to each iteration of a modified order would be complex using MIDAS, so we drop these orders to simplify the analysis. *See* 2001 FAQs, Question 23, for staff statements regarding modified orders. As will be discussed in more detail in reference to each analysis using this MIDAS dataset below, these changes to the MIDAS dataset did not affect the Commission's conclusions from the analyses using MIDAS data relative to the Proposing Release.

[1131] The MIDAS data used in this analysis have been updated and corrected since the Proposing Release for the reasons described in *supra* note 1130. *See* Proposing Release, 88 FR 3786 at 3843 (Figure 5) (Jan. 20, 2023), where Figure 5 presents the same analysis using data from Mar. 2022 (*see* Proposing Release, 88 FR 3786 at 3842, n.634 (Jan. 20, 2023), for data description). The analysis in the Proposing Release similarly found that odd-lot orders made up a significant percentage of orders (18.2%), though only a small percentage of total submitted share volume (2.8%). Therefore, changes to the MIDAS dataset did not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that odd-lot orders made up a significant percentage of orders, though only a small percentage of total submitted share volume.

[1132] These data include information only about NMLOs, and therefore information about the sizes of market orders and marketable limit orders is not available.

Market commentators have attributed this rise in odd-lot trading to a variety of factors. For example, an increase in the number of high-priced stocks caused order sizes to decrease in these stocks, where trading in larger order sizes is more expensive.[1133] In this vein, one commenter to the Proposing Release stated that ''the fact that many issuers have moved away from stock splits and allowed their stock prices generally to increase'' has contributed to the increase in odd-lot orders.[1134]

Another factor is a rise in algorithmic trading, which chops orders into many smaller orders. Broker-dealers that handle institutional orders often make use of odd-lot orders because of trading algorithms that split larger parent orders into smaller child orders to reduce the market impact of their trades.[1135] High frequency traders also use inside the spread odd-lot orders as a means of probing for hidden liquidity or detecting forthcoming order flow. Academic papers have found evidence that high frequency traders and other institutional investors make up a substantial fraction of odd-lot trades.[1136] Another potential reason for the increase in odd-lot trading is the increasing presence of trading by individual investors, who tend to use smaller order sizes.[1137] All-in-all, by not capturing information related to these orders, preexisting Rule 605 reports have been missing information about potentially important segments of order flow from both individual and institutional investors.

(b) Orders Less Than a Share

Due to the exclusion of fractional orders that are smaller than one share from Rule 605 prior to these amendments,[1138] information about an increasingly important segment of individual investor order flow has been missing from Rule 605 reports. Similar to the increase in odd-lots, one reason for the increase in the use of fractional shares is the increasing presence of trading by individual investors, who tend to use smaller order sizes.[1139] The past few years have seen increasing attention paid to fractional shares, as more and more retail brokers are offering this functionality.[1140] The Commission understands that there are at least two different ways that retail brokers handle fractional trades: first, they rely on their clearing firm, which will often ''round up'' the fractional part of the order and deposit the residual in an internal ''fractional inventory account;'' and second, they execute fractional trades against their own inventory.[1141]

An estimation of the percentage of orders that were excluded from preexisting Rule 605 reporting requirements because they are smaller than one share is difficult, as these orders are executed off-exchange and therefore not included in public datasets. However, an analysis using data from CAT [1142] confirms that levels of fractional trading are mostly the result of individual investor trading: [1143] in August 2023, there were 54.7 million orders for less than one share that eventually received an execution, the majority (65.3%) of which were submitted by accounts attributed to ''Individual Customers.'' [1144] While these fractional orders represented only a small part (around 3.3%) of total executed orders, they represented a much higher percentage (16.4%) of executions received by individual account holders.[1145] Therefore, by not capturing information related to these orders, Rule 605 reports have been missing information about an important segment of individual investor trades.[1146] The Commission estimates

[1133] *See, e.g.,* Odd Facts About Odd Lots, *supra* note 1127.

[1134] *See* Virtu Letter II at 4.

[1135] *See infra* section IX.C.4.a)(1)(b), discussing the practice of broker-dealers handling institutional parent orders as not held orders and splitting them up into child orders.

[1136] *See, e.g.,* Hardy Johnson et al., *Are All Odd-lots the Same? Odd-lot Transactions By Order Submission and Trader Type,* 79 J. Banking & Fin. 1 (2017); Maureen O'Hara et al., *What's Not There: Odd lots and Market Data,* 69 J. Fin. 2199 (2014).

[1137] *See, e.g.,* Bartlett et al. (2022), *supra* note 33; Matthew Healey, *An In-Depth View Into Odd Lots,* Chi. Bd. Options Exch. (Oct. 2021), *available at https://www.cboe.com/insights/posts/an-in-depth-view-into-odd-lots/.* Similarly, one commenter stated that ''advances in technology that have dramatically expanded the number of participants in the market'' is one reason for the increase in odd-lot orders. *See* Virtu Letter II at 7.

[1138] Orders greater than one share can also be fractional. If the fractional order is for more than just a single share (*e.g.,* 2.5 shares), the broker-dealer may internalize the fractional component (0.5 shares) and reroute the whole component (2 shares) to a market center for execution.

[1139] *See, e.g.,* Kevin L. Matthews, *What Are Fractional Shares and How Do They Work?,* Bus. Insider (Sept. 21, 2022), *available at https://www.businessinsider.com/personal-finance/fractional-shares.*

[1140] *See, e.g.,* Rick Steves, *Fractional Shares: Experts Weight in Amid Exploding Retail Trading Volumes,* Fin. Feeds (June 7, 2021, 8:25 a.m. UTC), *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, reported as more than 1,400%, year over year) for brokers after they introduced the use of fractional shares.

[1141] *See, e.g.,* Robert P. Bartlett et al., *A Fractional Solution to a Stock Market Mystery* (working paper Nov. 17, 2023), *available at https://ssrn.com/abstract=4167890* (retrieved from SSRN Elsevier database). As fractional shares fell below the smallest order size category in Rule 605 prior to these amendments, a broker-dealer that currently exclusively executes fractional shares would be a market center, but was not required to file Rule 605 reports.

[1142] This dataset contains CAT records capturing introducing and trading activity in Aug. 2023, including fractional NMS orders that were eventually executed on- and off-exchange. As individual fractional orders are often aggregated into a single representative order before routing and execution, the Commission looked at the information specific to the originating customer orders (designated as MENO orders events in CAT) that were eventually executed, and, separately, examined the information specific to the executions of the orders (designated as MEOT for off-exchange or EX and EOT for on-exchange events in CAT) that could be linked to the fractional MENOs either directly or via a representative order.

[1143] The CAT data used in this analysis have been updated from the Proposing Release for a more recent time period. *See* Proposing Release, 88 FR 3786 at 3844 (Jan. 20, 2023). The analysis in the Proposing Release found that, as of Mar. 2022, orders from individual customers accounted for 92% of all fractional orders (both orders less than a share and orders with fractional components). This number was 70% in Aug. 2023 (65% for fractional orders less than one share). Further analysis reveals that this difference can mostly be attributed to an increase in fractional shares from institutional investor accounts, rather than a decrease in fractional shares from individual investor accounts. This highlights that fractional trading may be an increasingly important segment of institutional order flow as well. However, these differences due to updates to the data did not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that fractional orders for less than one share are an important segment of order flow.

[1144] CAT account type definitions are available in Appendix G to the CAT Reporting Technical Specifications for Industry Members, under the field name ''accountHolderType.'' *See* CAT Reporting Tech. Specifications for Indus. Members version 4.0.0 r20 app. G (CAT NMS Plan Participants 2023) (July 31, 2023), *available at https://catnmsplan.com/sites/default/files/2023-09/09.01.2023_CAT_Reporting_Technical_Specifications_for_Industry_Members_v4.0.0r20_CLEAN.pdf.* 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 Account, Foreign, Individual Customer, Market Making, Firm Agency Average Price Account, Other Proprietary, and Error Account. An Institutional Customer account is defined by FINRA Rule 4512(c) as a bank, savings and loan association, insurance company, registered investment company, 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'' 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.

[1145] In terms of notional volume, executed fractional orders, including orders for less than one share and orders greater than one share with a fractional component, make up around 0.003% of total executed dollar volume and 1.2% of executed dollar volume attributed to individual account holders. Furthermore, executed fractional orders for less than one share made up about 7.06 million shares, which is only about 0.001% of total executed share volume.

[1146] One commenter used a sample of TAQ data to show that ''25% of reported trades are for one share, which includes fractional trades for less than one share,'' and stated that ''[t]hus, under current disclosure requirements, retail traders are unable to evaluate market center execution quality for a

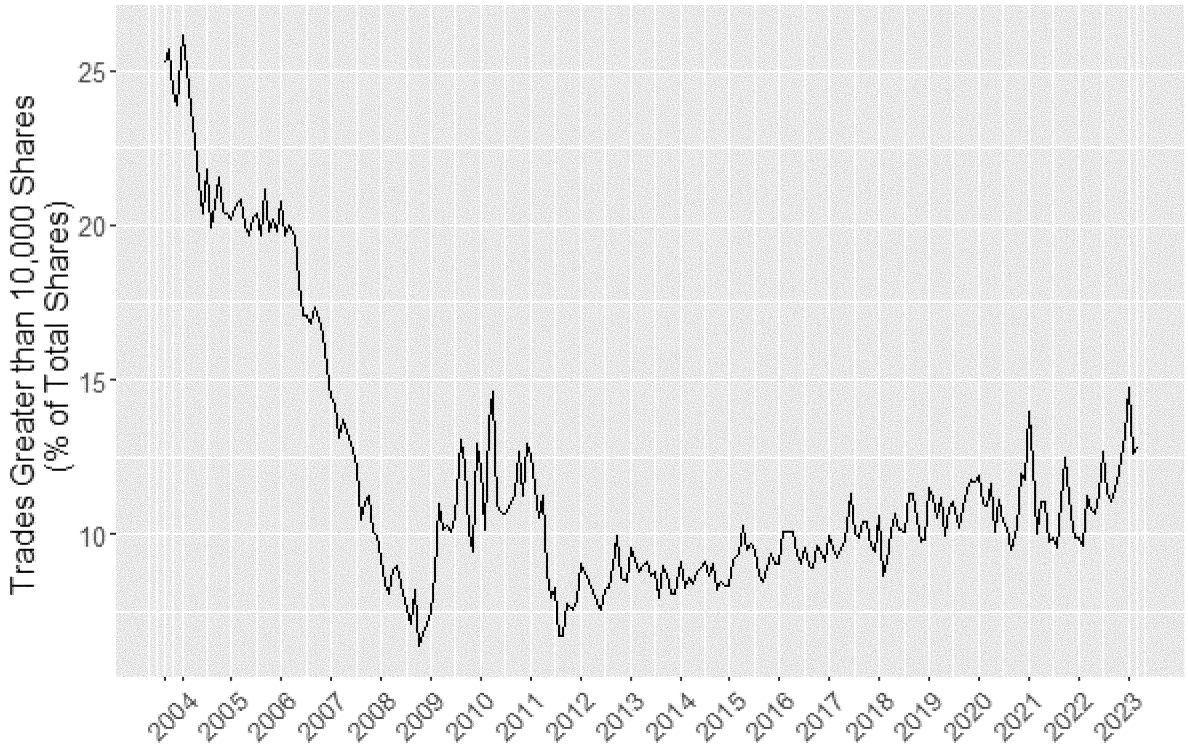
that there are 20 market centers [1147] that exclusively execute fractional orders less than one share and were not required to file Rule 605 reports prior to these amendments due to these orders falling below the smallest order size category in preexisting Rule 605.

(c) Larger-Sized Orders

Due to the exclusion of orders sized larger than 10,000 shares from preexisting Rule 605,[1148] information about another important segment of order flow has been missing from Rule 605 reporting requirements.[1149] The Commission understands that practices have evolved such that most broker-dealers that service institutional investors use SORs to break up these customers' large parent orders into smaller-sized child orders.[1150] As shown in Figure 7,[1151] which plots the number of shares associated with trades that are for 10,000 or more shares as a percent of total executed shares,[1152] the rate of larger-sized trades declined from more than 25% in late 2003 to 12.8% as of March 2023. This decline is likely at least partly due to the increased use of SORs,[1153] though other market changes such as the overall increase in stock prices may also play a part. However, the rate of larger-sized trades has been increasing since August 2011, when the rate of larger-sized trades was around 6.7%.

BILLING CODE 8011–01–P

Figure 7: Larger-Sized Trades as a Percent of Total Executed Shares, Sep. 2003 to Mar. 2023



This figure plots the monthly number of executed shares associated with trades that are for 10,000 shares or more, summed across all stocks and days in the sample, divided by the total number of executed shares across all stocks and days, using data from TAQ. See supra note 1152 for dataset description.

BILLING CODE 8011–01–C

majority of their trades.'' Professor Schwarz et al. Letter at 4.

[1147] *See infra* note 1659 for further discussion of this estimate.

[1148] *See supra* note 9 and corresponding discussion describing the exemptive relief provided by the Commission in 2001 for orders with a size of 10,000 shares or greater.

[1149] This was supported by a commenter. *See* Virtu Letter II at 9.

[1150] *See infra* section IX.C.4.a)(1)(b) further discussing the practice of broker-dealers handling institutional parent orders as not held orders and splitting them up into child orders.

[1151] The TAQ data used in this analysis have been updated from the Proposing Release for a more recent time period. *See* Proposing Release, 88 FR 3786 at 3844 (Figure 6) (Jan. 20, 2023), which presents the same analysis for the time period Sept. 2003 to Mar. 2022. Between Mar. 2022 and Mar. 2023, there is a small overall increase in the rate of large-sized trades. Therefore, updates to the TAQ dataset did not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that larger-sized orders of 10,000 have been increasing since August 2011.

[1152] This analysis uses data from intraday TAQ Consolidated Trade files for the period from Sept. 2003 to Mar. 2023 for the entire universe of TAQ securities. Plotted is the monthly number of shares associated with trades that are for 10,000 shares or more, divided by the total number of executed shares. The data are limited to trades with sales conditions indicating regular trades, including regular trades with no associated conditions, automatic executions, intermarket sweep orders, and odd-lot trades. *See* NYSE, Daily TAQ Client Specifications (May 20, 2020), *available at https://www.nyse.com/publicdocs/nyse/data/Daily_TAQ_Client_Spec_v3.3.pdf.*

[1153] *See, e.g.,* M. O'Hara, *High Frequency Market Microstructure,* 116 J. Fin. Econ. 257 (2015).

Furthermore, larger-sized orders make up a non-negligible percent of order flow. Figure 6,[1154] which plots the distribution of NMLO sizes in order submission data from MIDAS for the month of Mar. 2023, shows that while NMLOs of 10,000 or more shares made up only 0.27% of order flow in terms of number of orders, they made up around 8.5% of order flow in terms of share volume.[1155] However, some, or possibly most, of these larger-sized orders may be not held to the market, and so would not be required to be included in Rule 605 reports even without the exemptive relief.[1156]

(2) Orders Submitted With Stop Prices

The exclusion of orders with stop prices from the definition of ''covered order'' prior to these amendments has resulted in the exclusion of orders that are likely relevant for investors from preexisting Rule 605 reports. A stop order, also referred to as a stop-loss order, is an order to buy or sell a stock once the price of the stock reaches the specified price, known as the stop price. When the stop price is reached, a stop order becomes a market order, or a limit order in the case of so-called stop limit orders.[1157] The treatment of stop orders varies across broker-dealers and market centers.[1158] At the same time, the execution prices of stop orders are highly sensitive to handling and execution practices, as these orders are more likely to execute when the stock price is in decline and any delay in execution will result in a larger loss (or smaller gain) for the investor.[1159]

The Commission understands that stop orders resting on national securities exchanges have been uncommon, and the vast majority of stop orders are handled by broker-dealers.[1160] Some national securities exchanges have eliminated this order type from their rule book.[1161] Furthermore, the use of stop orders has typically been associated with individual investors,[1162] who may be less likely to have the resources to actively monitor their orders, and thus use stop orders to try to protect a gain or to limit potential losses of a currently held position.[1163] Table 3 [1164] breaks down a sample of stop loss order volume by account type and stop loss order type using CAT data for Mar. 2023.[1165] The data confirm that the use of stop orders by institutional investors is very rare (only 0.25% of market and 0.0011% of limit orders are submitted with stop prices), while their use is relatively more common for individual investors, particularly for market orders, around 4.91% of which are submitted with stop prices.[1166] The data also confirm that, while most stop orders are triggered by the last sale price (''Stop/Stop Limit''), there is also nontrivial order flow associated with other trigger events as well, such as the

[1154] The MIDAS data used in this analysis have been updated and corrected since the Proposing Release for the reasons discussed in *supra* note 1131. *See* Figure 5 in the Proposing Release, 88 FR 3843 (Jan. 20, 2023). The analysis in the Proposing Release similarly found that larger-sized orders of 10,000 or more shares make up a small percent of order flow in terms of orders (2.5%), but a non-negligible percent of order flow in terms of share volume (7.75%). Therefore, changes to the MIDAS dataset did not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that larger-sized orders of 10,000 or more shares make up a small percent of order flow in terms of number of orders, but a non-negligible percent of order flow in terms of share volume.

[1155] This result supports the statement of one commenter, that ''while orders greater than 9,999 shares may comprise a relatively small number of total orders, when viewed through the lens of total shares, they comprise a meaningful amount of the total share volume.'' Virtu Letter II at 9.

[1156] *See supra* note 1003 and accompanying text discussing broker-dealers' requirements under Rule 606(b)(3) to provide individualized reports of execution quality upon request for not held orders.

[1157] *See, e.g.,* SEC, *Types of Orders*, Investor.gov, *available at https://www.investor.gov/introduction-investing/investing-basics/how-stock-markets-work/types-orders* and the definitions of stop order and stop limit order in FINRA Rule 5350(a), *available at https://www.finra.org/rules-guidance/rulebooks/finra-rules/5350*. The stop price can be the last sale price, or a quotation in the case of stop on quote or stop limit on quote orders. The stop price may also be permitted to increase or decrease by a predetermined amount or formula in the case of trailing stop and trailing stop limit orders.

[1158] For example, one broker-dealer stated that some of the market centers to which it routes orders may impose price limits to prevent stop orders from being triggered by potentially erroneous trades, and that these price limits vary by market center. *See Trading FAQs: Order Types,* Fidelity, *available at https://www.fidelity.com/trading/faqs-order-types.* Another brokerage firm states that, depending on the market center to which a stop limit order is presented, a stop limit order can be activated as a limit order using either a transaction or quotation as the triggering event. *See Best Execution of Equity Securities,* UBS (Jan. 2023), *available at https://www.ubs.com/content/dam/static/wmamericas/bestexecution.pdf.*

[1159] *See, e.g., Stop Orders: Factors to Consider During Volatile Markets,* FINRA: Investor Insights (June 28, 2016), *available at https://www.finra.org/investors/insights/stop-orders-factors-consider-during-volatile-markets*; *see also* FIF Letter at 9, stating that ''[a] stop order is often triggered under market conditions that reflect a market moving adverse to the order. For example, the triggering of a buy stop limit order would reflect a rising market, which could be detrimental to the execution quality for that order.''

[1160] *See, e.g.,* Memorandum from SEC, Div. of Trading and Mkts. to Equity Market Structure Advisory Committee (Jan. 26, 2016), *available at https://www.sec.gov/spotlight/equity-market-structure/issues-affecting-customers-emsac-012616.pdf* (citing NYSE Order Type Usage Chart illustrating that stop orders, along with good-til-canceled, agency cross and manual orders, accounted for only 0.19% of total matched volume for Q3 2015 and Q4 2015) (''SEC Division of Trading and Markets Memorandum''); *see also How to Survive the Markets Without Stop-Loss Orders,* NASDAQ (Dec. 2, 2015, 10:58 a.m. EST), *available at https://www.nasdaq.com/articles/how-survive-markets-without-stop-loss-orders-2015-12-02*, stating that stop orders represent around 2% of all orders placed on national securities exchanges.

[1161] *See, e.g.,* Securities Exchange Act Release No. 76649 (Dec. 15, 2015), 80 FR 79365 (Dec. 21, 2015) (SR–NYSE–2015–60) (''NYSE Notice''); Securities Exchange Act Release No. 76655 (Dec. 15, 2015), 80 FR 79382 (Dec. 21, 2015) (SR–NYSEMKT–2015–103).

[1162] *See, e.g.,* Annie Massa & Sam Mamudi, *BlackRock Calls for Halting Stock Market to Avoid Volatility*, Bloomberg Bus. (Oct. 7, 2015), *available at http://www.bloomberg.com/news/articles/2015-10-07/blackrock-calls-for-halting-the-stock-market-to-avoid-volatility* (citing industry concerns with ''the widespread use of stop orders by retail investors'').

[1163] *See, e.g.,* SEC Division of Trading and Markets Memorandum, *supra* note 1160. Meanwhile, professional or institutional investors are more likely to have the resources to be able to actively monitor their orders, and are therefore less likely to use stop orders. *See, e.g.,* How to Survive the Markets Without Stop-Loss Orders, *supra* note 1160.

[1164] The CAT data used in this analysis have been updated from the Proposing Release for a more recent time period. *See* Table 4 of the Proposing Release, 88 FR 3786 at 3845 (Jan. 20, 2023). The results of the analysis in the Proposing Release are similar to those presented here, except that the analysis in the Proposing Release found that 49.4% of institutional stop/stop limit orders were market orders and 37.8% were limit orders in Mar. 2022; the results in Table 3 for Mar. 2023 show a reverse pattern, in which the majority of institutional stop/stop limit orders are limit (63.4%) and relatively fewer are market orders. A closer inspection of the data revealed that this reversal is driven by the order volume of several market participants. The analysis in the Proposing Release similarly found that a significant percentage of institutional stop orders are limit orders. Therefore, the updates to the dataset did not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that a significant percentage of institutional stop orders have limit prices, as discussed in note 1166 *infra*.

[1165] This analysis uses data from CAT for all NMS stocks for the period of Mar. 2023 that originated either from Institutional Customer or from Individual Customer accounts. Stop orders are identified using the reporting requirements for stop orders in the CAT Reporting Technical Specifications for Industry Members. *See* CAT Reporting Tech. Specifications for Indus. Members version 4.0.0 r18 (Dec. 16, 2022), *available at https://www.catnmsplan.com/sites/default/files/2022-12/12.16.2022_CAT_Reporting_Technical_Specifications_for_Industry_Members_v4.0.0r18_CLEAN.pdf.*

[1166] One commenter stated that ''a material percentage of stop orders have a limit price and a material percentage of stop orders do not have a limit price.'' FIF Letter II at 2. Table 4 in the Proposing Release showed that, as of Mar. 2022, 0.0003% of institutional and 0.03% of individual limit orders consisted of orders with stop prices. At the same time, stop orders with limit prices made up 38.7% of institutional stop orders, and 12.4% of individual stop orders. *See* Proposing Release, 88 FR 3786 at 3845 (Jan. 20, 2023). Table 3 shows similar numbers for Mar. 2023, with 0.0011% of institutional and 0.02% of individual limit orders consisting of orders with stop prices, and 63.9% of institutional and 11.0% of individual stop orders consisting of stop orders with limit prices. These numbers show that, while stop orders with limit prices are generally a small percentage of total orders, they constitute a significant percentage of orders with stop prices, particularly for institutional investors.

quotation (''Stop on Quote/Stop Limit on Quote'').[1167]

Table 3: Stop Order Volume by Account and Order Types, Mar. 2023

		Types of Stop Orders (% of Total Stop Orders)			
Investor and Order Type	**Orders with Stop Prices (% of Total Orders)**	**Stop / Stop Limit**	**Stop on Quote / Stop Limit on Quote**	**Trailing Stop / Trailing Stop Limit**	**Total**
Institutional					
Market	0.25%	31.4%	0.2%	4.5%	36.1%
Limit	0.0011%	63.4%	0.2%	0.2%	63.9%
Individual					
Market	4.91%	70.0%	8.7%	10.3%	89.0%
Limit	0.02%	9.1%	1.5%	0.4%	11.0%

This table shows the percentage of orders that are submitted with stop prices (as a percentage of total orders) using a sample of CAT data for all NMS stocks from Mar. 2023. Percentages are calculated as the number of orders submitted with stop prices summed across all stocks and days in the sample, divided by the total number of submitted orders summed across all stocks and days. These percentages are broken down into whether these orders were submitted by institutional or individual customer accounts, and whether the orders are market or limit orders submitted with stop prices. Also shown is a breakdown of stop order submission volume according to six common types of stop orders. See supra note 1165 for information on the dataset and identification of stop orders.

(3) Non-Exempt Short Sale Orders

Prior to these amendments, Commission staff had taken the position that staff would view all non-exempt short sale orders as special handling orders.[1168] As a result, these orders have not been included in prior Rule 605 statistics, which has resulted in the exclusion of a large portion of orders that are likely relevant for market participants.

Non-exempt short sale orders are orders that are subject to price restrictions under Rule 201 of Regulation SHO,[1169] which contains a short sale circuit breaker that, when triggered by a price decline of 10% or more from a covered security's prior closing price, imposes a restriction on the price at which the covered security may be sold short (*i.e.,* must be above the current national best bid). Once triggered, the price restriction will apply to short sale orders in that security for the remainder of the day and the following day, unless the short sale order is ''short exempt.'' [1170] Since a non-exempt short sale that is subject to a price restriction is only allowed to take place at least one tick above the NBB, these could be ''orders to be executed on a particular type of tick or bid,'' which would exclude them from the definition of ''covered order.'' [1171] The exclusion of tick-sensitive orders from preexisting Rule 605 reporting requirements was designed so that these orders did not skew execution quality statistics, as the prevention of these orders from executing at the best bid would likely lead to lower execution quality statistics (*e.g.,* negative price improvement and higher effective spreads) as compared to other orders.

In the years since Rule 201's adoption, it has become clear that Rule 201 price test restrictions are not often triggered. Between April 2015 and November 2023, a Rule 201 trigger event only occurred on 1.8% of trading days for an average stock.[1172] Around 15.4% of Rule 201 triggers occur the day after a previous trigger event, and around 45.4% occur within a week after a previous trigger event. These statistics imply that Rule 201 triggers tend to be relatively rare, and clustered around a few isolated events. This has resulted in a significant portion of non-exempt short sale orders being excluded from prior Rule 605 statistics when Rule 201 was not triggered, at which point a price test restriction was not in effect and their exclusion would not have skewed execution quality statistics.

(4) Orders Submitted Pre-Opening/Post-Closing

When Rule 605 was first adopted, the Commission explained the decision to exclude orders submitted outside of regular trading hours by stating that there are substantial differences in the nature of the market between regular trading hours and after-hours, and therefore orders executed at these times should not be blended together.[1173] However, the preexisting exclusion of

[1167] *See, e.g.,* FIF Letter II at 2, confirming ''that a material percentage of stop orders are triggered based on a change in the NBBO (in most cases, but not always, the opposite-side quote) and a material percentage of stop orders are triggered based on a change in the last sale price.''

[1168] *See* 2013 FAQs.

[1169] *See supra* note 299 for more information about Rule 201 of Regulation SHO.

[1170] ''Short exempt'' orders include certain short sale orders from market makers and short sales priced above the current national best bid at the time of submission. *See* 17 CFR 242.201(c) and (d).

[1171] *See* prior 17 CFR 242.600(b)(22).

[1172] This analysis looked at the percentage of trading days that experienced a Rule 201 trigger event for the period Apr. 2015 and Nov. 2023 for all listed stocks on NYSE or NASDAQ exchanges and then averaged across stocks. The Commission restricted its sample to common stocks identified in CRSP (share code 10 or 11), from CRSP 1925 US Stock Database, Ctr. Rsch. Sec. Prices, U. Chi. Booth Sch. Bus. (2022). The Commission also excluded financial stocks (SIC code 6000–6999), as financial stocks may have different properties than other types of stocks, including characteristics related to short selling (*e.g.,* Markus K. Brunnermeier & Martin Oehmke, *Predatory Short Selling,* 18 Rev. Fin. 2153 (2014)). Rule 201 circuit breaker data retrieved from *ftp://ftp.nyxdata.com/NYSEGroup SSRCircuitBreakers/* and *ftp://ftp.nasdaq trader.com/SymbolDirectory/shorthalts/.* A similar analysis was included in the Proposing Release and found substantially similar results. *See* Proposing Release, 88 FR 3786 at 3846 (Jan. 20, 2023).

[1173] *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75421 (Dec. 1, 2000).

all orders submitted outside of regular market hours from the definition of ''covered order,'' [1174] in addition to excluding orders that execute outside of regular hours, also extended to orders that, while submitted outside of regular market hours, are only eligible to execute during regular market hours. While these orders represent only a small portion of order flow, they represent a relatively high concentration of orders from individual investors. Therefore, the exclusion of all orders submitted outside of regular trading hours from Rule 605 prior to these amendments may have led to the exclusion of an important segment of individual investor orders.

When Rule 605 was first adopted, after-hours markets were still mostly the purview of institutional investors, but a growing number of broker-dealers had recently begun providing their retail customers with the ability to have their orders directed to electronic communication networks (ECNs) after the major markets close for the day. The growth in the availability of after-hours trading for individual investors raised concerns over, and heightened awareness of, the differences in execution quality for after-hours trades, which tend to be much riskier due to lower liquidity levels and higher volatility in after-hours markets.[1175]

Along with an increase in access to after-hours trading, the late 1990s and early 2000s saw an increase in the prevalence of online brokerages, in which individual investors in particular were given newfound access to order entry systems. Early research into the rise of online brokerages describes a shift from a system in which retail brokers ''communicate buy/sell recommendations to clients over the telephone'' (presumably during regular working hours), to a system in which individual investors have ''round-the-clock access to trading systems and account information.'' [1176] Logically, as investors make use of the ''round-the-clock'' access offered by online brokerages, the number of orders submitted outside of regular market hours has likely increased over the preceding decades. However, not all orders submitted after hours are eligible to trade in after-hours markets, which continues to be the case even in today's market. For example, some broker-dealers' platforms allow customers to submit orders at any time, but unless the customer requests to trade during extended hours and the security is eligible to trade as such, the order will only be executed during regular market hours.[1177] Since these orders are not intended, and in many cases are not eligible, to execute outside of regular trading hours, these orders may not be subject to the same concerns that drove the Commission to exclude orders submitted outside of trading hours from Rule 605 reporting requirements in the Rule 11Ac1–5 Adopting Release.

To estimate the amount of orders that are submitted outside of regular trading hours, data from the Tick Size Pilot B.I Market Quality dataset [1178] were analyzed to break order volume down into different trading sessions according to when the order was eligible to trade.[1179] The Commission considered only those orders that have an effective time during regular market hours to be eligible for Rule 605 reporting, and excluded orders that were otherwise excluded from preexisting Rule 605 reporting requirements, *i.e.,* because they are an excluded order type or size. The Commission found that a small fraction of orders are effective outside of regular market hours (1.3%), while the vast majority of orders (98.7%) are effective during regular market hours.

At least some of these orders, while submitted outside of regular market hours, execute during regular trading hours, *e.g.,* because they are NMLOs that are only executable during regular trading hours.[1180] In order to estimate the extent to which this occurs, a sample of 400 stocks [1181] using CAT data from Q1 2023 [1182] was analyzed to examine how the submission volume of executable NMLOs submitted outside of regular trading hours [1183] compares to the full sample of executable NMLO

[1174] *See* prior 17 CFR 242.600(b)(22), (77).

[1175] *See, e.g.,* SEC, Div. of Mkt. Regul., *Special Study: Electronic Communication Networks and After-Hours Trading* (June 2000), *available at https://www.sec.gov/news/studies/ecnafter.htm.*

[1176] Jennifer Wu et al., *Online Trading: An internet Revolution,* 4 Sloan Sch. of Mgmt. Mass. Inst. of Tech. Rsch. Notes (1999).

[1177] *See, e.g., Extended Hours Overview,* Charles Schwab, *available at https://www.schwab.com/public/schwab/nn/qq/about_extended_hours_trading.html* (2023); *Extended-Hours Trading,* Robinhood, *available at https://robinhood.com/us/en/support/articles/extendedhours-trading/* (last visited Jan. 29, 2024, 1:21 p.m.).

[1178] *See supra* note 1115 for dataset description. This analysis was included in the Proposing Release; *see* Proposing Release, 88 FR 3786 at 3846 (Jan. 20, 2023).

[1179] These trading sessions include (1) regular hours only; (2) extended hours only; (3) both regular and extended hours with an effective time during regular market hours; and (4) both regular and extended hours with an order effective time during extended hours. *See* Tick Size Pilot FAQs, Q4.11, *supra* note 1116.

[1180] Most retail brokers do not permit market orders during extended hours trading. *See, e.g.,* Extended Hours Overview and Extended-Hours Trading, *supra* note 1177.

[1181] This sample of stocks was constructed using data as of market close on Dec. 30, 2022, using the same methodology as in the Proposing Release. Market capitalization and price information were collected from the Center for Research in Security Prices (CRSP), and stocks with volume less than 1,000 shares, stocks with a closing price of less than $2, and dual-class shares were excluded. For each of the four market capitalization groups (less than or equal to $100 million, greater than $100 million and less than or equal to $1 billion, greater than $1 billion and less than or equal to $10 billion, greater than $10 billion), stocks were sorted by price and assigned to four equally-sized buckets. Within each sorted price bucket, 25 stocks were chosen at evenly spaced intervals, yielding 100 stocks per group for a total of 400 stocks. As a hypothetical example, from a price-sorted bucket with 50 stocks every second stock would be chosen to get 25 total stocks. From this initial sample of 400 stocks, four stocks were replaced due to being delisted during the Q1 2023 analysis period, and one stock was replaced due to abnormally high volume.

[1182] This analysis uses CAT data for 400 stocks for the period Q1 2023. *See supra* note 1181 for information about how the 400-stock sample was selected. The CAT data consist of all orders eligible to trade during regular hours during Q1 2023 that were received for the 400 stocks at four types of reporting entities: (1) Exchanges, (2) Wholesalers, (3) Alternative Trading Systems (ATSs) and (4) Broker-Dealers. We excluded multi-day orders, orders received when the NBBO was locked or crossed, and all orders with handling instructions, with the exception of intermarket sweep orders (ISOs) for on-exchange orders, and with the exception of orders with handling codes CASH, DIR, DISQ, DNR, DNRT, RSV, and STP, for broker-dealer and off-exchange orders. Certain on-exchange TIF codes are also excluded, including Fill or Kill, Good For Seconds, At the Close, At the Open, Auction or Kill, and Auction Only Order. For more information on order handling codes in CAT, *see* CAT Reporting Tech. Specifications for Indus. Members version 4.0.0 r18 (Dec. 16, 2022), *available at https://www.catnmsplan.com/sites/default/files/2022-12/12.16.2022_CAT_Reporting_Technical_Specifications_for_Industry_Members_v4.0.0r18_CLEAN.pdf.* We also exclude a small percentage of orders that had more shares traded than the original order size in its CAT lifecycle. We also excluded orders that had order modifications (3.4% of orders). For ATSs, we additionally excluded ATS-specific order types that were determined to not be eligible for Rule 605 reporting. For Broker-Dealer order originations, we excluded orders received from the following account holder types: Employee Account, Market Making, Other Proprietary, and Error Account of the Firm. For both of the Broker-Dealer and Wholesaler route acceptances, we kept order acceptances if the CAT Reporter ID associated with the CRD is not an ATS. Execution times and effective spreads are measured relative to the time of order receipt by the market entity. Orders received in off trading hours were benchmarked to the first non-locked and crossed quote in the stocks' listing market on the next trading day. For simplicity and without loss of generality, the analysis considers only NMLOs that are priced at the quote or better, *i.e.,* NMLOs that are immediately executable upon order receipt. Limit orders are classified as marketable, at-the-quote, below-the-midpoint, at-the-midpoint, or beyond-the-midpoint, based on the distance of their limit price from the NBBO or NBBO midpoint at the time of order receipt.

[1183] The definition of marketability for the purposes of this analysis for pre-open orders is determined using the NBBO at the time that primary listing market has disseminated its first firm, uncrossed quotations in the security, such that orders to be executed prior to this time opening price are excluded. *See supra* section III.A.1.b) for more information about defining the marketability of orders submitted outside of regular market hours.

submission volume.[1184] This analysis confirms that pre-open orders make up a small percentage of order volume, representing around 1.3% of total submitted shares (0.4% of total submitted orders). However, further analysis reveals that these orders contain a higher concentration of orders associated with Individual Customer accounts. Specifically, for those pre-open orders that could be identified as originating from either individual or institutional customer accounts,[1185] 81.8% of these pre-open orders (82.6% of pre-open shares) originated from individual customer accounts. In comparison, individual customer accounts were responsible for just 1.5% of orders (1.7% of shares) of total individual and institutional customer account originations.

This is consistent with the idea that at least some of this order flow represents orders that are submitted by individual investors outside of market hours, *i.e.,* via online brokerage accounts, but not necessarily with the intention to engage in after-hours trading.

(c) Required Information

In addition to decreasing the coverage of Rule 605, subsequent market changes since the initial adoption of Rule 605 may have also decreased the relevance of some of the metrics required to be reported by preexisting Rule 605 reporting entities. This section will discuss how market changes may have affected, or will likely affect in the near future, aspects of several such metrics, including the definition of round lots for order size categories, the granularity of metrics related to time-to-execution, and the use of a five-minute time horizon for realized spreads.

(1) Order Size Categories

Preexisting Rule 605 defined order size categories in terms of numbers of shares. Given that share prices and thus the notional value of orders can differ dramatically, defining a size category in terms of number of shares has disadvantages.[1186] Figure 1 shows that the vast majority of orders are for a notional value of less than $100,000, and Figure 2 shows that this is the case for stocks across all different price levels. This implies that, for a $500 stock in which a $100,000 order is equivalent to an order of only 200 shares, nearly all covered orders were clustered within preexisting Rule 605's smallest order size category of 100 to 499 shares.[1187] Clustering all covered orders into a single category would have limited market participants' ability to use these categories to compare across orders of different sizes in such higher-priced stocks. Furthermore, combined with the exclusion of orders for less than 100 shares, defining order sizes in terms of number of shares led to the exclusion of many orders in higher-priced stocks. For example, a 99-share odd-lot in a $500 stock already has a notional value of $49,500, which is greater than the notional value of around 93% all orders according to Figure 1. Similarly, one industry analyst stated that the definition of order size categories in terms of number of shares, together with the exclusion of orders of less than 100 shares under preexisting Rule 605,[1188] has led to the exclusion of more orders with low dollar values as the average stock price increases.[1189]

Lastly, the Commission's 2020 adoption of the MDI Rules included a new definition of ''round lot'' that would have caused some round lots to be excluded from reporting requirements, absent an update to Rule 605's order size categories.[1190] Specifically, the order size categories as defined under preexisting Rule 605, which excluded orders with fewer than 100 shares, would have excluded a portion of round lots for stocks with prices greater than $250.[1191]

(2) Non-Marketable Limit Order Categories

As a result of the categorization of NMLOs under preexisting Rule 605, execution quality statistics for some NMLOs may have included orders whose executions are more likely to depend on their limit prices and price movements in the market, and excluded orders whose executions are more likely to depend on their handling by the market center.[1192]

Given that the aim of Rule 605 is to enable investors to compare and evaluate execution quality among different market centers,[1193] Rule 605 reports are designed to include only orders that provide a basis for meaningful comparisons across measures of execution quality.[1194] Depending on their characteristics,

[1184] The CAT data used in this analysis have been updated since the Proposing Release for a more recent time period and to include the full sample of executable NMLOs described in note 1182 *supra.* A similar analysis in the Proposing Release used CAT data for a sample of 390 stocks from Mar. 2021 to compare NMLOs submitted outside of regular trading hours that were designated as only eligible to trade during regular trading hours to the volumes and characteristics of NMLOs submitted during a sample time window from 9:40 a.m. to 10:40 a.m. *See* Proposing Release, 88 FR 3786 at 3847 (Jan. 20, 2023). These updates to the data and methodology did not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that pre-open orders represent a small percentage of order flow, contain a high concentration of individual investor orders, and likely have some differences in execution profiles as compared to orders submitted during regular market hours.

[1185] As the account type (*i.e.,* individual or institutional) data field is only available upon order origination and is not transferred to the executing market center, the Commission was not able to differentiate individual investors in the CAT data for exchanges.

[1186] *See* Virtu Letter II at 5, stating that ''Rule 605's approach to bucketing orders solely by share quantity yields skewed comparisons because it fails to take into account the notional value of orders.''

[1187] *See* prior 17 CFR 242.605(a)(1); *see also supra* note 1121 and corresponding text for a definition of the order size categories included in Rule 605 reporting requirements prior to these amendments. Consider also that a 400-share order in a $500 stock would already be considered a large ''block'' order according to some Regulation NMS rules. *See, e.g.,* Rule 606(a)(1) of Regulation NMS (requiring reports on the routing of customer orders) and prior Rule 600(b)(25) of Regulation NMS (defining ''customer order'' to exclude an order with a market value of $200,000 or more); 17 CFR 242.604(b)(6) (providing an exception for orders of block size from required limit order display) and prior 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). Therefore, in reports under preexisting Rule 605, all non-block covered orders in such a stock were grouped in the smallest order size category.

[1188] *See supra* section IX.C.3.b)(1)(a) for a discussion of the exclusion of orders that are less than 100 shares from preexisting Rule 605 reporting requirements.

[1189] *See* Phil Mackintosh, *Modern Retail Needs Modern Rules,* NASDAQ (May 27, 2021, 11:54 a.m. EDT), *available at https://www.nasdaq.com/articles/modern-retail-needs-modern-rules-2021-05-27/.*

[1190] *See supra* note 1016 for a definition of these tiers.

[1191] In addition, even prior to the implementation of the MDI Rules, a small number of NMS stocks have a round lot size smaller than 100. Until the round lot definition adopted pursuant to the MDI Rules is implemented, round lots continue to be defined in exchange rules. *See* MDI Adopting Release, 85 FR 16726 at 16738 (Mar. 24, 2020). For most NMS stocks, a round lot is defined as 100 shares. According to TAQ Data, as of Mar. 2023, 11 stocks had a round lot size other than 100. Nine stocks had a round lot of 10 and two stocks had a round lot of one.

[1192] The execution quality of NMLOs is relevant for both individual and institutional investors. Studies have shown that both institutional and individual investors likely make use of NMLOs. One academic study, using data on retail orders between 2003 and 2007 from two OTC market centers, estimated that NMLOs made up around 39% of individual investor order flow. *See* Eric K. Kelley & Paul C. Tetlock, *How Wise are Crowds? Insights from Retail Orders and Stock Returns,* 68 J. Fin. 1229 (2013). Other academic papers suggest that NMLO usage by institutional investors may also be high. *See, e.g.,* Amber Anand et al., *Empirical Evidence on the Evolution of Liquidity: Choice of Market Versus Limit Orders by Informed and Uninformed Traders,* 8 J. Fin. Mkt. 288 (2005); Ron Kaniel & Hong Liu, *So What Orders Do Informed Traders Use*?, 79 J. Bus. 1867 (2006).

[1193] *See supra* note 13.

[1194] *See, e.g.,* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75421 (Dec. 1, 2000), stating that Rule 11Ac1–5 ''contains several conditions and exclusions that are intended to limit its scope to those orders that provide a basis for meaningful and comparable statistical measures of execution quality.''

execution quality statistics for some NMLOs may be less meaningful because their executions depend more on the order's limit price and price movement in the market than on handling by the market center. In preexisting Rule 605, the exclusion of NMLOs with limit prices more than $0.10 outside the NBBO (''away-from-the-quote'' NMLOs) from reporting requirements [1195] was intended to eliminate NMLOs with less meaningful execution quality statistic.[1196] The ''near-the-quote'' limit order category, consisting of NMLOs that were outside the NBBO by no more than 10 cents, was meant to include limit orders that are submitted away from the NBBO, but that still have a relative likelihood of being executed (hence the maximum distance requirement from the NBBO).[1197]

However, the likelihood of execution of a NMLO greatly depends on the movement of the NBBO, such that even an order submitted within 10 cents of the NBBO may never receive an opportunity to be executed if that order never touches the NBBO (*e.g.,* if prices were to move away from that order immediately after submission), and an order that is submitted further than 10 cents may indeed eventually execute if prices move towards the order. Figure 8 [1198] presents data on the fill rates of NMLO orders,[1199] broken down by NMLO type, including away-from-the-quote, near-the-quote, and at-the-quote NMLOs, along with several categories of inside-the-quote NMLOs depending on their distance from the midpoint (below-the-midpoint, at-the-midpoint, and beyond-the-midpoint),[1200] using a sample of MIDAS NMLO submission data.[1201] The figure shows that near-the-quote and away-from-the-quote NMLOs appear very similar in terms of fill rates (0.27% and 0.02%, respectively), particularly compared to other types of NMLOs (*e.g.,* inside-the-quote NMLOs have an average fill rate of around 0.36% to 3.57%). The fact that near-the-quote and away-from-the-quote NMLOs have similar fill rates is consistent with the possibility that the exclusion of NMLOs priced more than 10 cents away from the NBBO under preexisting Rule 605 was based on a threshold that does not optimally differentiate between orders that have a meaningful chance to execute. Meanwhile, orders that never have a meaningful opportunity to execute (*e.g.,* because they never touch the NBBO) may have been included in Rule 605 statistics prior to these amendments.

BILLING CODE 8011–01–P

[1195] *See* prior 17 CFR 242.600(b)(14), (37); prior 17 CFR 242.605(a)(1).

[1196] *See, e.g.,* Disclosure of Order Routing and Execution Practices (Proposing Release), 65 FR 48406 at 48414 (Aug. 8, 2000), stating that ''Commission preliminarily believes that the rule's statistical measures (*e.g.,* fill rates and speed of execution) for [limit orders with limit prices that are more than $0.10 outside the consolidated BBO at the time of order receipt] may be less meaningful because they would be more dependent on the extent to which the orders' limit prices were outside the consolidated BBO (and movements in market prices) than on their handling by a market center.''

[1197] In preexisting Rule 605, the categorization of a NMLO as a ''near-the-quote'' NMLO was based on the NBBO as of the time of order receipt. *See* prior 17 CFR 242.600(b)(37).

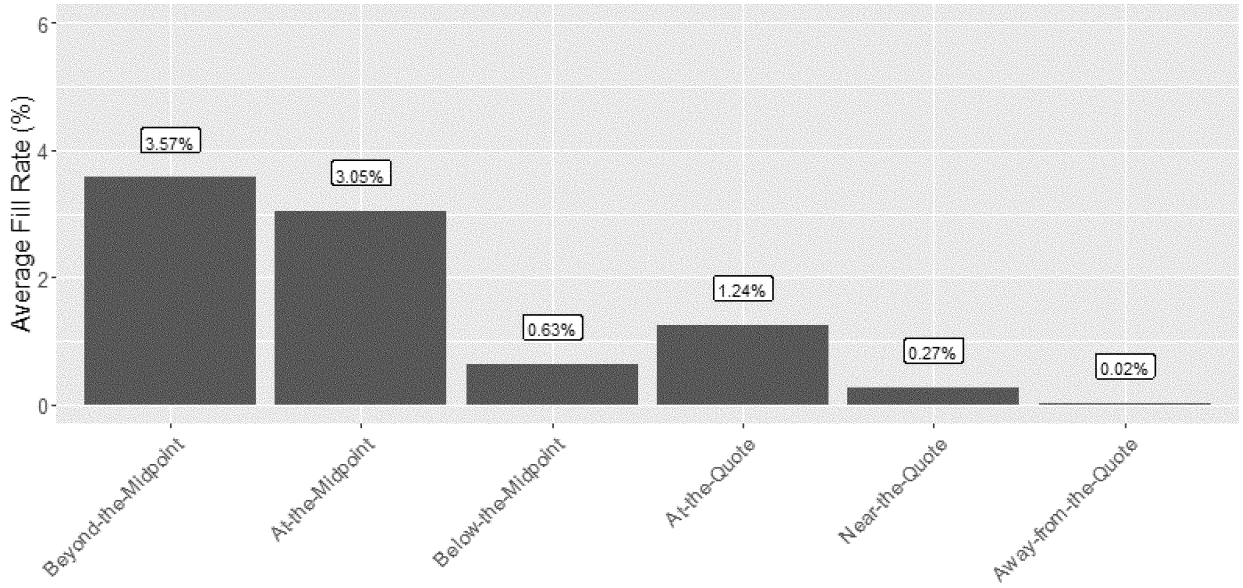
[1198] The MIDAS data used in this analysis have been updated and corrected since the Proposing Release for the reasons described in *supra* note 1130. *See* Proposing Release, 88 FR 3786 at 3849 (fig. 8) (Jan. 20, 2023). The fill rates in the analysis in the Proposing Release are somewhat higher—beyond-the-midpoint (5.07%), at-the-midpoint (4.96%), below-the-midpoint (2.66%), at-the-quote (2.89%), near-the-quote (0.61%), and away-from-the-quote (0.18%)—compared to those in the updated analysis in Figure 8. However, it remains the case that near-the-quote and away-from-the-quote NMLOs have similarly low fill rates compared to other types of NMLOs. Therefore, changes to the MIDAS dataset did not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that the exclusion of away-from-the-quote NMLOs and the inclusion of near-the-quote NMLOs under preexisting Rule 605 was based on a threshold that does not optimally differentiate between orders that do and do not have a meaningful chance to execute.

[1199] Due to the exclusion of orders with more than one submission message from the MIDAS dataset as described in *supra* note 1130, an analysis using this data may overestimate fill rates. This is because many of the orders associated with more than one submission message are so-called ''cancel/replace'' orders, in which an existing order is cancelled and replaced with a modified order, such as an order with a different price. The exclusion of these orders will thus tend to exclude more cancellations than executions, leading to higher fill rates. An alternate analysis, rather than dropping order ids (''oids'') with multiple submission messages, summed submission volume by stock-day-exchange-oid and assigned to this volume the price at the time of first submission. The fill rates resulting from this alternative analysis differ from those in Figure 8 by less than 0.01 percentage points; thus, the Commission's conclusions from this analysis are not affected by the exclusion of orders with multiple submission messages.

[1200] These categories of NMLOs are defined as follows. ''Beyond-the-midpoint'' NMLOs consist of, for sell orders, NMLOs with limit prices lower than the midpoint but higher than the NBB, and, for buy orders, NMLOs with limit prices higher than the midpoint but lower than the NBO. ''At-the-midpoint'' NMLOs consist of NMLOs with limit prices equal to the NBBO midpoint. ''Below-the-midpoint'' NMLOs consist of, for sell orders, NMLOs with limit prices higher than the midpoint but less than the NBO and, for buy orders, NMLOs with limit prices lower than the midpoint but higher than the NBB. ''At-the-quote'' NMLOs consist of, for sell orders, NMLOs with limit prices equal to the NBO and, for buy orders, NMLOs with limit prices equal to the NBB. ''Near-the-quote'' NMLOs consist of, for sell orders, NMLOs with limit prices worse (*i.e.,* higher) than the NBO by no more than $0.10 and, for buy orders, NMLOs with limit prices worse (*i.e.,* lower) than the NBB by no more than $0.10. ''Away-from-the-quote'' NMLOs consist of, for sell orders, NMLOs with limit prices worse (*i.e.,* higher) than the NBO by more than $0.10 and, for buy orders, NMLOs with limit prices worse (*i.e.,* lower) than the NBB by more than $0.10.

[1201] The distribution of orders into various NMLO categories may change following the implementation of the MDI Rules. Specifically, the NBBO is anticipated to narrow for stocks priced above $250 as a result of the new definition of round lots, which will likely decrease the number of inside-the-quote NMLOs and increase the number of quotes at or outside of the quotes for these stocks. *See supra* section IX.C.1.c)(2). However, it is not clear how a change in the distribution of orders into various NMLO categories will affect the average fill rates of these NMLO categories.

Figure 8: Fill Rates of NMLOs, Mar. 2023



This figure plots the fill rates of order flow that can be categorized into various NMLO categories, using order submission data from MIDAS. Fill rates are calculated as the number of shares executed of a given NMLO type, summed across all stocks and days in the sample, divided by the number of shares submitted of a given NMLO type, summed across all stocks and days. See supra note 1130 for a description of the dataset and supra note 1200 for definitions of the NMLO categories. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. See supra note 1201 and section IX.C.1.c)(2).

To get an idea of the extent to which these orders were included in Rule 605 statistics prior to these amendments, Figure 9 [1202] breaks down the sample of MIDAS NMLO submission data [1203] into NMLO types.[1204] According to Figure 8, more than 99% of near-the-quote NMLOs do not execute, which, according to Figure 9 represents around 29.3% of total submission volume.[1205] While it is possible that some of these orders did not execute because of their handling by the market center, it is unlikely that this is the case for all of them, and likely that some of the lack of fills was the result of other factors, such as price movements or cancellations by the submitter.[1206]

[1202] The MIDAS data used in this analysis have been updated and corrected since the Proposing Release for the reasons described in *supra* note 1130. *See* Proposing Release, 88 FR 3786 at 3848 (fig. 7) (Jan. 20, 2023). The share volumes in the Proposing Release are similar for beyond-the-midpoint (2.9%), at-the-midpoint (1.2%), below-the-midpoint (2.9%), at-the-quote (33.3%), near-the-quote (35.8%), and away-from-the-quote (23.8%) NMLOS. Therefore, changes to the MIDAS dataset did not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that near-the-quote NMLOs represent around a third of total submission volume.

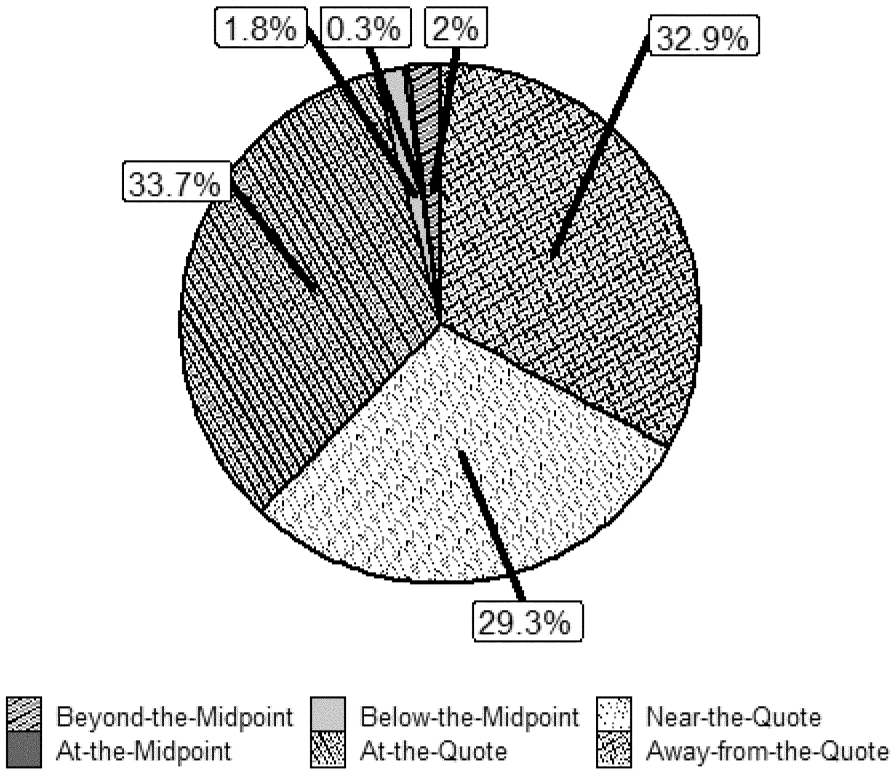
[1203] *See supra* note 1130 for a description of the dataset.

[1204] Results may be different following the implementation of the MDI Rules. *See supra* note 1201 and section VII.C.1.d)(2) for further discussion.

[1205] These numbers are the same as those in the Proposing Release. *See* Proposing Release, 88 FR 3786 at 3848 (Jan. 20, 2023).

[1206] *See infra* section IX.E.2.b) for a discussion of how NMLO orders that are cancelled quickly after submission may impact fill rates.

Figure 9: Order Submission Share Volume by NMLO Type, Mar. 2023



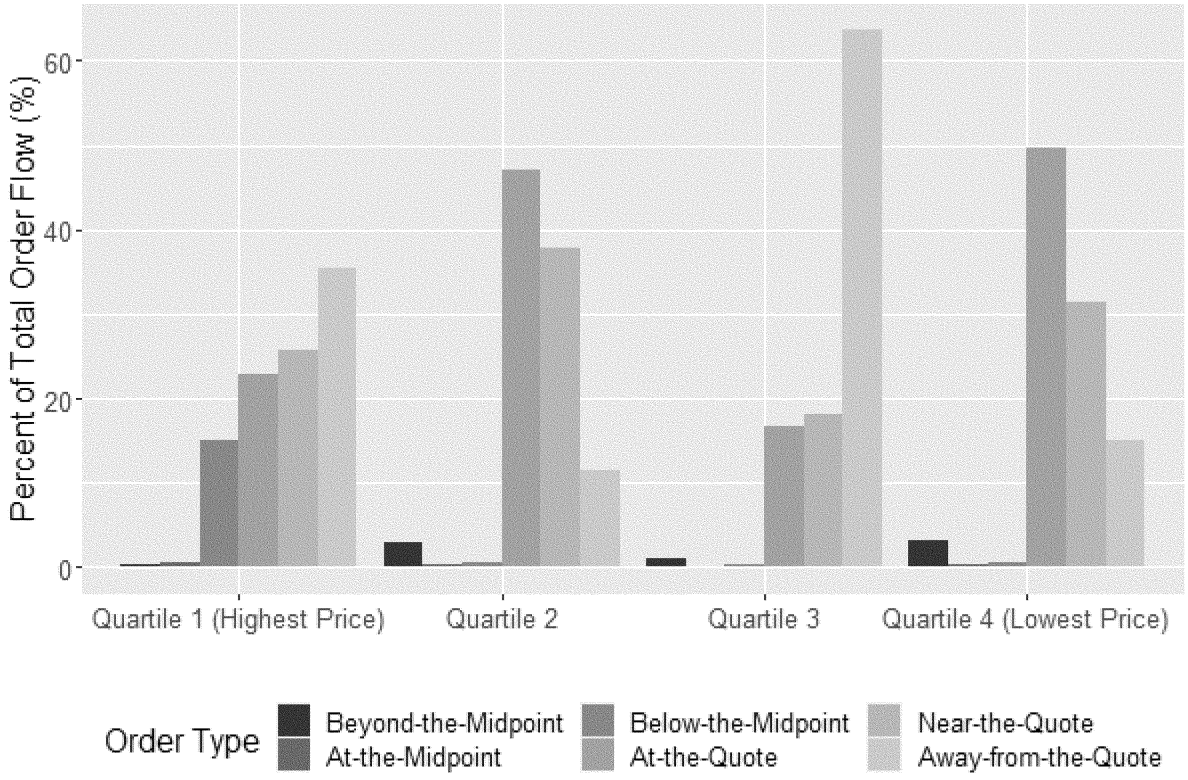
This figure plots the percentage of share volume that can be categorized into various NMLO categories, using order submission data from MIDAS. See supra note 1130 for a description of the dataset and supra note 1200 for definitions of the NMLO categories. Percentages are calculated as the number of submitted shares within a given NMLO category summed across all stocks and days in the sample, divided by the total number of submitted shares summed across all stocks and days. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. See supra note 1201 and section IX.C.1.c)(2).

Furthermore, the fact that the threshold for inclusion in preexisting Rule 605 reports was based on nominal terms (*i.e.,* 10 cents) means that NMLO coverage varied depending on the stock price: high-price stocks with smaller relative tick sizes would have had less NMLO coverage, since 10 cents represents a relatively tighter band around the NBBO when considered as a percentage of stock price.[1207] This is shown in Figure 10,[1208] which breaks down the NMLO submission volumes in Figure 9 by both order type and average share prices. The figure shows that away-from-the-quote NMLOs represent 35.5% of total NMLO share volume for the group of stocks with the highest share prices, but only 15.0% for the group of stocks with the lowest share prices. Given the positive fill rates for away-from-the-quote NMLOs from Figure 8, this implies that a higher portion of executed away-from-the-quote NMLOs have been excluded from preexisting Rule 605 reports for high-priced stocks. Excluding large portions of relevant NMLOs results in less reliable market quality measures; this may especially be the case for high-priced stocks, thus making comparisons between market centers less reliable for these stocks.

[1207] Results may be different following the implementation of the MDI Rules. Specifically, NMLO coverage for stocks priced above $250 may decrease even further, as the narrowing of the NBBO for these stocks will result in even tighter price bands. *See supra* section IX.C.1.c)(2) for further discussion.

[1208] The MIDAS data used in analysis has been updated and corrected since the Proposing Release for the reasons described in *supra* note 1130. *See* Proposing Release, 88 FR 3786 at 3850 (fig. 9) (Jan. 20, 2023). The Proposing Release similarly found that away-from-the-quote NMLOs represent a higher percentage (24.4%) of total NMLO share volumes for the group of stocks with the highest share prices as compared to the group of stocks with the lowest share prices (8.4%). Therefore, changes to the MIDAS dataset did not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that a higher portion of executed away-from-the-quote NMLOs in high-priced stocks were excluded from preexisting Rule 605 reports.

Figure 10: Order Submission Share Volume by NMLO Type and Stock Price Quartiles, Mar. 2023



This figure plots the percent of submitted shares that can be categorized into various NMLO categories, using order submission data from MIDAS. Stocks are split into quartiles based on average stock prices. Percentages are calculated as the number of submitted shares within a given order type category, summed across all stocks within a given market capitalization group and all days in the sample, divided by the total number of submitted shares summed across all stocks within a given market capitalization group and all days in the sample. See supra note 1130 for a description of the dataset and supra note 1200 for definitions of the NMLO categories. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. See supra note 1207 and section IX.C.1.c)(2).

Preexisting Rule 605 also required execution quality information for NMLOs to be measured relative to the time of order receipt. As will be shown in Figure 12 below, NMLOs that are submitted further away from the NBBO tend to take longer from the time of order receipt to execute than those submitted closer to the NBBO, as the NBBO has a further distance to move before it reaches the order's limit price. This requirement thus may have made it difficult to compare the execution times of market centers that handle NMLOs with varying distances from the NBBO.

(3) Midpoint-or-Better NMLOs

Prior to these amendments, Rule 605 reports required the separate reporting of execution quality information for inside-the-quote NMLOs. However, the Commission understands that some inside-the-quote limit orders may have different execution quality characteristics than other types of NMLOs, including other inside-the-quote NMLOs, and that this may vary across market centers. In particular, similarly to market and marketable limit orders, some at-the-midpoint and beyond-the-midpoint limit orders (collectively, ''midpoint-or-better'' orders) are submitted by traders with the intention of executing immediately, in this case against hidden or odd-lot inside-the-quote liquidity. However, because they are not a marketable order type (*i.e.,* they do not fully cross the spread), preexisting Rule 605 did not require certain statistics that are appropriate for marketable orders, such as effective spreads, to be reported for inside-the-quote NMLOs.[1209] Furthermore, some market centers, such as some wholesalers, treat ''beyond-the-midpoint'' limit orders (*i.e.,* NMLOs that are priced more aggressively than the midpoint) like marketable limit orders and will offer price improvement to these orders.

Confirming that there are differences between certain types of inside-the-quote NMLOs, Table 4 [1210] presents

[1209] For market and marketable limit orders, the effective spread captures how much more than the stock's estimated value a trader has to pay for the immediate execution of its order. *See infra* section IX.C.3.c)(6).

[1210] The CAT data used in this analysis have been updated since the Proposing Release for a more recent time period, as well as to include a larger sample of reporting entities (both wholesalers and exchanges/ATSs). Consistent with requiring time-to-execution buckets in Rule 605 reports rather than time-to-execution statistics (see supra section III.B.3), the methodology has also been updated to capture execution speeds as the percent of executed shares that are executed in under one millisecond, rather than mean and median execution times. *See* Proposing Release, 88 FR 3786 at 3850 (tbl. 5) (Jan. 20, 2023). The results in the Proposing Release

Continued

results from an analysis of the execution quality of different order types, including market, marketable limit, and various types of inside-the-quote NMLOs, along with at-the-quote NMLOs. The analysis uses a sample of orders from CAT data for the period of Q1 2023.[1211] First, the high percentage of beyond-the-midpoint and at-the-midpoint NMLO share volume that is submitted with IOC designations as compared to below-the-midpoint and at-the-quote NMLOs confirms that these orders are often submitted with the intention of executing immediately.[1212] Furthermore, the results show that there are differences between the execution characteristics of midpoint-or-better NMLOs as compared to NMLOs that are below the midpoint or at the quote. For example, for wholesalers, there is a notable difference in the fill rates of midpoint-or-better NMLOs (9.8% to 10%%) as compared to NMLOs below the midpoint (3.7% to 4.4%). Similarly, while around 70–77% of on-exchange midpoint-or-better NMLOs execute in less than a millisecond, this number drops to around 28.6% for below-the-midpoint NMLOs, and 9.3% for at-the-quote NMLOs.[1213] This analysis suggests that midpoint or better orders have a sufficiently different execution profile from other NMLOs to warrant different reporting requirements.

Table 4: Execution Quality Characteristics Across Different Order Types, Q1 2023

Exchanges & ATSs	IOC Volume (% Of Share Volume)	Fill Rate (%)	Executions Under 1 Millisecond (%)
Market	22.3%	84.2%	48.9%
Marketable Limit	92.6%	14.1%	97.1%
Beyond-the-Midpoint	35.8%	0.3%	76.9%
At-the-Midpoint	37.9%	2.2%	70.4%
Below-the-Midpoint	4.7%	0.1%	28.6%
At-the-Quote	13.3%	0.9%	9.3%
Wholesalers	**IOC Volume (% Of Share Volume)**	**Fill Rate (%)**	**Executions Under 1 Millisecond (%)**
Market	0.2%	94.8%	11.1%
Marketable Limit	62.9%	39.1%	20.2%
Beyond-the-Midpoint	90.8%	10.0%	18.9%
At-the-Midpoint	84.2%	9.8%	12.6%
Below-the-Midpoint	65.3%	3.7%	5.8%
At-the-Quote	67.0%	4.4%	11.7%

This table shows execution quality metrics for different order types using CAT data during the period of Q1 2023, along with the percentage of shares that are submitted with IOC designations (calculated as the number of shares submitted with an IOC designation summed across all stocks and days in the sample, as a percentage of the total number of submitted shares summed across all stocks and days). Also presented are fill rates (calculated as the number of shares executed, summed across all stocks and days in the sample, divided by the number of shares submitted, summed across all stocks and days in the sample.), and percentage of executed orders that execute in less than one millisecond (calculated as the number of shares executed in less than one millisecond summed across all stocks and days, as a percentage of the total number of executed orders summed across all stocks and days). Results are presented separately for Wholesalers and for Exchanges and ATSs. Large block orders (i.e., orders greater than $200,000) are excluded from this analysis. See supra note 1211 for dataset description and supra note 1200 for definitions of the NMLO categories. As discussed in supra note 1182, this analysis excludes some orders, including orders with certain handling codes and ATS-specific order types that were determined to not be eligible for Rule 605 reporting. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. See supra note 1212 and section IX.C.1.c)(2).

similarly show that beyond-the-midpoint NMLOs executed by wholesalers tend to have faster time-executions and higher fill rates than other types of inside-the-quote NMLOs. Therefore, these updates did not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that beyond-the-midpoint orders have different execution characteristics than other types of inside-the-quote NMLOs. S*ee infra* note 1213 for further discussion comparing the results from the Proposing Release to those in Table 4.

[1211] This analysis uses CAT data for a sample of 400 stocks. *See supra* note 1182 for a description of the dataset. In order to focus on NMLOs that will be included in Rule 605 reports as amended, the analysis includes only NMLOs that are immediately executable upon entry, *i.e.,* NMLOs that are submitted at or better than the quote.

[1212] This dataset is from prior to the implementation of the MDI Rules and the distribution of orders into various NMLO categories, including at-and-beyond-the-midpoint orders, may change following the implementation of the MDI Rules. *See supra* note 1207 and section IX.C.1.c)(2). However, it is not clear how a change in the distribution of orders into various NMLO categories will affect the average fill rates and time-to-execution of these NMLO categories.

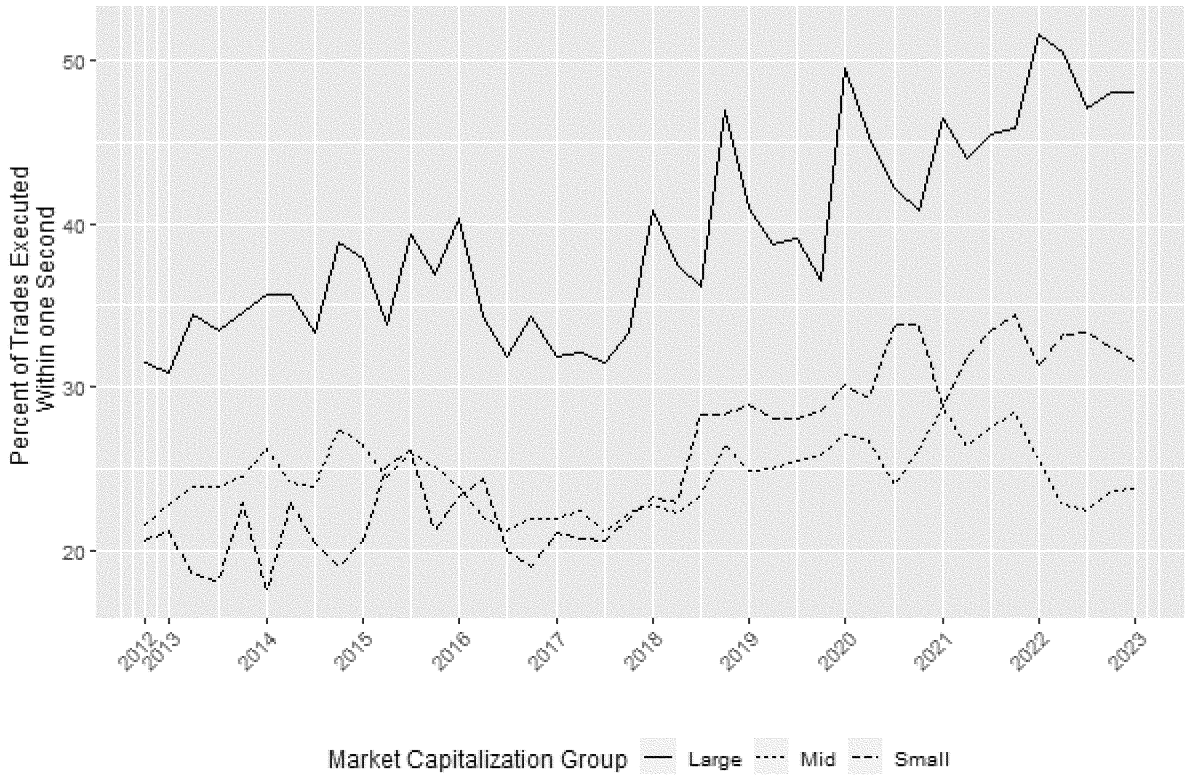
[1213] The analysis in the Proposing Release additionally looked at the percentage of price-improved orders across different order types executed by wholesalers and found that beyond-the-midpoint orders are offered price improvement by wholesalers more often than other inside-the-quote NMLOs. *See* Table 5 in the Proposing Release, 88 FR 3786 at 3850 (Jan. 20, 2023). However, as stated by a commenter, at least some of a NMLO's price improvement will be driven by its limit price, which is outside the control of the market center. *See* Schwab Letter at 32. The Commission agrees with the commenter and therefore focuses this analysis on time-to-execution and fill rates.

(4) Time-to-Execution

Prior to these amendments, Rule 605 required the reporting of time-to-execution information in two ways. First, for market and marketable limit orders, reporting entities were required to report the share-weighted average time-to-execution for orders executed with price improvement, at the quote, and with price dis-improvement, calculated based on timestamps recorded in seconds. Second, for all orders, reporting entities were required to report the number of shares executed within certain predefined time-to-execution categories or buckets.[1214]

First, calculating average time-to-execution statistics using timestamps recorded in terms of seconds does not reflect changes in market speeds. Figure 11 [1215] uses data from the SEC's MIDAS analytics tool [1216] to plot the percentage of on-exchange NMLOs that, conditional on being executed,[1217] are fully executed within one second or less from the time of submission between Q4 2012 and Q1 2023. The figure shows that this percentage has increased over time across different market capitalization groups, and that in Q1 2023 nearly half (48.0%) of executed NMLOs are executed in less than one second in large market cap stocks. Therefore, while timestamps expressed in seconds may have been appropriate for the markets when Rule 605 was first adopted, they are likely to miss variation in time-to-execution across market centers in today's markets.[1218]

Figure 11: Percentage of NMLOs Executed Within One Second, Q4 2012 to Q1 2023



This figure plots the percentage of NMLOs that, conditional on being executed on a national securities exchange, are executed within one second or less from the time of submission between Q4 2012 and Q1 2023 using data from the SEC's MIDAS analytics tool. See supra note 1216 for dataset description.

[1214] *See* prior 17 CFR 242.605(a)(1)(i)(F) through (J) (detailing time-to-execution buckets of 0 to 9 seconds, 10 to 29 seconds, 30 to 59 seconds, 60 to 299 seconds, and 5 to 30 minutes after the time of order receipt).

[1215] The data used in this analysis have been updated since the Proposing Release to include a more recent time period. *See* Proposing Release, 88 FR 3786 at 3851 (fig. 10) (Jan. 20, 2023), which presents the same analysis for Q4 2012 through Q1 2022. The percentage of NMLOs executed within one second has decreased slightly since Q1 2022. However, these differences due to updates to the dataset did not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that the percentage of NMLOs executed within one second has generally increased over time.

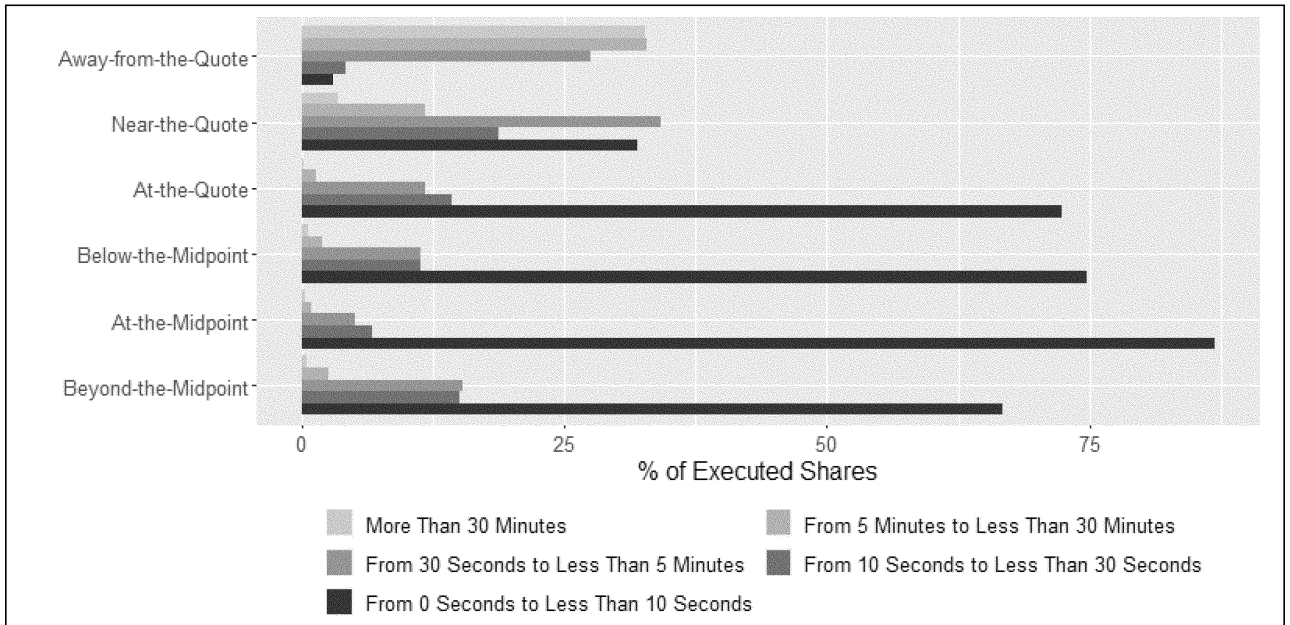
[1216] *See Conditional Cancel and Trade Distributions* (Dec. 2023), SEC, *available at https://www.sec.gov/marketstructure/downloads.html*). If the order is not fully executed, it is treated as canceled at the close. *See Quote Life Report Methodology,* SEC, *available at https://www.sec.gov/marketstructure/quote-life-report-methodology* (last visited Jan. 30, 2024, 3 p.m.).

[1217] *I.e.,* Figure 8 plots the number of fully executed NMLOs executed within one second relative to the total number of fully executed on-exchange NMLOs. In contrast, Figure 6 plots the number of executed NMLO shares divided by the total number of submitted NMLO shares.

[1218] *See, e.g.,* Better Markets Letter at 3, stating that ''there have been significant developments in trading since Rule 605 was adopted. It is now done electronically with automated systems and the speeds have increased exponentially, measured in milli or microseconds, not mere seconds;'' and FIF Letter at 17, stating that ''market centers, in particular, typically record trading events with greater precision than milliseconds.''

Second, given that many orders are executed on a sub-second basis, the time-to-execution buckets prescribed by preexisting Rule 605 are not able to fully capture variations in execution times across order types.[1219] To illustrate this, Figure 12 [1220] groups on-exchange NMLO executions collected from MIDAS for the period of Mar. 2023 [1221] into time-to-execution buckets that correspond to those defined in preexisting Rule 605. The figure shows that, while away-from-the-quote and near-the-quote NMLOs are relatively evenly distributed across the time-to-execution categories, these categories do not capture much differentiation for other NMLO types, particularly for those that take place inside the quote. For inside-the-quote NMLOs, 66.6% to 86.9% of orders are grouped in the shortest time-to-execution bucket (from 0 to less than 10 seconds), depending on the distance to the midpoint, while the category corresponding to the longest time-to-execution bucket defined by preexisting Rule 605 (5 to 30 minutes) has 0.4% to 0.6% of inside-the-quote NMLO executions. Therefore, these time-to-execution categories likely did not fully capture variations in the execution times of these orders across reporting entities.

Figure 12: Distribution of NMLO Execution Times, Mar. 2023



This figure plots the distribution of executed shares across different time-to-execution categories, for different categories of NMLOs, using data from MIDAS. Percentages are calculated as the number of shares in a given order type category that executed within a given time category, summed across all stocks and days in the sample, divided by the total number of executed shares within a given order type category, summed across all stocks and days in the sample. Execution times are calculated as the time of order receipt (which, for at- and inside-the-quote NMLOs, is equivalent to the time of executability) to the first time that one or more of the order's shares are executed. See supra note 1130 for dataset description and supra note 1200 for definitions of the NMLO categories. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. See supra note 1221 and section IX.C.1.c)(2).

MIDAS data include only orders and quotes that are posted on national securities exchanges' limit order books and trades that are executed against those orders,[1222] and as such it is not possible to view the submission times (and thus calculate the time-to-execution of) market and marketable limit orders using MIDAS data. As a result, the above analysis is only able to consider the time-to-execution of on-exchange NMLOs. In order to estimate the time-to-execution of both on- and off-exchange orders, including market and marketable limit orders, the

[1219] *See supra* note 1214 for a definition of these time-to-execution categories.

[1220] The MIDAS data used in this analysis has been updated and corrected since the Proposing Release for the reasons described in *supra* note 1130. *See* Proposing Release, 88 FR 3786 at 3852 (fig. 11) (Jan. 20, 2023). The distributions of orders across time-to-execution buckets for different NMLO categories are similar in the Proposing Release: for inside-the-quote NMLOs, 84.2% to 85.7% of orders were grouped in the shortest time-to-execution bucket (from 0 to less than 10 seconds), depending on the distance to the midpoint, while the category corresponding to the longest time-to-execution bucket (5 to 30 minutes) has only 1.1% to 1.3% of executions. Therefore, changes to the MIDAS dataset did not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that the time-to-execution categories in preexisting Rule 605 likely did not fully capture variations in the execution times of orders across reporting entities.

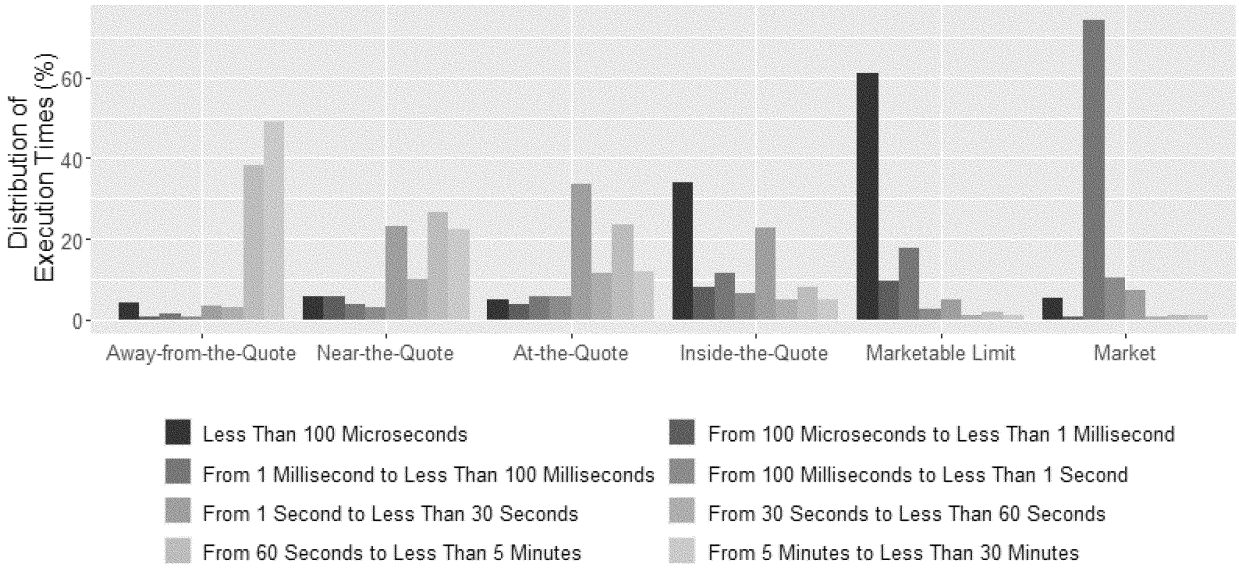
[1221] *See supra* note 1130 for data description. This dataset includes only NMLOs submitted to exchanges that do not immediately execute and are subsequently posted to the limit order book. The results of this analysis may not reflect the execution quality of inside-the-quote NMLOs that execute immediately, *e.g.,* against hidden liquidity on the limit order book. Time-to-execution is calculated as the time for order receipt to the first time that one or more of the order's shares are executed. Furthermore, this dataset is from prior to the implementation of the MDI Rules and the distribution of orders into various NMLO categories may change following the implementation of the MDI Rules. *See supra* note 1207 and section IX.C.1.c)(2). However, it is not clear how a change in the distribution of orders into various NMLO categories will affect the average time-to-execution of these NMLO categories.

[1222] *See supra* note 1130. MIDAS data include information about off-exchange trade executions, but not information about any off-exchange order submissions, so it is also not possible to use MIDAS data to calculate the time-to-execution of off-exchange orders.

Commission used the Tick Size Pilot B.I Market Quality data from April 2016 until March 2019.[1223] Figure 13 [1224] shows the distribution of time-to-execution statistics for market and marketable limit orders, along with the three categories of non-marketable limit orders required in Rule 605 reports prior to these amendments (*i.e.,* inside-the-quote, at-the-quote, and near-the-quote). Note that the time-to-execution categories defined in the Tick Size Pilot dataset are more granular than those in preexisting Rule 605.

BILLING CODE 8011–01–P

Figure 13: Distribution of Order Execution Times, Apr. 2016 to Mar. 2019



This figure plots the distribution of execution times across different time-to-execution categories, for market orders, marketable limit orders, and different categories of NMLOs. Percentages are calculated as the number of shares in a given order type category that executed within a given time category, summed across all stocks and days in the sample, divided by the total number of executed shares within a given order type category, summed across all stocks and days in the sample. See supra note 1124 for dataset description and supra note 1197 for definitions of the NMLO categories. See supra note 1115 for dataset description and supra note 1200 for definitions of the NMLO categories. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. See supra note 1223 and section IX.C.1.c)(2).

BILLING CODE 8011–01–C

Echoing the results using MIDAS data in Figure 12, Figure 13 shows that, for at-the-quote and near-the-quote limit orders, executions are reasonably well distributed across the different time-to-execution buckets and there is positive volume in the longer time-to-execution buckets that are included in both preexisting Rule 605 and the Tick Size Pilot categorizations (30 to 59 seconds, 60 to 299 seconds, and 5 to 30 minutes). However, similar to the results for inside-the-quote NMLOs, for market and marketable limit orders, execution times are mostly bunched up at the faster end of their time buckets; in fact, the vast majority of these orders are executed in under one second, falling within the shortest preexisting Rule 605 category of shares executed from 0 to 9 seconds. Likewise, the longer time-to-execution buckets that are included in both preexisting Rule 605 and the Tick Size Pilot categorizations are virtually empty. Therefore, as with inside-the-quote NMLOs, preexisting Rule 605 time-to-execution categories were missing information about potential differences across reporting entities in terms of the execution times of the market and marketable limit orders that they handle, which has limited the usefulness of time-to-execution information for investors.[1225]

[1223] *See supra* note 1115 for data description. As the Tick Size Pilot only collected data for small cap stocks, these execution times are not necessarily representative of all stocks. For example, larger market cap stocks are typically more liquid and likely execute faster. Also, as this is an older dataset (Apr. 2016 until Mar. 2019), it may be that market speeds have changed since this time. However, as it is likely that market speeds have only gotten faster since this time period, it could represent a lower bound on execution times and therefore still give an idea of how relevant the preexisting Rule 605 time-to-execution buckets are for market and marketable limit orders. Lastly, this dataset also includes off-exchange orders, while the MIDAS data include only on-exchange orders, which could result in different execution times between the two datasets. Furthermore, this dataset is from prior to the implementation of the MDI Rules and the distribution of orders into various NMLO categories may change following the implementation of the MDI Rules. *See supra* note 1207 and section IX.C.1.c)(2). However, it is not clear how a change in the distribution of orders into various NMLO categories will affect the average time-to-execution of these NMLO categories.

[1224] The same figure can be found in the proposing release. *See* Proposing Release, 88 FR 3786 at 3853 (Figure 12) (Jan. 20, 2023).

[1225] Academic literature suggests that time-to-execution information would be especially useful for institutional investors with short-lived private information, who profit from trading against other, slower institutions. *See, e.g.,* Ohad Kadan et al., *Trading in the Presence of Short-Lived Private Information: Evidence from Analyst Recommendation Changes,* 53 J. Fin. Quantitative Analysis 1509 (2018). Time-to-execution information would also benefit institutions that engage in market making, as one study shows these institutions are likely to rely on speed to reduce their exposure to adverse selection and to relax their inventory constraints. *See* Jonathan Brogaard et al., *Trading Fast and Slow: Colocation and Liquidity,* 28 Rev. Fin. Stud. 3407 (2015).

(5) Realized Spreads

Because of the increase in the speed at which markets operate,[1226] as well as the diversity of size and liquidity characteristics across stocks, the requirement in preexisting Rule 605 to use a single five-minute benchmark to calculate realized spreads [1227] may have limited the ability of market participants to use this measure to control for adverse selection risk when evaluating execution quality metrics, such as realized spreads.

Realized spreads are calculated by comparing an order's transaction price to the NBBO midpoint (*i.e.,* an estimate of the average expected trade price) at some later time interval. Realized spreads can be decomposed into the difference between the effective spread, which captures how much a trader has to pay for (and thus how much a liquidity provider earns from) the immediate execution of an order, and the movement in market prices some time interval after a trade (*i.e.,* price impact).[1228] Liquidity providers 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 market makers before they can unwind their positions.[1229] Thus, price impact can be thought of as a measure of adverse selection. Liquidity providers will generally set effective spreads to compensate for this adverse selection risk. Realized spreads, as the residual between the effective spread and price impact, can thus be thought of as the portion of the spread that liquidity providers earn in excess of adverse selection.[1230] Because of their inverse relationship with price impact, smaller (or even negative) realized spreads reflect that liquidity providers are earning less of the spread from their liquidity provision, which is usually a reflection of order flow with greater adverse selection risk. Therefore, all else being equal, if a market center reports favorable execution quality measures but a low or negative realized spread, this would reflect that the market center is still providing liquidity even during less favorable conditions.

Several commenters stated that realized spread is an imperfect proxy for revenue from liquidity provision.[1231] The Commission does not claim that the realized spread is a measure of a firm's overall profitability.[1232] The Commission stated in the Proposing Release and reiterates here that, to the extent realized spreads capture adverse selection costs faced by liquidity providers, they provide a measure of the potential profitability of trading for liquidity providers.[1233] In addition, the usefulness of realized spreads as a control variable for adverse selection does not depend on their being a measure of profitability.[1234]

Realized spreads vary significantly with the chosen time horizon. An academic study shows that realized spreads will generally decrease as the time horizon over which they are calculated is lengthened, highlighting that realized spreads are highly dependent on the time horizon over which they are calculated.[1235] The same study also finds that different time horizons may be appropriate for different stocks, depending on the stock's market capitalization.[1236] One way to interpret the decline in realized spreads as the time horizon increases is to consider that information is incorporated into market prices incrementally; a longer time horizon thus means that more of the price impact has been realized. The profitability of a market making strategy increases with the speed at which market makers are able to turn over their inventory before adverse movements in prices.

In order to examine how realized spreads vary with the chosen time horizon, the Commission analyzed realized spreads calculated over time horizons ranging from 10 milliseconds to five minutes,[1237] as well as how they differ based on market capitalization size, using TAQ data from Q1 2023 for a sample of 400 stocks from four different market capitalization groups (less than $100 million, $100 million to $1 billion, $1 billion to $10 billion, and

[1226] *See supra* section IX.C.3.c)(4) for a discussion of evidence of increased market trading speeds.

[1227] *See* prior 17 CFR 242.600(b)(9). Prior to these amendments, for buy orders, realized spread was double the amount of difference between the execution price and the midpoint of the NBBO five minutes after the time of order execution. For sell orders, realized spread was double the amount of difference between the midpoint of the NBBO five minutes after the time of order execution and the execution price.

[1228] Denoting by p_t the price of a trade, d_t the direction of the trade, m_t the midpoint at the time of trade, and m_{t+1} at the midpoint at time t+1 following a trade, the realized spread can be calculated as (effective spread − price impact) = $2*d_t*(p_t - m_t) - 2*\ d_t\ *(m_{t+1} - m_t) = 2*\ d_t\ *(p_t - m_{t+1})$. In preexisting Rule 605, realized spreads were required to be measured using the price at the time of order execution, and effective spreads were required to be measured using the midpoint price at the time of order receipt. To the extent that there were significant differences in the time of order receipt and the time of order execution, the decomposition of realized spreads in preexisting Rule 605 reports into effective spreads and price impact was not exact. The decomposition of realized spreads into effective spreads and price impact will continue to not be exact in the amended rule; *see infra* note 1484 for further discussion.

[1229] For example, if a liquidity provider provides liquidity to an informed trader, who is selling its shares because it knows that the share price is about to drop, the market maker will accumulate a long position in the stock. If the market maker were to immediately try to unwind this position in the market, the share price may have already dropped as a result of the realization of the informed trader's information, and the market maker will have to sell at a lower price than what it paid for the shares.

[1230] *See, e.g.,* Conrad and Wahal, *supra* note 544, at 240, stating that the realized spread ''can be thought of as the residual profit to liquidity providers.'' Realized spreads do not measure the actual trading profits that liquidity providers earn from supplying liquidity. In order to estimate the trading profits that liquidity providers earn, we would need to know at what times and prices the liquidity provider executed the offsetting position for a trade in which it supplied liquidity (*e.g.,* the price at which the liquidity provider later sold shares that it bought when it was supplying liquidity). If liquidity providers 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, then the realized spread measure is an imprecise proxy for the profits liquidity providers earn supplying liquidity. Differences in inventory holding periods of different liquidity providers could also create differences in the trading profits that liquidity providers earn that would not be captured in the realized spread measure if it is estimated over the same time horizon for all liquidity providers. *See* Lingyan Yang & Ariel Lohr, *The Profitability of Liquidity Provision* (working paper Feb. 18, 2022), *available at https://ssrn.com/abstract=4033802* (retrieved from SSRN Elsevier database). Additionally, realized spread metrics do not take into account any transaction rebates or fees, including PFOF, that a liquidity provider might earn or pay, which would also affect the profits they earn when supplying liquidity.

[1231] *See, e.g.,* Rule 605 Citadel Letter at 8–9, stating that ''the Commission's assertion that realized spread can serve as a proxy for liquidity provider profitability has been thoroughly discredited, including by academic research'' and Virtu Letter II at 12, stating that ''there is a risk that such measurements are improperly used . . . as a proxy for liquidity providers' profitability.'' *See also* Conrad and Wahal, *supra* note 544, at 247.

[1232] For example, realized spreads do not account for other costs that liquidity providers may incur, such as fixed costs for setting up their trading infrastructure and costs for connecting to trading venues and receiving market data. *See supra* section III.B.4.a)(2) for further discussion. *See also supra* note 1230.

[1233] *See* Proposing Release, 88 FR 3786 at 3814 (Jan. 20, 2023).

[1234] *See, e.g., infra* note 1506, discussing commenter support for the usefulness of realized spreads as a measure of order flow characteristics.

[1235] *See* Conrad and Wahal, *supra* note 544.

[1236] *See id.* Specifically, the authors recommend a horizon of no more than 15 seconds for large stocks and 60 seconds for small stocks.

[1237] While the analysis of realized spreads in the Proposing Release considered only six time horizons (1 second, 5 seconds, 10 seconds, 15 seconds, 1 minute, and 5 minutes), this analysis considers an additional four time horizons (10 milliseconds, 50 milliseconds, 100 milliseconds, and 500 milliseconds) in response to a commenter who recommended that realized spreads be calculated using shorter time frames (specifically, 50 milliseconds and 100 milliseconds). *See* Healthy Markets Letter at 17; *see also* Figure 13 in the Proposing Release, 88 FR 3786 at 3854 (Jan. 20, 2023).

over $10 billion).[1238] Following the academic literature, results are presented separately for different market capitalization groups as a proxy for different liquidity variables, with high market capitalization correlating highly with higher liquidity.[1239] The results are presented in Figure 14 [1240] and show that realized spreads tend to decrease as the time horizon increases. One exception is the five-minute time horizon for the largest market capitalization group, for which realized spread begins to increase. This may be driven by the addition of noise at this longer time horizon for large-cap stocks.[1241]

Figure 14 also shows that, except for the largest market capitalization group, realized spreads tend to decline as market capitalization size increases.[1242] Echoing results from the academic literature, the persistence of these systematic differences in realized spreads across market capitalization sizes implies that a time horizon that may be ideal for large cap stocks may not be appropriate for small cap stocks.[1243]

BILLING CODE 8011–01–P

[1238] This analysis uses data from intraday TAQ Consolidated Trade files for the period of Q1 2023 for a sample of 400 stocks. *See supra* note 1129 for a description of how the sample of stocks was selected.

[1239] *See, e.g.,* Conrad and Wahal, *supra* note 544, at 242: ''We display many of our results separately for small- and large-capitalization stocks because size is so strongly correlated with liquidity variables.''

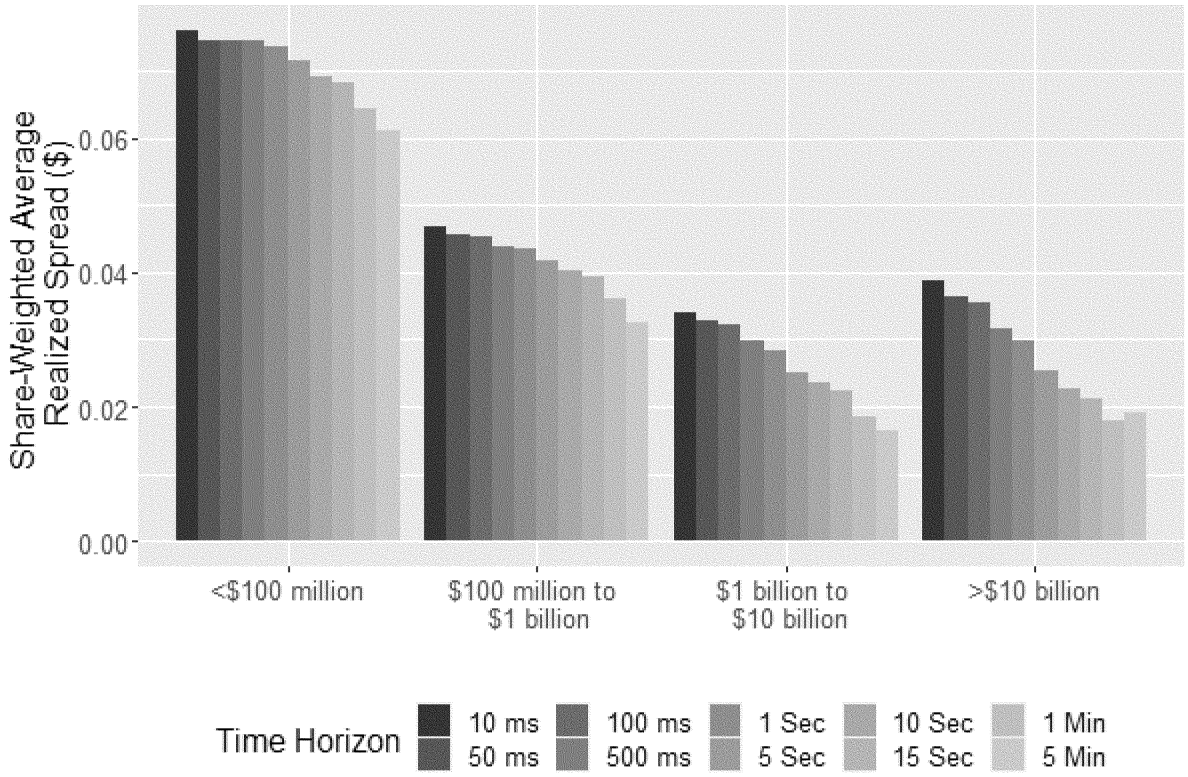
[1240] The TAQ data used in this analysis have been updated since the Proposing Release to account for a more recent time period. In addition, the methodology has been updated to include additional time horizons. *See* Proposing Release, 88 FR 3786 at 3815 (fig. 1) (Jan. 20, 2023), which presents a similar analysis that uses data from Feb. 2021 (*see* Proposing Release, 88 FR 3786 at 3854, n.706 (Jan. 20, 2023), for data description), and includes six time horizons (1 second, 5 seconds, 10 seconds, 15 seconds, 1 minute, and 5 minutes); *see supra* note 1237. As the sample was from a different time period, the magnitudes of realized spreads are slightly different from those in the sample from Q1 2023. However, the updates to the dataset did not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that realized spreads tend to decrease, for each market capitalization group, as the time horizon increases.

[1241] Conrad and Wahal also find a slight increase in realized spreads at longer time intervals. *See* Conrad and Wahal, *supra* note 544, figs. 1, 2.

[1242] Using data from Feb. 2021, an analysis in the Proposing Release further found that this pattern of declining realized spreads across increasing time horizon also held across different market centers. *See* Proposing Release, 88 FR 3786 at 3854 (fig. 13) (Jan. 20, 2023). An analysis using the updated sample of data described in note 1238 *supra* confirms that this pattern across market centers holds in Q1 2023 as well.

[1243] *See, e.g.,* results from Conrad and Wahal, discussed in note 1236. The Commission's analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. Specifically, the NBBO midpoint in stocks priced higher than $250 may be different under the MDI Rules than it was during out sample period, resulting in changes in the estimates for statistics calculated using the NBBO midpoint, such as realized spreads. While specific numbers might change, the Commission does not expect the relative variation in realized spreads across different time horizons to change as a result of the implementation of MDI. *See supra* section IX.C.1.c)(2) for further discussion.

Figure 14: **Average Realized Spreads by Market Capitalization and Time Horizon, Q1 2023**



This figure plots the share-weighted average realized spread using different time horizons, across four different market capitalization groups (less than $100 million, $100 million to $1 billion, $1 billion to $10 billion, and over $10 billion), using data from TAQ. See supra note 1238 for dataset description. Measures are winsorized at the 5% and 95% level. Measures grouped by size quartile were calculated on a stock-day basis, then averaged by stock, then averaged within each size quartile. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. See supra note 1243 and section IX.C.1.c)(2).

BILLING CODE 8011–01–C

(6) Effective Spreads

Prior to these amendments, reporting entities were not required to include information about the effective spreads of NMLOs in Rule 605 reports, including the effective spreads of midpoint-or-better NMLOs. The effective spread is calculated by comparing the trade execution price to the midpoint of the prevailing NBBO at the time of order receipt, which is used as an estimate of the stock's value.[1244] For market and marketable limit orders, the effective spread captures how much more than the stock's estimated value a trader has to pay for the immediate execution of its order. Like market and marketable limit orders, some at-the-midpoint and beyond-the-midpoint limit orders are submitted by traders with the intention of executing immediately, in this case against hidden or odd-lot inside-the-quote liquidity.[1245] Therefore, for midpoint-or-better orders, effective spreads contain information that may also otherwise be useful to investors.

(7) Notional Spreads (Effective and Realized)

The fact that reports under preexisting Rule 605 contained information on average realized and average effective spreads only in terms of dollar amounts, and not in terms of percentages, made it difficult for market participants to account for differences in share prices when comparing across market centers.[1246] While spreads in notional terms can be useful for participants because they can reflect a cost of (or benefit to) trading in terms that are easy to interpret, it is also the case that, since the effective spread is a per-share cost, the real costs to investors captured by the effective spread can be very different, depending on the stock price.[1247] All else being equal, spread measures tend to be higher in dollar terms for higher-priced stocks. As different reporting entities handle and/or transact in different mixes of stocks, this may have made it difficult for market participants who may want to compare reporting entities' overall price performance or their performance for baskets of stocks to aggregate across effective spreads.[1248]

Also, measuring spreads in absolute terms may lead to comparisons across reporting entities that do not account for potential differences in the timing of order flow, particularly for stocks whose prices vary significantly over the course of the monthly reporting period. For example, say that a stock's price increased dramatically over the course of a month from $2.50 to $250 and that, by chance, Market Center A executed more order flow for that stock at the beginning of the month, while Market Center B executed more order flow for that stock at the end of the month. In its Rule 605 report for that month, Market Center A showed an average effective spread of $0.01, while Market Center B showed an average effective spread of $0.10. Measured in dollar terms, Market Center B would seem to have offered worse execution prices than Market Center A, since it is associated with higher effective spreads. However, relative to the stock price, Market Center B would actually have offered the better prices (a percentage effective spread of 0.04%) compared to Market Center A (a percentage effective spread of 0.4%).[1249] This illustrates that a market center's spread measures may be higher in dollar terms, but not necessarily because it offered worse execution performance; instead, these differences in spread measures may simply reflect changes in the stock's dollar price and the timing of market center's order flow.

(8) Price and Size Improvement

The measure of price improvement required by preexisting Rule 605 may not have always succeeded in capturing price improvement relative to the best available prices. Prior to these amendments, market centers were required to report price improvement only as the difference between the trade price and the NBBO. However, in cases where odd-lot volume is available at prices better than the NBBO, price improvement measured relative to the NBBO will not reflect the best available displayed prices.[1250] This may have limited market participants' ability to compare these measures of price improvement across market centers. For example, if a market center internalizes an order with $0.05 of price improvement relative to the NBBO, but meaningful odd-lot liquidity is available on another market center at prices that are $0.10 better than the NBBO, the market center would have posted a price improvement measure of $0.05, even though the investor could have received a better price if the market center had routed the order to execute against the available odd-lot liquidity available elsewhere instead of internalizing the order. As a result, in some cases, measures of price improvement in preexisting Rule 605 may not have accurately reflected the amount of price improvement offered by some market centers.[1251]

Information about price improvement is different from information about whether orders received an execution of more than the displayed size at the quote, *i.e.,* ''size improvement.'' The price improvement metrics required by preexisting Rule 605 do not necessarily

[1244] *See, e.g.,* Bjorn Hagströmer, *Bias in the Effective Bid-Ask Spread,* 142 J. Fin. Econ. 314 (2021); *see infra* section IX.E.3.c)(3) discussing potential issues with using the midpoint to calculate effective spreads.

[1245] *See supra* section IX.C.3.c)(5) for further discussion.

[1246] In theory, market participants could also control for differences in share prices by matching up stock-level information from Rule 605 reports to, *e.g.,* information on the stock's average stock price from that month. However, this would require market participants who wish to control for differently priced stocks to go through the extra step of gathering and matching stock price information to Rule 605 data, which may be an unreasonable expectation, particularly for individual investors with limited resources. Furthermore, while a monthly average might well capture the prevailing stock price for any given execution for a stock with low price volatility, it might not be a good representation of the prevailing stock price for executions in stocks with high price volatility.

[1247] To illustrate, consider an investor that wants to acquire a $10,000 position in a $250 stock with an effective spread of $0.01; the investor will have to pay about $0.40 to purchase 40 shares of the stock. Now consider an investor who wants to acquire a $10,000 position in a $2.50 stock with an effective spread of $0.01; the investor would have to pay around $4.00 to acquire 400 shares. In other words, even though the dollar effective spread was the same, it was 10 times more expensive for the investor to accumulate a position worth the same dollar amount in the lower-priced stock.

[1248] While the main purpose of Rule 605 is to facilitate comparisons across reporting entities on the basis of execution quality within a particular security, the Commission understands that access to aggregated information is useful for market participants. The amendment that requires reporting entities to prepare summary reports that aggregate execution quality information for S&P 500 stocks, along with all NMS stocks, will give market participants access to aggregate effective spreads for one commonly used basket of stocks. Meanwhile, per-stock percentage spread information will enhance market participants' ability to aggregate effective spread information across baskets of stocks other than the S&P 500.

[1249] To illustrate how the percentage effective spread can reflect different costs in real terms, consider if one customer acquired a $10,000 stake in the stock at the beginning of the month (*i.e.,* $10,000/$2.50 = 4,000 shares); a per-share effective spread of $0.01 means that the customer's cost of acquiring the position would have been $40. Meanwhile, another customer acquired a $10,000 stake at the end of the month (*i.e.,* $10,000/$250 = 40 shares); a per-share effective spread of $0.10 means that the customer's cost would have been only $4.

[1250] *See, e.g.,* Bartlett et al. (2022), *supra* note 33, who found that odd-lots offer better prices than the NBBO 18% of the time for bids and 16% of the time for offers. The authors found that this percentage increases monotonically in the stock price, for example, for bid prices, increasing from 5% for the group of lowest-price stocks in their sample, to 42% for the group of highest-priced stocks.

[1251] One commenter stated that measures of price improvement in preexisting Rule 605 were incomplete because they did not include liquidity from odd-lot quotes at prices better than the NBBO. *See* Virtu Letter II at 7.

capture a market center's ability to fill orders beyond the liquidity available at the NBBO.[1252] For example, consider a situation in which the market is $10.05 × $10.10 with 100 consolidated shares available at the NBO of $10.10 and 100 consolidated shares available at the next best ask price of $10.15. Say that a trader submits a marketable buy order for 200 shares to a market center, which fills the entire order at the best ask price of $10.10. The market center's Rule 605 statistics would reveal a price improvement metric of $0 for this order, despite the fact that the trader saved money by avoiding having to walk the book, which would have resulted in a total price of (100 * $10.10) + (100 * $10.15) = $2,025. As a result of the market center's ability to offer this ''size improvement,'' the trader saved an average of $10.125 − $10.10 = $0.025 per share. This information about execution quality would not be reflected in the market center's price improvement statistics. The handling of orders that exceed available NBBO depth may not be a rare occurrence: One academic study found that, in a proprietary database consisting of orders handled by wholesalers, over 52% of the total shares executed in their data were from orders seeking to trade more shares than are available at the NBBO and that, of these trades, 83.61% received size improvement from wholesalers.[1253]

As the Commission stated in the Rule 11Ac1–5 Adopting Release, the average effective spread captures some information about size improvement.[1254] The effective spread is calculated by comparing the trade execution price with the midpoint of the NBBO, rather than with the NBBO itself. In this way, it captures the full range of available liquidity at a market center and not merely the displayed orders that determine the NBBO. The effective spread will be larger for orders that are larger than liquidity available at the NBBO and are required to walk the book. Therefore, generally speaking, a market center that offers greater size improvement will tend to have a lower average effective spread (*i.e.,* these measures will be negatively correlated).[1255] However, as this measure contains information about both size and price, it may be difficult to disentangle information about size improvement from information about price improvement when interpreting average effective spreads.[1256] Therefore, investors that particularly value the ability of market centers to offer size improvement, such as investors trading in larger order sizes, would not have been able to use the metrics contained in reports under preexisting Rule 605 to easily discern which market center would have better handled their order according to this dimension of execution quality.[1257]

(9) IOCs

Under preexisting Rule 605 requirements, grouping IOCs together with other orders may have skewed the execution quality metrics of reporting entities that handle a large number of IOCs,[1258] which may have hindered market participants' ability to accurately compare execution quality across reporting entities.

In an analysis in the Proposing Release, the Commission found that including IOCs along with other types of market and marketable limit orders may skew the execution quality of these other order types, particularly since IOCs make up more than 90% of market and marketable share volume.[1259] In addition, several commenters stated that grouping non-marketable IOCs together with other non-marketable limit orders could skew execution quality statistics for these orders, since non-marketable IOCs also have different execution profiles.[1260]

[1252] One commenter similarly stated that ''price improvement figures reported under current Rule 605 substantially understate the benefits to retail investors provided by the current market structure.'' Virtu Letter II at 10; *see also* Robinhood Letter at 47, stating that the ''absence [of size improvement information] in Current Rule 605 reports means that execution quality is significantly undercounted.'' An analysis of data from the Tick Size Pilot B.II Market and Marketable Limit Order dataset reveals that nearly 7% of orders had sizes greater than the liquidity available at the NBBO between Apr. 2016 and Mar. 2019; *see infra* note 1545 for data description. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. Specifically, the MDI Rules could result in a smaller number of shares at the NBBO for stocks in higher-priced round lot tiers, increasing the number of orders with sizes greater than the NBBO; *see supra* section IX.C.1.c)(2) for further discussion.

[1253] *See* Robert H. Battalio & Robert H. Jennings, *Wholesaler Execution Quality* (working paper Dec. 18, 2023), *available at https://ssrn.com/abstract=4304124* (retrieved from SSRN Elsevier database) (''Battalio & Jennings''). As a result, the authors estimate that incorporating information about size improvement into Rule 605 price improvement statistics would more than double estimates of price improvement for internalized orders. *See* Battalio & Jennings at 4. A previous version of this study was referenced by several commenters in support of the inclusion of size improvement information in Rule 605 reports (*see, e.g.,* Citadel Letter at 11); as well as in general support of updates to Rule 605 (*see, e.g.,* McHenry et al. Letter at 2; SIFMA Letter II at 20); *see also* Virtu Petition at 3, stating that approximately 45% of shares (and 54% of the value traded) filled by Virtu in 2020 were from orders that outsized the NBBO, and that industry-wide retail investors received approximately $7 billion in size improvement in 2020.

[1254] *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75425 (Dec. 1, 2000).

[1255] For example, assume that a trader submits a marketable buy order for 100 shares to a $10.05 × $10.10 market with 100 consolidated shares available at the NBO of $10.10 and 100 consolidated shares available at the next best ask price of $10.15. In this case, the effective spread would be 2 * ($10.10 − $10.075) = $0.05, reflecting that the trader had to pay an average of $0.05 more per share than the NBBO midpoint. Now consider the situation in which the trader instead submits a marketable buy order for 200 shares to a market center (''Market Center A'') that walks the order up the book. In this case the effective spread will be twice as high, 2 * ($10.125 − $10.075) = $0.10. This higher effective spread reflects the need for Market Center A to use volume beyond the best quote to fill the order. If, on the other hand, instead of walking the 200-share order up the book, a market center (''Market Center B'') fills the entire buy order at the current NBO of $10.10; the effective spread would only be $0.05. The ability of Market Center B to execute an order for more than the displayed size at the quote is therefore reflected in an effective spread that is lower than that of Market Center A.

[1256] To illustrate, consider the example in *supra* note 1255, but, instead of 200 shares, the trader's order was for 100 shares and Market Center A executed the order with an average price dis-improvement of $0.025; the effective spread for Market Center A would similarly be $0.10. Furthermore, consider a situation in which the market is wider at $10.12 × $10.02 and Market Center B executes the 100-share order with an average price improvement of $0.025 per share, while Market Center A executes it without any price improvement. Both of these cases would lead to the same effective spreads (an effective spread of $0.10 for Market Center A, and an effective spread of $0.05 for Market Center B) as the above-described scenario in which Market Center B offered size improvement and Market Center A did not, but for situations in which the order size is less than or equal to the displayed size at the quote.

[1257] Compare the example of Market Center B offering size improvement to a 200-share order in note 1255, *supra,* to the example of Market Center B offering price improvement to a 100-share order in note 1256, *supra.* A trader that tends to submit 200-share orders would want to know a market center's ability to offer the first scenario, while a trader that tends to submit 100-share orders would want to know the market center's ability to offer the second scenario. However, in both examples the Rule 605 report would show an effective spread statistic of $0.05 for orders in the order size category of 100–499 shares, which means that these traders would not be able to use this statistic to discern a market center's execution quality according to the dimension of execution quality that they find most valuable.

[1258] *See, e.g.,* Rule 605 Citadel Letter at 7, stating that ''[a]t the moment, depending on the structure of the broker-dealer, these IOC orders [executed on SDPs] may be aggregated with retail orders for reporting purposes, even though the execution profile is very different and could negatively skew a wholesale broker-dealer's execution quality metrics.''

[1259] *See* Proposing Release, 88 FR 3786 at 3857 (tbl. 6) (Jan. 20, 2023). The analysis in the Proposing Release was based on the Tick Size Pilot B.II Market and Marketable Limit Order dataset. This dataset includes information only about market and marketable limit orders, and furthermore collected data only for small cap stocks.

[1260] *See, e.g.,* FIF Letter at 13.

To test the concern raised by these commenters, the Commission uses a sample of CAT data for 400 stocks for the period of Q3 2023 to refine its analysis of IOC orders to include non-marketable order types in addition to marketable order types.[1261] The results are presented in Table 5,[1262] and show that IOCs are a significant percentage of order flow across multiple different order types, including a large percentage of marketable limit order shares (92.6% for exchanges and ATSs, and 62.9% for wholesalers), as well as beyond-the-midpoint and at-the-midpoint shares (for exchanges and ATSs, 35.8% and 37.9%, and, for wholesalers, 90.8% and 84.2%, respectively). This reflects that IOC orders are a significant component of order flow across both marketable and non-marketable order types. In addition, IOCs indeed may have different execution quality, as, with the exception of market orders on exchanges and ATSs, a higher percentage of IOC orders execute in under one millisecond as compared to non-IOC orders. Furthermore, at wholesalers, IOC orders tend to have higher effective spreads and lower fill rates than non-IOC orders. This result supports the Commission's understanding that IOC orders received by wholesalers are typically institutional orders that are pinged in the wholesalers' SDPs to see if any contra-side volume is available,[1263] and that commingling SDP activity with other market center activity under preexisting Rule 605 requirements may have obscured differences in execution quality or distorted the general execution quality metrics for the market center.[1264] Similarly, grouping together IOC orders along with other types of market and marketable orders could have imposed a significant skew on execution quality metrics, particularly since IOCs make up a significant percentage of order flow. This may have impacted market centers' incentives to achieve better execution quality for these orders prior to these amendments.[1265]

[1261] This analysis uses CAT data for 400 stocks for the period Q1 2023. *See supra* note 1181 for information about how the 400-stock sample was selected and supra note 1182 for more information about the CAT data.

[1262] This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. However, it is not clear how a change in the distribution of orders into various NMLO categories will affect the average fill rates of these NMLO categories. *See supra* section IX.C.1.c)(2).

[1263] *See, e.g.,* Rule 605 Citadel Letter at 7, stating that ''[m]any wholesale broker-dealers execute immediate-or-cancel ('IOC') orders for non-retail investors (including pension plans, insurance companies, and other asset managers), particularly through the use of a single-dealer platform ('SDP').''

[1264] *See supra* section IX.C.3.a)(2) for further discussion of commingling SDP activity with other market center activity.

[1265] For example, if, prior to these amendments, a market center's Rule 605 reports revealed low fill rates for market orders simply because it handled a large amount of marketable IOCs, it may not have been incentivized to improve its fill rates for other types of market orders since the higher fill rates of these orders would be obscured by the low fill rates of marketable IOCs.

Table 5: Immediate-Or-Cancel (IOC) Share Volume and Execution Quality, Q1 2023

Exchanges and ATSs	Volume (% Of Total Share Volume)	IOC Volume (% Of Share Volume)	Fill Rate (%) (IOC)	Fill Rate (%) (non-IOC)	Executions Under 1 ms (%) (IOC)	Executions Under 1 ms (%) (non-IOC)	Effective Spread ($) (IOC)	Effective Spread ($) (non-IOC)
Market	<0.01%	22.3%	47.1%	94.9%	22.5%	52.6%	$0.0483	$0.0641
Marketable Limit	10.3%	92.6%	14.3%	11.6%	98.1%	80.5%	$0.0487	$0.0362
Beyond-the-Midpoint	2.2%	35.8%	0.6%	0.1%	78.2%	73.5%	$0.0165	$0.0581
At-the-Midpoint	2.0%	37.9%	2.9%	1.8%	98.1%	43.5%	-$0.0014	-$0.0004
Below-the-Midpoint	49.6%	4.7%	0.4%	0.1%	95.0%	16.5%	-$0.0954	-$0.1277
At-the-Quote	35.9%	13.3%	0.2%	1.0%	89.1%	6.5%	-$0.0291	-$0.0513
Wholesalers	**Volume (% Of Total Share Volume)**	**IOC Volume (% Of Share Volume)**	**Fill Rate (%) (IOC)**	**Fill Rate (%) (non-IOC)**	**Executions Under 1 ms (%) (IOC)**	**Executions Under 1 ms (%) (non-IOC)**	**Effective Spread ($) (IOC)**	**Effective Spread ($) (non-IOC)**
Market	28.1%	0.2%	31.7%	94.9%	85.4%	11.0%	$0.0438	$0.0344
Marketable Limit	26.9%	62.9%	18.3%	74.3%	49.3%	8.1%	$0.0420	$0.0319
Beyond-the-Midpoint	3.2%	90.8%	4.2%	66.8%	29.0%	12.6%	$0.1066	$0.0682
At-the-Midpoint	2.3%	84.2%	2.3%	50.2%	35.5%	7.0%	-$0.0010	-$0.0005
Below-the-Midpoint	6.9%	65.3%	1.5%	7.7%	12.6%	3.3%	-$0.1867	-$0.1175
At-the-Quote	32.6%	67.0%	0.9%	11.4%	73.4%	1.6%	-$0.0213	-$0.0354

This table shows the breakdown of the percentage of share volume across market, marketable limit, and three categories of non-marketable limit (beyond-the-midpoint, at-the-midpoint, below-the-midpoint, and at-the-quote) orders as percentages of order flow in terms of share volume, as well as the percentage of share volume of these order types that are submitted with IOC instructions. Also presented are fill rates (calculated as the number of shares executed, summed across all stocks and days in the sample, divided by the number of shares submitted, summed across all stocks and days in the sample), the percentage of executed orders that execute in less than one millisecond (calculated as the number of shares executed in less than one millisecond summed across all stocks and days, as a percentage of the total number of executed orders summed across all stocks and days), and share-weighted effective spreads (calculated as two times the signed difference between the midpoint and the execution price). Share weights are calculated as the number of executed shares in an order divided by the total number of executed shares summed across stocks and all days in the sample. These metrics are calculated and presented separately for IOC and non-IOC orders, and for Wholesalers and for Exchanges/ATSs. The results are obtained using a sample of CAT data for 400 stocks for Q1 2023. See supra note 1261 for data description and supra note 1200 for definitions of the NMLO categories. As discussed in supra note 1182, this analysis excludes some orders, including orders with certain handling codes and ATS-specific order types that were determined to not be eligible for Rule 605 reporting. This analysis uses data from prior to the implementation of the MDI Rules and specific numbers reported may be different following the implementation of the MDI Rules. See supra note 1262 and section IX.C.1.c)(2).

(10) Riskless Principal Orders

The preexisting Rule 605 reporting requirements for riskless principal transactions [1266] has led to the duplicative reporting of these orders and has created uncertainty about how many orders are internalized by off-exchange market centers, particularly wholesalers.

In a riskless principal transaction, a market center routes a principal order to a second market center, typically an exchange or ATS, in order to fulfill a customer order; upon execution at the second market center, the first market center executes the customer transaction on the same terms as it received from the principal execution at the second market center. Both prior to and after these amendments, the second (executing) market center in this example will be required to report this transaction as having been executed at the market center under Rule 605(a)(1)(i)(D). However, prior to these amendments, the first (routing) market center will also report the riskless principal transaction under prior Rule 605(a)(1)(i)(D), rather under Rule 605(a)(1)(i)(E) (cumulative number of shares of covered orders executed at any other venue) [1267]

Particularly in the case of riskless principal transactions that are handled by wholesalers, grouping transactions that are handled on a riskless principal basis together with other orders executed at the market center under prior Rule 605(a)(1)(i)(D) has obscured information about the extent to which wholesalers internalize orders. Wholesalers primarily choose between two options to execute the individual investor orders that they handle: they either internalize orders by executing orders against their own inventory, or they execute orders on a riskless principal basis.[1268] While wholesalers' internalized orders are not exposed to competition from other interested parties quoting on external market centers, their riskless principal executions expose individual investor orders to trading interest from market participants other than the wholesaler, which has potential implications for differences in execution quality between these two order types. Prior to these amendments to Rule 605, both types of orders would be categorized together as orders executed at the market center under prior Rule 605(a)(1)(i)(D), so market participants would not be able to tell from Rule 605 reports whether a wholesaler internalizes the majority of its individual investor order flow, or executes the majority as riskless principal. Thus, key information that would be useful for investors (particularly individual investors, whose orders are overwhelmingly handled by wholesalers [1269]) when interpreting and comparing information about wholesalers' execution quality has not been available from Rule 605 reports.

(d) Accessibility of Rule 605 Reports

Rule 605 requires market centers to post their monthly reports on an internet website that is free of charge and readily accessible to the public.[1270] In order to collect a complete or mostly complete set of Rule 605 reports to, for example, select the reporting entity offering the best execution quality in a given stock, a market participant may incur search costs.[1271] The process of collecting Rule 605 reports may be simplified by the NMS Plan's requirement that each market center must designate a single Participant to act as the market center's Designated Participant, who is tasked with maintaining a comprehensive list of the hyperlinks provided by its market centers.[1272] Furthermore, certain reporting entities' use of third-party vendors to prepare and/or collect Rule 605 reports may also simplify the process of collecting Rule 605 reports, as these vendors typically maintain a centralized repository of the reports that they handle.[1273] There is no system or requirement, and the Commission is not adopting such a requirement, for the centralized posting of Rule 605 reports.[1274]

Rule 605 reports are designed to be machine readable, rather than human readable. While machine-readable data are useful for facilitating further processing and analysis, they are not easily consumable by market participants who do not have the access to necessary software or programming skills. Prior to these amendments, this may have limited the accessibility of Rule 605 reports, particularly for those individual investors who may be less likely to have access to these resources.[1275]

4. Markets for Brokerage and Trading Services for NMS Stocks Under Preexisting Rule 605 Disclosure Requirements

(a) Brokerage Services for NMS Stocks

(1) Current Structure of the Market for Brokerage Services

Based on information from broker-dealers' FOCUS Report Form X–17A–5 Schedule II, there were 3,494 registered broker-dealers as of Q2 2023.[1276] A

[1266] In effecting riskless principal transactions, a market center submits a principal order to another market center in order to fulfill a customer order. Upon execution at the away market center, the receiving market center executes the customer transaction on the same terms as the principal execution. *See* Securities Exchange Act Release No. 47364 (Feb. 13, 2003), 68 FR 8686 at 8690, n.33 (Feb. 24, 2003) (generally describing riskless principal transactions ''as trades in which, after receiving an order to buy (or sell) from a customer, the broker-dealer purchases (or sells) the security from (or to) another person in a contemporaneous offsetting transaction'').

[1267] *See supra* note 684 and accompanying text. In contrast, for the purposes of SIP reporting, the away market center is required to report the principal transaction to the tape, while the receiving market center would post a non-tape (regulatory or clearing-only) report to reflect the offsetting riskless customer transaction. When the initial leg of the transaction takes place on and is reported through an exchange, members are instructed not to report the customer transaction for public dissemination purposes, as that would result in double (tape) reporting of the same transaction. *See Trade Reporting Frequently Asked Questions, answers to Questions 302.2 and 302.4,* FINRA, *available at https://www.finra.org/filing-reporting/market-transparency-reporting/trade-reporting-faq* (last updated 2024).

[1268] *See infra* section IX.C.4.b) for further discussion of the market for trading services, which includes wholesalers.

[1269] *See, e.g.,* Proposing Release, 88 FR 3786 at 3839, n.614 (Jan. 20, 2023), describing a Commission analysis of Rule 606 reports that showed that, in Q1 2022, a sample of 46 retail broker-dealers routed 87.3% of orders in S&P 500 stocks and 87.9% of orders in non-S&P 500 stocks to wholesalers, as compared to 9.1% and 8.5%, respectively, to national securities exchanges.

[1270] *See* prior 17 CFR 242.605(a)(2) (requiring market centers to make their Rule 605 reports ''available for downloading from an internet website that is free and readily accessible to the public. . ..'').

[1271] One commenter stated that the current system for accessing Rule 605 reports is difficult. *See* BlackRock Letter at 4, stating that ''[c]urrently, accessing Rule 605 reports can be an onerous and time-consuming process for investors because it is widely dispersed across numerous market center websites where reports can be difficult to locate and retrieve.''

[1272] *See* Section VIII of the Rule 605 NMS Plan. For a description of ''Designated Participant'' as defined in the Plan, *see supra* note 869.

[1273] *See, e.g., Disclosure of SEC—Required Order Execution Information,* S&P Global, *available at https://vrs.vista-one-solutions.com/sec605rule.aspx* (last visited Jan. 30, 2024, 4:22 p.m.).

[1274] In May 2023, FINRA requested comment on whether to require its members to provide Rule 605 reports to FINRA for centralized publication. *See* FINRA Regulatory Notice 23–10 (May 31, 2023) (''Regulatory Notice''). FINRA stated in the Regulatory Notice that the proposed requirement to provide Rule 605 reports to FINRA would supplement, not replace, firm's current obligations under Rule 605. *See* Regulatory Notice at 3. Comments received on FINRA Regulatory Notice 23–10 are *available at https://www.finra.org/rules-guidance/notices/23-10#comments.*

[1275] *See supra* section IX.C.2 for further discussion.

[1276] The Proposing Release, which used information from broker-dealers' FOCUS Report Form X–17A–5 Schedule II as of Q2 2022, found that there were 3,498 registered broker-dealers. *See* Proposing Release, 88 FR 3786 at 3858 (Jan. 20, 2023).

portion of these broker-dealers focus their business on individual and/or institutional investors in the market for NMS stocks.[1277] These include both carrying broker-dealers, who maintain custody of customer funds and securities, and introducing broker-dealers, who accept customer orders and introduce their customers to a carrying broker-dealer that will hold the customers' securities and cash.[1278] The Commission estimates that there are approximately 153 broker-dealers that carry at least one customer trading in NMS stocks,[1279] and 1,092 broker-dealers that introduce at least one customer trading in NMS stocks.[1280]

The high level of fragmentation of NMS stock trading[1281] means that broker-dealers have a variety of choices for order routing and execution, and the venue that a broker-dealer chooses may have a tangible effect on the execution quality of an order. A broker-dealer has a legal duty to seek best execution of customer orders. The duty of best execution predates the Federal securities laws and is derived from an implied representation that a broker-dealer makes to its customers.[1282] The duty is established from ''common law agency obligations of undivided loyalty and reasonable care that an agent owes to [its] principal.''[1283] This obligation requires that a ''broker-dealer seek to obtain for its customer orders the most favorable terms reasonably available under the circumstances.''[1284]

The Commission understands that the structure of the market for brokerage services can broadly be separated into two distinct markets—brokerage services for individual investors on the one hand, and brokerage services for institutional investors on the other—that differ somewhat in terms of their market structure.

(a) Brokerage Services for Individual Investors

As of the end of 2022, there were approximately 1,006 registered broker-dealers that originated orders on behalf of individual investors in the market for NMS stocks.[1285] Unlike institutional investors, individual investors generally use a single broker to handle their orders. Retail brokers can broadly be divided into ''discount'' brokers and ''full-service'' brokers.[1286] Competition among discount brokers for the business of individual investors in particular has recently resulted in many new entrants and a decline in commissions to zero or near zero.[1287] Instead of commissions on certain transactions, these discount brokers earn revenue through other means, including, among other products and services, interest on margin accounts and from lending securities, as well as broker-wholesaler arrangements involving PFOF paid by the wholesaler to the retail broker. Discount broker-dealers can distinguish themselves by the accessibility and functionality of their trading platform, which can be geared towards less experienced or more sophisticated investors, and by providing more extensive customer service as well as tools for research and education on financial markets.

Investors may incur switching costs when changing broker-dealers, such as the cost of withdrawing or transferring funds and potential administrative fees. Switching broker-dealers could also involve time delays resulting in lost investment opportunities or revenues and other opportunity costs.[1288] Furthermore, some customers that rely on broker-dealers' non-execution-related services, such as providing recommendations, holding customers' funds and securities and/or providing analyst research, may find it more costly to switch broker-dealers, as these services would be more difficult to transfer across broker-dealers. However, the Commission understands that some broker-dealers, including some that cater to individual investors, will compensate new customers for transfer fees that their outgoing broker-dealer may charge them, which will result in lower (or even zero) switching costs.[1289]

(b) Brokerage Services for Institutional Investors

As of the end of 2022, there were approximately 837 registered broker-dealers that originated institutional orders in the market for NMS stocks.[1290]

[1277] Some broker-dealers service only the accounts of other brokers, which are excluded from the definition of customers. *See supra* note 89 for a definition of ''customer.''

[1278] *See supra* note 98 for a description of introducing and carrying broker-dealers. Some firms operate a hybrid introducing/carrying broker-dealer by introducing on a fully disclosed basis to a carrying broker-dealer those customers that trade securities for which the broker-dealer is not prepared to provide a full range of services. *See, e.g.,* Securities Exchange Act Release No. 70073 (Aug. 21, 2013), 78 FR 51910 at 51911, 51949, and 51968 (Aug. 21, 2013).

[1279] This number is based on the number of broker-dealers that report carrying at least one customer on their 2022 FOCUS Schedule I reports. The Proposing Release found the same number using 2021 FOCUS Schedule I reports. *See* Proposing Release, 88 FR 3786 at 3858 (Jan. 20, 2023).

[1280] This number is based on estimates using broker-dealers FDIDs identified in CAT data for NMS stocks during the 2022 calendar year. *See infra* note 1743 for a discussion of the data and methodology for identifying introducing broker-dealers. The Proposing Release, using CAT data for the 2021 calendar year, found that 1,110 broker-dealers introduced at least one customer trading in NMS stocks and options. *See* Proposing Release, 88 FR 3786 at 3858 (Jan. 20, 2023).

[1281] *See infra* section IX.C.4.(b)(1) for a breakdown of trading in NMS stocks across various types of trading venues.

[1282] *See, e.g., Newton* v. *Merrill, Lynch, Pierce, Fenner & Smith, Inc.,* 135 F.3d 266, 270 (3d Cir.), *cert. denied,* 525 U.S. 811 (1998).

[1283] *See id.*

[1284] *See id.; see also* Securities Exchange Act Release No. 37619A (Sept. 6, 1996), 61 FR 48290 (Sept. 12, 1996) (''Order Execution Obligations Adopting Release''). A Report of the Special Study of Securities Markets stated that ''[t]he integrity of the industry can be maintained only if the fundamental principle that a customer should at all times get the best available price which can reasonably be obtained for him is followed.'' SEC Report of the Special Study of Securities Markets, H.R. Doc. No. 95, 88th Cong., 1st Sess. Pt. II, 624 (1963) (''Special Study'').

[1285] This number is estimated using the CAT data described *infra* in note 1743. Individual investor accounts are identified in CAT as accounts belonging to the ''Individual Customer'' account type, defined as accounts that do not meet the definition of ''institution'' in FINRA Rule 4512(c) and are also not proprietary accounts. *See supra* note 1144 for more information about account types in CAT. A similar analysis in the Proposing Release found that there were 1,037 registered broker-dealers that originated individual customer account orders in the market for NMS stocks at the end of 2021. *See* Proposing Release, 88 FR 3786 at 3859 (Jan. 20, 2023).

[1286] There is not necessarily a precise delineation between full-service and discount brokers. Discount brokers generally provide execution-only services, typically at a reduced or zero commission rate. Full-service brokers (as they are commonly called) typically charge commissions in exchange for a package of services, including execution, incidental investment advice, and custody. *See, e.g.,* Interpretive Rule Under the Advisers Act Affecting Broker-Dealers, Advisers Act Release No. 2652 (Sept. 24, 2007), 72 FR 55126 at 55127, n.2, 55129, n.20 (Sept. 28, 2007).

[1287] *See, e.g.,* Samuel Adams & Connor Kasten, *Retail Order Execution Quality Under Zero Commissions* (working paper Jan. 7, 2021), *available at https://ssrn.com/abstract=3779474* (retrieved from SSRN Elsevier database), describing how ''on October 1st, 2019, Charles Schwab announced that they would cut commissions from $4.95 per trade to zero on all retail trades starting on October 7th. Within hours, TD Ameritrade followed by announcing they would cut commissions to zero from $6.95 beginning on October 3rd. By January 3rd, Vanguard, Fidelity, and E*TRADE had joined the trend in offering free equity trades for retail investors.''

[1288] *See, e.g., Understanding the Brokerage Account Transfer Process,* FINRA, *available at https://www.finra.org/investors/learn-to-invest/brokerage-accounts/understanding-brokerage-account-transfer-process* (last visited Jan. 30, 2024, 4:30 p.m.).

[1289] *See, e.g.,* Chad Morris, *ACAT Fee: Account Transfer Fee in 2024,* Brokerage-Review.com, *available at https://www.brokerage-review.com/discountbroker/acat-account-transfer-fees.aspx* (last updated Nov. 16, 2023) (providing a list of fees for different brokers).

[1290] This number is estimated using the CAT data described in *infra* note 1743. Institutional investor accounts are identified in CAT as accounts belonging to the ''Institutional Customer'' account type, defined as accounts that meet the definition in FINRA Rule 4512(c). *See supra* note 1144 for more information about account types in CAT. A similar analysis in the Proposing Release found that there were 909 registered broker-dealers that

One feature that distinguishes the market for institutional brokerage services is that a significant portion of institutional investor orders are generally ''not held'' orders.[1291] A broker-dealer has time and price discretion in executing a not held order, and institutional investors in particular rely on such discretion for various reasons including minimizing price impact.[1292] Due to the large size of institutional trading interests, broker-dealers will often split orders when handling their orders, often through the use of SORs. Specifically, a broker-dealer or its SOR will split up a ''parent'' order into multiple ''child'' orders, with the goal of executing the child orders in a way that achieves the best execution for the parent order.[1293] For example, a broker-dealer might not execute a child order at the best price, if doing so could result in a larger price impact and increases the overall cost of working a parent order. For this reason, most institutional parent orders are handled by broker-dealers on a not held basis, which would exclude these orders from Rule 605 execution quality disclosure requirements.[1294] However, since 2018, broker-dealers are required by Rule 606(b)(3) to provide individualized reports of execution quality of not held orders upon request.[1295]

The Commission understands that some investors, particularly some institutional investors, are likely to use multiple broker-dealers,[1296] which could lead to lower switching costs. For example, a customer that is unhappy with one broker-dealer could use one of its other broker-dealers to handle those orders, providing that this does not raise other costs.

(2) Competition Among Broker-Dealers on the Basis of Execution Quality

Broker-dealers compete with one another along a variety of dimensions,[1297] including the execution quality that they offer, and make their execution quality known in a variety of ways. For example, at least one broker-dealer published execution quality reports using the FIF template,[1298] and furthermore some broker-dealers disclose their own execution quality metrics on their websites.[1299] Broker-dealers may seek to improve their competitive position on the basis of execution quality by, for example, investing in the speed and quality of their routing technology. Broker-dealers may also compete on the basis of execution quality by reevaluating their routing strategies to increase the extent to which they route orders to the market centers offering better execution quality.

When making routing decisions, some broker-dealers may face conflicts of interest that arise when their interests are not aligned with their customers' interest in receiving better execution quality.[1300] These conflicts of interest could result, for example, from broker-dealer affiliations with market centers. Some broker-dealers operate or are otherwise affiliated with ATSs, which may present a possible conflict of interest relative to their customers' interests if these broker-dealers give preference to routing orders to their own ATSs, where they typically pay lower transaction fees, even if their customer would have received better execution quality if the order were routed to another trading venue. One academic study found that certain broker-dealers that route more orders to their affiliated ATSs are associated with lower execution quality.[1301] Similarly, the presence of liquidity fees and rebates at some market centers may incentivize broker-dealers to make 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 customer.[1302] For example, a recent research paper analyzed the relationship between maker-taker fee schedules and order routing, and found a negative relation between take fees and limit order execution quality.[1303] Another potential conflict of interest, particularly with regard to individual investor order flow, includes the receipt of PFOF, which may result in broker-dealers routing orders to wholesalers as a result of the terms of the PFOF arrangements.[1304]

If information asymmetries, such as those resulting from insufficient public information about broker-dealer execution quality,[1305] prevent investors from observing differences in execution quality across broker-dealers, this limits the extent to which broker-dealers need to compete on the basis of execution quality.

(b) Trading Services for NMS Stocks

(1) Current Structure of the Market for Trading Services

originated institutional customer account orders in the market for NMS stocks at the end of 2021. *See* Proposing Release, 88 FR 3786 at 3859 (Jan. 20, 2023).

[1291] *See supra* note 1002 discussing an analysis showing that institutional investors are more likely than individual investors to use not held orders.

[1292] *See* 2018 Rule 606 Amendments Release, 83 FR 58338 at 58343 (Nov. 19, 2018). Meanwhile, a broker-dealer must attempt to execute a held order immediately, which typically better suits individual investors who seek immediate executions and rely less on broker-dealer order handling discretion.

[1293] *See* Tyler Beason & Sunil Wahal, *The Anatomy of Trading Algorithms* (working paper Jan. 21, 2021), *available at https://ssrn.com/abstract=3497001* (retrieved from SSRN Elsevier database) (''Beason & Wahal'').

[1294] Some child orders may be held orders and thus will be required to be included in Rule 605 reports. *See supra* note 4 (discussing held and not held orders).

[1295] *See supra* note 1003 and accompanying text discussing broker-dealer requirements under Rule 606(b)(3) to provide individualized reports of execution quality upon request for not held orders.

[1296] For example, one academic paper finds that institutional investors tend to break up larger orders and spread them out across multiple broker-dealers, as a strategy to avoid information leakage. *See, e.g.,* Munhee Han & Sanghyun (Hugh) Kim, *Splitting and Shuffling: Institutional Trading Motives and Order Submissions Across Brokers* (working paper Sept. 30, 2020), *available at https://ssrn.com/abstract=3429452* (retrieved from SSRN Elsevier database).

[1297] For example, broker-dealers may compete by charging lower commissions for trading, or by offering a wider range of services or functionalities, such as trading in additional asset classes such as options.

[1298] *See supra* note 973.

[1299] *See id.* for examples.

[1300] *See supra* section IX.C.3.(a)(1).

[1301] *See* Amber Anand et al., *Institutional Order Handling and Broker-Affiliated Trading Venues,* 34 Rev. Fin. Studies 3364 (2021).

[1302] *See, e.g.,* Robert H. Battalio et al., *Can Brokers Have It All? On the Relation Between Make-Take Fees and Limit Order Execution Quality,* 71 J. Fin. 2193 (2016).

[1303] *See id.* The authors ''document a strong negative relation between take fees and several measures of limit order execution quality. Based on this evidence, [they] conclude that the decision of some national brokerages to route all nonmarketable limit orders to a single exchange paying the highest rebate is not consistent with the broker's responsibility to obtain best execution for customers.''

[1304] The study by Schwarz et al. (2023), supra note 1064, does not find a relationship between the amount of PFOF a retail broker receives and the amount of price improvement its customers' orders receive. However, the authors stated 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. 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. See supra note 1064.

[1305] *See supra* section IX.C.3.(a)(1) discussing broker-dealers' execution quality reporting requirements prior to these amendments to Rule 605.

Trading services for NMS stocks are highly fragmented among different types of market centers.[1306] Table 6 [1307] shows that in Q1 of 2023, NMS stocks were traded on 16 national securities exchanges and off-exchange at 33 NMS Stock ATSs and at 228 other FINRA members, including 6 wholesalers that internalize the majority of individual investor marketable orders.[1308] During Q1 of 2023, an average of over 11.7 billion shares ($522 billion notional) were traded daily in NMS stocks.[1309] National securities exchanges executed approximately 56% of total share volume in NMS stocks (59% of total notional volume), while off-exchange market centers executed approximately 44% of total share volume (41% of total notional volume).[1310] The majority of off-exchange volume is executed by wholesalers, who execute over one quarter of total share volume (26.9%) and about 61% of off-exchange volume. Some OTC market makers, such as wholesalers, operate SDPs through which they execute institutional orders in NMS stocks against their own inventory.[1311] SDPs accounted for approximately 4% of total trading volume in Q1 2023.[1312] As of June 2023, the Commission estimates that there are currently 228 market centers to which Rule 605 applies.[1313]

Table 6: NMS Stock Traded Share Volume Percentage by Market Center Type

Market Center Type	Venue Count	Share Volume (% of Total Volume)	Off-Exchange Share Volume (% of Total Off-Exchange)
NMS Stock ATSs	33	10.7%	24.2%
National Securities Exchanges	16	55.9%	-
Wholesalers	6	26.9%	60.9%
Other FINRA Members	222	6.6%	15.0%

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 2023, including the number of venues in each market center category. Exchange share volume and total market volume are based on CBOE Market Volume Data on monthly share volume executed on each exchange available at: https://cboe.com/us/equities/market_statistics/historical_market_volume/. NMS Stock ATS, wholesaler and FINRA member share volume are based on monthly data from FINRA OTC (Non-ATS) Transparency Data Monthly Statistics, available at: https://otctransparency.finra.org/otctransparency/OtcData; and FINRA ATS Transparency Data Monthly Statistics, available at: https://otctransparency.finra.org/otctransparency/AtsBlocksDownload. This analysis uses data from prior to the implementation of the MDI Rules and specific numbers reported may be different following the implementation of the MDI Rules. See supra note 1310 and section IX.C.1.c)(2).

Market centers' primary customers are the broker-dealers that route their own orders or their customers' orders for execution at the trading venue, and market centers compete with each other for their members' customers' flow on a number of dimensions, including execution quality. Broker-dealers may face switching costs from changing the primary trading venues to which they route orders. For example, the extent to which broker-dealers may have arrangements to route orders to specific market centers could hamper their ability to switch trading venues.[1314] Incentives related to the common practice across national securities exchanges of setting fee and rebate schedules where specific tiers are determined by execution volume [1315]

[1306] Some academic studies attribute the highly fragmented nature of this market to implementation of Regulation NMS. *See, e.g.,* Maureen O'Hara & Mao Ye, *Is Market Fragmentation Harming Market Quality?,* 100 J. Fin. Econ. 459 (2011); Amy Kwan et al., *Trading Rules, Competition for Order Flow and Market Fragmentation,* 115 J. Fin. Econ. 330 (2015).

[1307] The data used in this analysis have been updated from the Proposing Release for a more recent time period. *See* Proposing Release, 88 FR 3786 at 3861 (tbl. 7) (Jan. 20, 2023), which presents the same statistics for Q1 2022. They are comparable to those for Q1 2023. Therefore, changes to the MIDAS dataset did not affect the Commission's conclusions from this analysis.

[1308] *See* Concept Release on Equity Market Structure, 75 FR 3594 at 3598–3600 (Jan. 21, 2010) (for a discussion of the types of trading centers); *see also Form ATS–N Filings and Information* (Modified Jan. 18, 2024), *available at https://www.sec.gov/divisions/marketreg/form-ats-n-filings.htm.* These wholesalers were determined based on marketable order routing information from retail broker Rule 606(a)(1) reports.

[1309] Average daily share and notional trading volume in NMS stocks are based on CBOE Market Volume Data on monthly share volume executed on each exchange *available at: https://cboe.com/us/equities/market_statistics/historical_market_volume/.*

[1310] This analysis uses data from prior to the implementation of the MDI Rules. The implementation of the MDI Rules may result in a change in the flow of orders across trading venues, which may result in numbers that are different from those reported here. However, the Commission is uncertain of the magnitude of these effects. *See supra* section IX.C.1.c)(2) for further discussion.

[1311] *See* Rosenblatt Securities, *US Equity Trading Venue Guide* (2023). Wholesalers and OTC market makers can execute orders themselves or route orders to be executed on other venues. An SDP always acts as the counterparty to any trade that occurs on the SDP. *See, e.g., Where Do Stocks Trade?,* FINRA (Dec. 3, 2021), *available at https://www.finra.org/investors/insights/where-do-stocks-trade.*

[1312] *See* Rosenblatt Securities, *US Equity Trading Venue Guide* (2023).

[1313] *See supra* section VIII.C for a discussion of this estimate. Some market centers may not be required to prepare Rule 605 reports, for example, if they do not handle any covered orders.

[1314] In addition, one commenter stated that switching costs for broker-dealers ''could be for the time and cost of monitoring, limits imposed on maximum or minimum market share, technology limitations, and so forth.'' Huang et al. Letter at 7.

[1315] Some national securities exchanges typically currently use volume calculated on a monthly basis to determine the applicable threshold or tier rate. *See, e.g.,* fee schedules of NASDAQ PSX (Adopted Feb. 3, 2020), *available at https://listingcenter.nasdaq.com/rulebook/phlx/rules/Phlx%20*

may also make it difficult for broker-dealers to transfer order flow between market centers,[1316] particularly intra-month as exchange volume-based transaction pricing is assessed on a monthly basis. Volume-based tiering gives broker-dealers an incentive to concentrate orders on a given exchange, not because that exchange may offer the best execution quality but because doing so can allow a broker-dealer to execute sufficient volume on the exchange to qualify for a better tier and receive a lower fee or higher rebate. In addition, for national securities exchanges, upfront connectivity fees associated with establishing a connection to a new exchange could also discourage switching.

While national securities exchanges cater to a broader spectrum of investors, ATSs and OTC market makers, including wholesalers, tend to focus more on providing trading services either for institutional or for individual investor order flow. For example, an analysis of retail brokers' routing practices showed that a group of six wholesalers handled more than 87% of the customer orders of retail brokers in Q1 2022.[1317] Meanwhile, SDPs are mainly used for the execution of institutional orders, to potentially reduce the order's price impact and avoid triggering significant reactions by other market participants.[1318]

(2) Competition Between Trading Venues on the Basis of Execution Quality

Trading venues compete with one another on the basis of the execution quality that they offer, as well as on the basis of other potential factors.[1319] As discussed above, Rule 605 reports have been a useful proxy that investors and their broker-dealers can use to assess and compare the execution quality that they can expect to receive across market centers,[1320] and there is evidence that broker-dealers factor in information about the execution quality of market centers from Rule 605 reports when making their order routing decisions. One academic study attributes a significant decline in effective and quoted spreads following the implementation of Rule 605 to an increase in competition among market centers, which improved the execution quality that they offered in order to attract more order flow.[1321] Market centers may seek to improve their competitive position on the basis of execution quality by, for example, investing in the speed and quality of their execution technology.

As discussed above, if information asymmetries, such as those resulting from insufficient public information about broker-dealer execution quality, prevent investors from observing differences in execution quality across broker-dealers, this limits the extent to which broker-dealers need to compete on the basis of execution quality.[1322] Market centers have less of an incentive to compete and innovate on execution quality to the extent that broker-dealers route orders for reasons other than execution quality. Market centers also have less of an incentive to compete on the basis of execution quality to the extent that broker-dealers and other market participants are less able to use Rule 605 reports to compare execution quality across market centers, for example, as a result of erosions to the information content of Rule 605 statistics due to changes in market conditions,[1323] or to the extent that Rule 605 does not include some relevant order sizes or types.[1324]

D. Economic Effects

The amendments expanding and modifying the reporting requirements under Rule 605 will result in numerous beneficial economic effects. These economic effects will mainly derive from improvements in the transparency of execution quality of broker-dealers and market centers, which will promote competition among these reporting entities on the basis of execution quality. These amendments to Rule 605 will also result in initial and ongoing compliance costs to reporting entities.

This section measures the economic effects of these amendments to Rule 605 relative to a regulatory baseline that includes the implementation of the MDI Rules [1325] and reflects the Commission's assessment of the anticipated economic effects, including potentially countervailing or confounding economic effects from the MDI Rules.[1326] However, given that the MDI Rules have not yet been implemented, they have not affected market practice and therefore data required for a quantitative analysis of the economic effects that includes the effects of the MDI Rules is not available. It is possible that the economic effects relative to the baseline can 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

These amendments to Rule 605 will promote increased transparency of order execution quality, particularly for larger broker-dealers who were not required to disclose execution quality information under preexisting Rule 605, but also for all reporting entities, whose execution quality information will be more relevant and easier to access because of improvements to existing Rule 605 disclosure requirements.

This increased transparency, together with increased competition resulting from this transparency, will result in improvements in execution quality, for several reasons. First, investors and their broker-dealers will be able to make

Equity%207 (as of July 2022) (calculating fees based on ''average daily volume during the month''); and *Cboe* EDGA, *EDGA Equities Fee Schedules (Effective Jan. 2, 2024), available at https://www.cboe.com/us/equities/membership/fee_schedule/edga/* (as of Apr. 1, 2022) (calculating fees based on ''average daily volume'' and ''daily volume'' on a monthly basis).

[1316] The Commission recently proposed to prohibit national securities exchanges from offering volume-based transaction pricing in connection with the execution of agency-related orders in certain stocks. *See* Securities Exchange Act Release No. 98766, 88 FR 76282 (Nov. 6, 2023) (Volume-Based Exchange Transaction Pricing for NMS Stocks).

[1317] *See* Proposing Release, 88 FR 3786 at 3861, n.772 (Jan. 20, 2023) and accompanying text.

[1318] *See, e.g.,* Yashar H. Barardehi, et al., *Internalized Retail Order Imbalances and Institutional Liquidity Demand* (working paper revised Jan. 2, 2023), *available at https://ssrn.com/abstract=3966059* (retrieved from SSRN Elsevier database).

[1319] For example, national securities exchanges may adjust fees and rebates to incentivize broker-dealers to route more order flow to them. The use of liquidity rebates has also allowed national securities exchanges to compete with each other and with off-exchange market centers for order flow. Specifically, to the extent that the liquidity rebates facilitate more competitive quotes by liquidity providers (which may or may not occur for stocks that are neither tick-constrained nor thinly traded, but rather are priced at a level where a rebate of approximately $0.0030 could influence a displayed quote), these rebates can make it more expensive to offer price improvement over the displayed NBBO. *See* Transaction Fee Pilot for NMS Stocks, 84 FR 5202 at 5255 (Feb. 20, 2019).

[1320] *See supra* section IX.C.2.

[1321] *See* Zhao & Chung, *supra* note 16.

[1322] *See supra* section IX.C.2.a).

[1323] For example, market centers may be less incentivized to compete on the basis of execution speed to the extent that, as a result of rapid increases in the speed of trading, market participants are less able to use time-to-execution measures from Rule 605 reports to compare across market centers. *See supra* section IX.C.3.c)(4) for further discussion.

[1324] For example, market centers may be less likely to compete on the basis of execution quality for orders of less than 100 shares, since these orders were previously not required to be included in Rule 605 reports. *See supra* section IX.C.3.b)(1)(a) for further discussion.

[1325] *See supra* section IX.C.1.(c)(2).

[1326] *See supra* section IX.C.1.(c)(2) for a discussion of the Commission's anticipated economic effects of the MDI Rules as stated in the MDI Adopting Release.

better informed decisions about where to route their orders to achieve better quality execution. Second, these amendments are expected to increase the extent to which broker-dealers compete on the basis of execution quality in order to attract and retain customers, as well as the extent to which market centers must compete on the basis of execution quality to attract and retain order flow.[1327] The Commission expects that this increase in competition will lead to improvements in execution quality as a result of improvements to broker-dealer routing practices and improvements to market centers' execution practices. These economic mechanisms will lead to improvements to overall levels of execution quality, as well as improvements to particular components of execution quality, such as execution prices, execution speeds, size improvement, and fill rates.[1328]

The following sections will discuss the expected benefits of these amendments for transparency, competition, and execution quality, including those expected from expanding the scope of reporting entities, modernizing the required information, and improving accessibility. The Commission acknowledges that there may be limitations to these benefits and discusses these below, though none will significantly reduce the benefits of the amended rule.

(a) Expanding the Scope of Reporting Entities

(1) Expanding Requirements for Larger Broker-Dealers

As a primary effect, the adopted amendment expanding the scope of Rule 605 reporting entities to include larger broker-dealers [1329] will increase transparency into the differences in execution quality achieved by these broker-dealers when they route customer orders to execution venues.[1330] This increase in transparency will increase the extent to which both broker-dealers and market centers compete on the basis of execution quality, which will result in improvements in execution quality.

First, as a result of the adopted amendment, customers of larger broker dealers, along with other market participants, will no longer need to make inferences about their broker-dealers' execution quality based on routing information from Rule 606 data combined with market centers' execution quality information from Rule 605 data, but will instead have access to direct information about the aggregate execution quality achieved by their broker-dealers.[1331] Customers will then be able to use this information to compare across broker-dealers and select those broker-dealers offering better execution quality. Furthermore, combined with information about broker-dealers' payment relationships with execution venues in quarterly reports prepared pursuant to Rule 606(a)(1), information about the aggregate execution quality obtained by larger broker-dealers that are in the business of routing customer orders will give market participants and other interested parties access to key information that will facilitate their ability to evaluate how these payment relationships may affect execution quality. The flow of customers to the broker-dealers that provide better execution quality will improve the execution quality of customers that route their orders to those broker-dealers.

This increase in market participants' ability to compare execution quality across broker-dealers will increase the extent to which broker-dealers compete on the basis of execution quality when making their order routing decisions.[1332] Broker-dealers will increase their competitive position with respect to execution quality by investing in or otherwise adjusting their routing practices to increase the extent to which they route orders to the market centers offering better execution quality and limit the extent to which they route orders for other potential reasons.[1333] For example, broker-dealers that face conflicts of interest that arise when their interests are not aligned with their customers' interests may be better incentivized to manage these conflicts as a result of an increase in their need to compete on the basis of execution quality.[1334] Specifically, to the extent that broker-dealers lose customer order flow as a result of their offering lower execution quality, these broker-dealers are expected to base more of their routing decisions on the execution quality of market centers, rather than on which market centers are more likely to benefit them (*e.g.,* because of higher PFOF or lower access fees). This is expected to promote the flow of orders to market centers that provide better execution quality. The flow of orders to those market centers offering better

[1327] Several commenters stated that enhancing Rule 605 reporting requirements would generally lead to increased competition on the basis of execution quality. *See, e.g.,* Better Markets Letter at 1–2; NASAA Letter at 5; Fidelity Letter at 7; Healthy Markets Letter at 5; *see also infra* note 1330 and corresponding text for additional statements from commenters on the impact of the expansion of Rule 605 reporting requirements to include larger broker-dealers on competition among broker-dealers.

[1328] As discussed in the Proposing Release, the magnitude of improvements in order execution quality that individual and institutional investors experience under the amended rule may be lower after the MDI Rules are implemented, relative to the pre-implementation baseline. The availability of faster consolidated market data with more data on odd-lot information and depth of book information from competing consolidators could result in improved execution quality for customers' orders, if their broker-dealers currently utilize SIP data and switch to consuming the expanded consolidated market data. However, there is uncertainty with respect to how the benefits of the amended rule will be changed. Specifically, there is uncertainty regarding the magnitude of price improvement that wholesalers will provide to retail investors when the MDI Rules are implemented, as well as uncertainty regarding how the NBBO midpoint will change for stocks with prices above $250 when the MDI Rules are implemented. These amendments to Rule 605 will still lead to improvements in individual and institutional investor order execution quality, as well as improvements in price discovery, relative to a baseline in which the MDI Rules are implemented. *See* Proposing Release, 88 FR 3786 at 3872 (Jan. 20, 2023).

[1329] *See supra* section II.A for further discussion of the amendments related to the expansion of Rule 605 reporting entities to include larger broker-dealers.

[1330] These effects will principally accrue to larger broker-dealers, who will be required to prepare Rule 605 reports, but may spill over to effect smaller broker-dealers as well. *See* discussion in *infra* section IX.D.1.d)(1). Several commenters stated that expanding the scope of Rule 605 reporting requirements to include larger broker-dealers will benefit transparency. *See, e.g.,* Nasdaq Letter at 43. One commenter, while generally agreeing that expanding the scope to broker-dealers will improve transparency, described the importance of ''enabl[ing] retail brokers to provide background information contextualizing how their obligations are different from those of wholesalers or other market centers that currently report under Rule 605.'' Virtu Letter II at 3–4. As stated in the Proposing Release and repeated *infra* this section, while differences in certain statistics for broker-dealers as compared to market centers may be more reflective of differences in business models rather than effectiveness in achieving execution quality, the Commission understands that these differences are well-known and are taken into account by market participants when evaluating execution quality statistics. *See* Proposing Release, 88 FR 3786 at 3800 (Jan. 20, 2023).

[1331] This effect will be enhanced by the requirement that broker-dealers publish Rule 605 reports for their broker-dealer activities separately from activities related to the market center(s) that they may operate, which will allow investors to access execution quality information that is exclusively related to the firm's broker-dealer operations. *See supra* section II.A.2.b) for further discussion.

[1332] Several commenters stated that expanding the scope of Rule 605 reporting requirements to include larger broker-dealers would increase competition among broker-dealers. *See, e.g.,* Fidelity Letter at 7–8; Rule 605 Citadel Letter at 4; CCMR Letter at 14–15; NASAA Letter at 6.

[1333] The magnitude of the improvements in order routing practices under the final rule may be lower when the MDI Rules are implemented. *See supra* note 1328.

[1334] *See supra* section IX.C.3.(a)(1) for a discussion of potential conflicts of interest in broker-dealer routing decisions.

execution quality may also result in further improvements in execution quality for those customers, as liquidity externalities and the consolidation of orders onto high-quality market centers will increase the liquidity of these venues.[1335]

These amendments will require larger broker-dealers to report the same execution quality information as market centers, including information about execution prices, execution speeds, and fill rates,[1336] as well as, under these amendments, information about size improvement.[1337] By requiring larger brokers-dealers to report stock-by-stock order execution information in a uniform manner, these amendments will make it possible for market participants and other interested parties to make their own determinations about how to group stocks or orders when comparing execution quality across broker-dealers. By allowing market participants and other interested parties to conduct their own analysis based on alternative categorizations of the underlying data, requiring larger broker-dealers to produce more detailed execution quality data will also help ameliorate potential concerns about overly general statistics as well as the specific categorization of orders and selection of metrics in the newly required summary reports.

The Commission is mindful that Rule 605's execution quality reports contain a large volume of statistical data, and, as a result, it may be difficult for individual investors to review and digest the reports. Should certain market participants not have the means to directly analyze the detailed statistics,[1338] independent analysts, consultants, broker-dealers, the financial press, and market centers likely will continue to respond to the needs of investors by analyzing the disclosures and producing more digestible information using the data.[1339] Furthermore, requiring larger broker-dealers, along with market centers, to prepare summary reports with aggregated execution quality information,[1340] in addition to the more detailed Rule 605 reports, will furnish more direct access to useful data for some market participants.

The adopted amendment requiring larger broker-dealers to report both the number of shares executed at the receiving broker-dealer and the number of shares executed at any other venue [1341] will help ensure that Rule 605 reports capture the execution quality of all orders that larger broker-dealers receive for execution as part of their customer-facing broker-dealer function. The majority of executions resulting from a firm's broker-dealer operations will likely be categorized as away-executed shares in the Rule 605 reports associated with its broker-dealer operations.[1342] While these shares will not be categorized as being directly executed by the broker-dealer, it is likely that market participants understand that execution quality can depend significantly on the broker-dealers' order handling and routing practices.

Several commenters did not support expanding the scope of Rule 605 reporting entities to include larger broker-dealers.[1343] One commenter disagreed that the expansion of scope would increase competition among broker-dealers, because ''[d]ifferences in execution quality could be the result of a myriad of factors, including the customers the two different brokers serve and the equities the customers trade.'' [1344] This commenter stated that ''if differences in reported execution quality statistics are reflective of different business models rather than actual differences in execution quality . . . producing Rule 605 statistics (particularly in the summary reports most likely to be used by retail investors) without accounting for different broker-dealer business models could lead investors to make incorrect decisions regarding broker-dealer selection.'' [1345]

First, the Commission agrees that, as a result of different business models, a particular broker-dealer's order flow may be made up of a different mixture of securities, order types, and order sizes, which may impact or constrain that broker-dealer's overall execution quality level.[1346] For example, Figure 15, which uses a sample of CAT data from Q1 2023 [1347] to break down broker-dealer order flow into different order types, shows that broker-dealers indeed handle a variety of order types, including both marketable and non-marketable orders, for both their individual and institutional investor customers.[1348]

[1335] However, liquidity externalities may have adverse effects on the competition among market centers if they result in the exit of some market centers. *See infra* section IX.D.1.(d)(4) for a discussion.

[1336] *See supra* section IX.C.1.(a) for a discussion of the economic significance of the execution quality information currently required by Rule 605 to be disclosed by market centers.

[1337] *See* final 17 CFR 242.605(a)(1)(ii)(R) and (S) and discussion in *supra* section III.B.4.(e).

[1338] *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75419 (Dec. 1, 2000) (stating that most individual investors likely would not obtain and digest the reports themselves); *see also* discussion *infra* section IX.D.1.(b)(3).

[1339] *See, e.g., supra* notes 1076–1077, describing the use of Rule 605 data in academic literature, in comment letters related to Commission and SRO rulemaking, and the financial press. One commenter stated that ''even though a certain percentage of retail investors may not read the Rule 605 reports, they will still benefit indirectly as the enhanced disclosure will . . . facilitate use by third-party researchers and academics, who in turn can extract information from the reports and use it to expose issues and problems with today's order routing and execution practices.'' Better Markets Letter at 9–10.

[1340] *See* final 17 CFR 242.605(a)(2).

[1341] *See* final 17 CFR 242.605(a)(1)(i)(E) and (F). As discussed herein, the Commission is amending the rule to also cover the number of shares executed at the receiving broker or dealer.

[1342] To the extent that a broker-dealer also acts as a market center, any executions that it handles will be required to be published in the Rule 605 report(s) that it files in its capacity as a market center. *See supra* section II.A.2.(b) for further discussion.

[1343] *See, e.g.,* Schwab Letter II at 34–35; Schwab Letter III at 2; and SIFMA Letter II at 30. One commenter did not support expanding the scope of Rule 605 to include larger broker-dealers because it instead supported expanding the reporting requirements under Rule 606 to included broker-dealer execution quality information. *See* Robinhood Letter at 39; *see infra* section IX.E.5.(b) for a discussion of this as a reasonable alternative.

[1344] *See* SIFMA Letter II at 30.

[1345] *See* SIFMA Letter II at 30; *see also* Schwab Letter II at 35, stating that ''[i]f differences in E/Q are a result of different business models employed across firms rather than actual differences in E/Q among comparable business models, providing this information in a way that appears to be—but is not—an apples-to-apples comparison would create investor confusion rather than provide useful information on which to base decisions,'' and Cambridge Letter at 7, stating that requiring larger retail broker-dealers to produce execution quality reports ''is likely to lead to misaligned, misleading comparisons between totally different entities.''

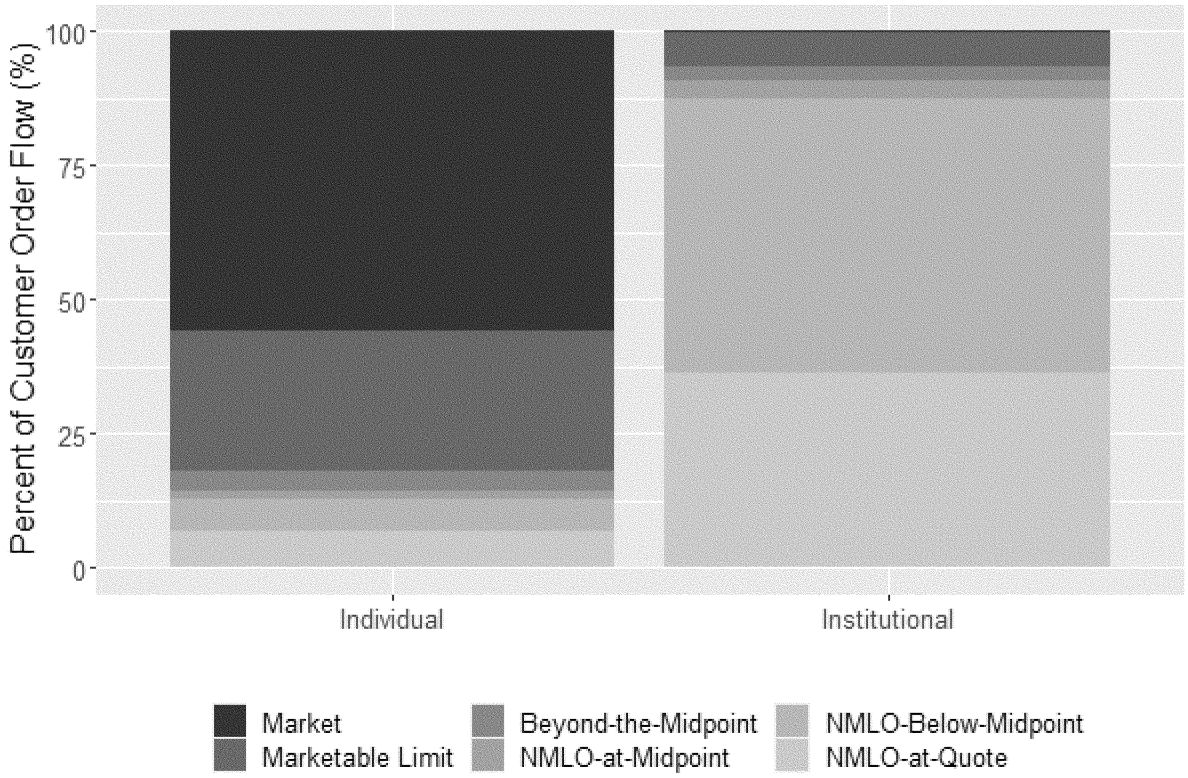
[1346] *See* Proposing Release, 88 FR 3786 at 3831 (Jan. 20, 2023); *see also supra* note 984 for an example of how differences in order flow characteristics may impact inferences about execution quality.

[1347] *See supra* note 1182 for dataset description. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. *See supra* section IX.C.1.(c)(2).

[1348] This CAT data used in this analysis have been updated from the Proposing Release for a longer and more recent time period, as well as to include a larger sample of broker-dealers. The methodology has also been updated to include only those NMLOs that are immediately executable upon receipt (*i.e.,* NMLOs priced at the quote or better). The analysis in the Proposing Release used a week of CAT data from Jan. 2022 to break down orders from 58 retail broker-dealers into different order types and similarly showed that broker-dealers indeed handle a variety of order types, including both marketable and non-marketable orders, for both their individual and institutional investor customers. *See* Proposing Release, 88 FR 3786 at 3863 (fig. 14) (Jan. 20, 2023). The distribution of order flows across order types is somewhat different in the analysis in the Proposing Release, including a much lower rate of market orders, particularly for individual customer accounts. This is likely because of the difference in order flow characteristics between the 58 retail broker-dealers in the Proposing Release sample, and the larger sample of 85 broker-dealers with 100,000 or more customer in the present analysis. These changes did

Continued

Figure 15: Broker-Dealer Order Volume by Order Type, Q1 2023



This figure shows the distribution of customer order flow, in terms of the percentage of the total number of submitted orders, across different order types for both individual and institutional customer accounts, using a sample of CAT data for 400 stocks for Q1 2023. Percentages are calculated as the number of orders originated by given account type and within a given order type category handled by broker-dealers, summed across all stocks and days in the sample, divided by the total number of orders originated by a given account type handled by broker dealers, summed across all stocks and days See supra note 1182 for dataset description and supra note 1200 for definitions of the NMLO categories. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. See supra section IX.C.1.c)(2).

However, under these amendments, larger broker-dealers will be required to categorize the execution quality information required by Rule 605 by individual security, different types of orders, and different order sizes. Larger broker-dealers will also be required to report realized spread, which is a measure of adverse selection.[1349] Giving market participants access to this information in Rule 605 reports will help ensure that they are able to control for these differences in order flow characteristics and make apples-to-apples comparisons when assessing and comparing execution quality information across broker-dealers.[1350] Furthermore, customers that primarily rely on broker-dealers' summary reports will also be able to use information from the summary reports to control for differences in broker-dealer order flow in terms of order sizes, average stock price and realized spreads.[1351] Second, to the extent that customers value and emphasize execution quality when deciding among broker-dealers, a decision to switch broker-dealers based on execution quality information as contained in Rule 605 reports will not be an ''incorrect'' one as stated by a commenter.[1352] Customers will continue to be able to evaluate their broker-dealers across a range of services, including those other than execution quality, such as commissions or user-friendliness,[1353] though they will be better able to factor execution quality into their decisions.[1354]

One commenter stated that ''it is not apparent that [requiring larger brokers to report on order execution quality] would improve retail execution quality, as the retail broker market is highly

not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that broker-dealers indeed handle a variety of order types, including both marketable and non-marketable orders, for both their individual and institutional investor customers.

[1349] *See supra* note 1229 and corresponding text for a discussion of realized spreads as a measure of adverse selection risk.

[1350] That some of the information contained in the summary execution quality report will be useful for controlling for differences across differences in order flow characteristics of broker-dealer was supported by comment. *See, e.g.,* comments in support of including average notional order size and average realized spreads in the summary reports, discussed in notes 1592–1593 *infra.*

[1351] *See supra* section IV.B.1.(b) for a discussion of the statistics that will be required to be reported in Rule 605 summary execution quality reports.

[1352] *See* SIFMA Letter II at 30.

[1353] *See supra* section IX.C.4.(a)(1) for further discussion of the additional services offered by broker-dealers.

[1354] At the same time, the Commission acknowledges that the expected benefits from the amendments to Rule 605, such as increased competition among broker-dealers, may be lessened to the extent that there are dimensions of execution quality not captured by Rule 605 reports which drive order handling decisions. *See infra* section IX.D.1.(d)(5) for a discussion.

competitive.'' [1355] The commenter went on to state that ''to the extent that there are unexploited opportunities to improve execution quality for retail investors, as the Commission has claimed in its release, empowering investors to compare execution quality across retail brokers (and consequently to switch brokers based on this information) could be the most efficient and effective way to address concerns about execution quality.'' Routing decisions affect the execution quality that broker-dealer customers' orders receive, leading to significant variations in execution quality across broker-dealers, and studies have documented a large variation in retail broker-dealer execution quality, even for identical orders.[1356] Another commenter stated that recent academic findings ''emphasize the need for further price execution disclosure at the broker level.'' [1357]

One commenter stated that, absent investor education on how to interpret Rule 605 summary reports, ''investors may misinterpret the data and make suboptimal decisions as a result.'' [1358] The amended rule does not preclude larger broker-dealers from disclosing additional information concerning their order execution practices that they believe would provide useful context concerning the quality of their services on their websites or through other means of communication.[1359] For example, individual broker-dealers can provide their own educational resources directly to their customers and other market participants. The commenter also referenced a statement from the Commission in the Proposing Release that ''differences in certain statistics for broker-dealers as compared to market centers may be more reflective of differences in business models rather than effectiveness in achieving execution quality for covered orders because of differences in order handling practices,'' and disagreed with the Commission that ''differences are well-known and are taken into account by market participants when evaluating execution quality statistics.'' [1360] These statements from the Commission in the Proposing Release were made in specific reference to market participants' use of Rule 605 reports to make a hypothetical comparison between a market center and a broker-dealer, and not to their ability to compare broker-dealers with one another. Notwithstanding the commenter's interpretation of the Commission's statements in the Proposing Release, the Commission agrees with the commenter that differences between broker-dealer business models may not be ex ante well-known to market participants. However, for the reasons described above, market participants will be able to use the information in Rule 605 reports and the Rule 605 summary reports to account for differences in broker-dealer order flow, and broker-dealers are not precluded from separately providing their customers with information that can be used to contextualize the information in the Rule 605 reports.

Meanwhile, it is unlikely that market participants will use information in Rule 605 reports to compare broker-dealers to market centers. Information about the execution quality of these two types of reporting entities is useful to different market participants for fundamentally different purposes. In terms of the principal-agent relationship described in the Market Failure section,[1361] information about execution quality for broker-dealers will be used to address different information asymmetries than information about execution quality for market centers. Broker-dealers' Rule 605 reports will be most likely used by broker-dealers' customers to compare execution quality across broker-dealers to address information asymmetries that exists between broker-dealers and their customers. In contrast, market centers' Rule 605 reports will continue to be more useful for broker-dealers to compare execution quality across market centers to address the information asymmetries that exist between broker-dealers and the market centers to which they route their customers' orders.

(2) Specifying and Expanding Requirements for Market Centers

In addition to expanding the scope of Rule 605 reporting entities to include larger broker-dealers, these amendments promote greater transparency by specifying that broker-dealers post separate Rule 605 reports for their ATSs [1362] and requiring that market centers operating SDPs post separate reports for each market center.[1363] By requiring firms that operate multiple market centers to report separately for each market center, the final rule will prohibit the commingling of multiple reporting entities' information, which, to the extent that it occurred prior to the final rule, may have added noise to or skewed Rule 605 reports. For example, requiring market centers that operate SDPs to report statistics separately for each line of business will increase the transparency of the operating market centers' fill rates, by eliminating downward skew associated with the inclusion of ''pinging'' orders submitted to the SDP.[1364] Reducing the skew of Rule 605 statistics will allow market participants to better assess differences in execution quality across different types of market centers, helping to enhance market centers' incentive to compete on the basis of execution quality to attract orders.

One commenter stated that ''certain Rule 605 metrics,'' such as fill rates, ''may be unduly impacted by differences in SDP business models,'' such as whether they send out indications of interest or solely receive IOCs.[1365] First, as amended, Rule 605 reports will add an IOC order type category,[1366] which will allow market participants to differentiate between SDPs that receive more or fewer IOCs, which should address the commenter's specific concern. More generally, and as stated by another commenter, users of SDPs tend to be sophisticated entities.[1367] As a result, it is likely that users of SDPs are knowledgeable about the differences in various SDP business models and the relationship of those differences to variations in execution quality statistics across SDPs. Lastly, the commenter's statement that there may be systematic differences between some SDP business models also applies to

[1355] *See* Virtu Letter II at 57.

[1356] *See supra* note 1064 and corresponding text for a discussion.

[1357] *See* Huang et al. Letter at 1 (attaching Xing Huang, Philippe Jorion, Jeongmin Lee & Christopher Schwarz, *Who Is Minding the Store? Order Routing and Competition in Retail Trade Execution* (Nov. 19, 2023)).

[1358] *See* SIFMA Letter II at 30.

[1359] *See supra* note 137 and corresponding text for further discussion.

[1360] *See* SIFMA Letter II at 29–30, *citing* the Proposing Release, 88 FR 3786 at 3800 (Jan. 20, 2023); *see also* Schwab Letter at 34, referencing the same statement in the Proposing Release to support its statement that, ''[i]f differences in E/Q are a result of different business models employed across firms rather than actual differences in E/Q among comparable business models, providing this information in a way that appears to be—but is not—an apples-to-apples comparison would create investor confusion rather than provide useful information on which to base decisions.''

[1361] *See supra* section IX.B.

[1362] *See* final 17 CFR 242.605(a)(1).

[1363] *See id.; see also supra* section II.C.

[1364] *See supra* section IX.C.3.a)(2) for a discussion of why the commingling of wholesaler and SDP orders for the purposes of Rule 605 reporting prior to these amendments would have effected a downward skew on the fill rates derived from the wholesalers' Rule 605 reports.

[1365] *See* Rule 605 Citadel Letter at 7.

[1366] *See supra* section III.B.2.(c)(2).

[1367] *See* Virtu Letter II at 12.

systematic differences between SDPs and market centers with other business models, and the relationship between these business models and execution quality is obscured to the extent that the execution quality information from these different execution venues is commingled. Requiring separate reporting for SDPs will provide market participants with transparency regarding the relationship between SDP business models and execution quality.

Another commenter stated that, because ''users of SDPs are all sophisticated entities capable of carrying out their own execution quality measurements and, in fact, do carry out these measurements on their own,'' requiring separate reporting ''imposes an additional cost on SDPs without any clear benefit.'' [1368] As stated in the Market Failure section, even for those market participants that have access to alternative sources of information about the execution quality of their orders, this information is typically highly individualized and nonpublic, and thus cannot be used to evaluate the execution quality of market centers with which the market participants do not do business.[1369] Furthermore, as stated in the Proposing Release, in addition to allowing users of SDPs to separately view the execution quality of SDPs, requiring wholesalers to report their SDP executions separate from their other executions will benefit the non-SDP user customers, the majority of which are individual investors.[1370]

(b) Modifications to Rule 605 Disclosure Requirements

As a result of the amendments expanding and modernizing Rule 605 disclosure requirements, the metrics used for the required Rule 605 disclosures will be more informative about execution quality, which will increase transparency into the differences in execution quality achieved by reporting entities. This increase in informativeness and transparency will enhance the benefits of expanding the scope of reporting entities, including the expansion to larger broker-dealers.[1371] In addition, as a result of the increase in transparency with respect to market center execution quality, broker-dealers will have the opportunity to be better informed when making their routing decisions. The flow of orders to those market centers that provide better execution quality will improve the execution quality of those broker-dealers (and their customers) that route their orders to these higher-quality market centers, and is expected to also increase the extent to which market centers must improve their execution practices in order to better compete with other market centers to attract customer order flow.[1372] Execution quality is expected to improve as a result.

These benefits will stem from modifications aimed at clarifying and expanding the scope of Rule 605 reporting entities, modernizing the information required to be reported under Rule 605 and improving the accessibility of the information contained in Rule 605 reports.

(1) Expanding the Definition of Covered Orders

The amendments expanding the definition of ''covered order'' to include additional order types will increase transparency about the execution quality that reporting entities achieve for these additional order types, including orders submitted with stop prices, non-exempt short sale orders, and orders submitted outside of regular trading hours.

(a) Orders Submitted Pre-Opening/Post-Closing

First, the adopted amendment expanding the definition of ''covered order'' to include NMLOs submitted outside of regular trading hours that become executable during regular trading hours[1373] will lead to a more complete picture of reporting entities' execution characteristics. While an analysis using CAT data shows that pre-open/post-close orders that are executable during regular hours are likely only a small portion of total order flow, these orders represent a relatively higher percentage of order flow associated with individual customer accounts.[1374] Individual investors will be able to make more informed decisions when choosing a broker-dealer, if these orders are included in broker-dealers' execution quality disclosures. Likewise, broker-dealers will be able to make more informed decisions about where to route NMLOs submitted outside of regular trading hours, knowing that these orders are being factored into a market center's overall statistics.

While several commenters supported the inclusion of NMLOs submitted outside of regular trading hours into Rule 605 reports,[1375] one commenter stated that the inclusion of these orders would ''likely skew the statistics''[1376] and ''lead to difficult comparisons between brokers'' because ''the first quote after opening is wide and not representative of the quote when the primary exchange opens.'' [1377] The commenter's specific concern will be addressed by the adopted amendment specifying that orders that are received during regular market hours but execute before the primary listing market has disseminated its first firm, uncrossed quotations will be treated in the same manner as any other order received pre-open or post-close.[1378] More generally, while some NMLOs submitted outside of market hours likely have characteristics that differ from those submitted during regular hours,[1379] these NMLOs make up only a very small percentage of order volume, representing only around 1.3% of total submitted share volume.[1380] Therefore, it is unlikely that the inclusion of these orders along with other order types will significantly skew execution quality statistics.

(b) Orders Submitted With Stop Prices

Second, the adopted amendment removing the exclusion of orders with

[1368] *See* Virtu Letter II at 12–13.

[1369] *See supra* note 1094 and corresponding text.

[1370] *See* Proposing Release, 88 FR 3786 at 3864 (Jan. 20, 2023).

[1371] *See supra* section IX.D.1.a) for a discussion of the benefits of expanding the scope of reporting entities under these amendments.

[1372] The magnitude of the improvements in execution practices may be lower when the MDI Rules are implemented, because the availability of faster consolidated market data with more data on odd-lot information and depth of book information from competing consolidators could result in more informed customer order routing by broker-dealers that switch to consuming the expanded consolidated market data, which could separately increase the flow of orders to trading venues offering better execution quality. *See supra* section IX.C.1.c)(2) for further discussion. However, these amendments are expected to lead to improvements in execution practices over and above the improvements that might result from the implementation of the MDI Rules.

[1373] *See* final 17 CFR 242.600(b)(27); *see also supra* section III.A.1.b).

[1374] *See* analysis described in *supra* section IX.C.3.b(4).

[1375] *See, e.g.,* Nasdaq Letter at 43–44; Virtu Letter II at 5.

[1376] *See* Schwab Letter at 32.

[1377] *See* Schwab Letter II at 7.

[1378] *See* discussion in *supra* section III.A.1.b). Specifically, any order that executes during this intervening time period will be excluded from Rule 605 reports; any NMLO (including an order submitted with a stop price) will not be considered executable until after the first firm, uncrossed quotations in the security are disseminated by the primary listing market; and any determination of whether a limit order received prior to or during that period is a marketable limit order, a beyond-the-midpoint limit order, or an NMLO will not occur until after the first firm, uncrossed quotations in the security are disseminated by the primary listing market.

[1379] For example, an analysis of the sample of CAT data described in note 1182 *supra* showed that pre-open executable NMLOs have somewhat lower fill rates than the full sample of executable NMLOs (0.18% vs. 0.42%).

[1380] *See supra* note 1182 and corresponding text for more information about this analysis.

stop prices from the definition of ''covered order'' [1381] will increase transparency about the execution quality of this type of order.[1382] This will be particularly beneficial, as the handling of stop orders can vary significantly across broker-dealers and across the market centers to which they route, and the execution prices of stop orders are highly sensitive to handling and execution practices.[1383] As broker-dealers will be incentivized to improve their handling of stop orders, they will be able to use information about the execution quality of stop orders achieved by market centers to route stop orders to those market centers with the practices and abilities that allow them to achieve higher execution quality for these orders.[1384]

The amendment to include stop orders within separate order type categories rather than grouping them together with other order types [1385] also will prohibit them from skewing the execution quality of other orders downwards, since stop orders are more likely to execute in adverse market conditions.[1386] In addition, including separate categories for executable market orders submitted with stop prices, executable stop marketable limit orders, and executable stop NMLOs will help market participants distinguish between orders with different execution profiles. For example, the risk of large losses is particularly acute for stop orders that use market orders, which represent the majority of stop orders submitted by individual investors according to Table 3, as the execution price an investor receives for this market order can deviate significantly from the stop price in a fast-moving market where prices change rapidly.[1387] As a result, the execution quality of these orders is highly sensitive to handling and execution practices, such that market participants will benefit from transparency regarding reporting entities' handling of these orders.

One commenter stated that the inclusion of stop orders ''will create increased complexity with little benefit for the individual investor,'' and that therefore ''the Commission should consider excluding stop orders from the report entirely.'' [1388] The Commission disagrees that there will be little benefit for individual investors from the inclusion of stop orders in Rule 605 reports. As shown in Table 3, individual account holders are more likely than institutional account holders to submit stop orders (*i.e.,* 4.91% of individual account holders' market orders are submitted with stop prices vs. 0.25% of those of institutional account holders). Therefore, information about the execution quality of stop orders will be particularly useful for individual investors, who can use this information to identify and direct stop orders to those broker-dealers with the practices and abilities that allow them to achieve higher execution quality for these orders. Such information is especially useful given that stop orders are more likely to execute in adverse market conditions.

(c) Non-Exempt Short Sale Orders

The Commission is adopting its position that non-exempt short sales orders will not be considered special handling orders unless a price test restriction is in effect for the security.[1389] This will lead to a more complete picture of reporting entities' execution characteristics, as short sales make up a large portion of trades and by implication are likely also a significant component of order flow.[1390] An analysis of short volume data found that, between Aug. 2009 and Mar. 2023, short selling was an average of 39.6% of trading volume for non-financial common stocks.[1391] To the extent that the proportion of short selling trade volume is comparable to the proportion of short selling order volume, these data points show that short selling is prevalent in equity markets. Therefore, the inclusion of non-exempt short sale orders will result in reporting entities' execution quality statistics reflecting more relevant orders for individual and institutional investors, who both engage in short selling. While the costs to maintain margin accounts and borrow stocks may prevent some individual investors from participating in the short sale market, one academic working paper found that, between January 2010 and December 2016, 6.36% of all off-exchange short selling [1392] could be attributed to retail traders, and 10.92% of retail trading was made up of short sales.[1393] Meanwhile, evidence suggests

[1381] *See* final 17 CFR 242.600(b)(27) (eliminating the express carve out of orders submitted with stop prices from the definition of ''covered order''); *see also supra* section III.A.2.(b).

[1382] Several commenters generally agreed that the inclusion of information about stop orders in Rule 605 reports will make the data more useful and complete. *See, e.g.,* Nasdaq Letter at 44; Virtu Letter II at 5; and SIFMA AMG Letter at 6.

[1383] *See supra* note 1158 and accompanying text for a discussion of differential treatment of stop orders.

[1384] As discussed in *supra* section IX.C.3.(b)(2), the Commission understands that the handling of stop orders can vary significantly across market centers.

[1385] *See* final 17 CFR 242.600(b)(19) (defining ''categorized by order type'' to include a category for ''*executable* orders submitted with stop prices'') (emphasis added); *see also* discussion in *supra* section III.A.2.(b).

[1386] *See supra* note 1159 and corresponding text for further discussion.

[1387] *See, e.g., SEC Investor Bulletin: Stop, Stop-Limit, and Trailing Stop Orders* (July 13, 2017), *available at https://www.sec.gov/oiea/investor-alerts-bulletins/ib_stoporders.html.* This risk can be attenuated with the use of stop limit orders, which sets a minimum price at which the stop order can be executed. However, the limit price may prevent the stop limit order from executing if the stock price falls below the limit price before the stop limit order can execute.

[1388] *See* Schwab Letter II at 5.

[1389] *See supra* section III.A.3.(b).

[1390] Several commenters supported including short sales in Rule 605 reports. *See, e.g.,* Nasdaq Letter at 43; Virtu Letter II at 5.

[1391] Short volume data are collected from CBOE Group (CBOE BYX Exchange, CBOE BZX Exchange, CBOE EDGA Exchange, CBOE EDGX Exchange), FINRA (FNYX, FNSQ, FNQC), NASDAQ Group (Nasdaq BX, Nasdaq PSX and Nasdaq Stock Market), and NYSE Group (New York Stock Exchange, NYSE Arca, NYSE American, NYSE Chicago, and NYSE National). *See https://www.cboe.com/us/equities/market_statistics/short_sale/* (last visited Apr. 2023) (CBOE data, which became available for purchase at *https://datashop.cboe.com/us-equity-short-volume-and-trades* on June 1, 2023); *https://www.finra.org/finra-data/browse-catalog/short-sale-volume-data* (FINRA data); *https://nasdaqtrader.com/Trader.aspx?id=shortsale* (NASDAQ data); *ftp://ftp.nyxdata.com/* (NYSE data). Common stocks include those with a CRSP share code of 10 or 11. Financial stocks (SIC code 6000–6999) and stocks that do not have an active trading status in CRSP (trade status = A) are excluded. CRSP share codes, SIC codes, trading statuses, and daily trading volumes are derived based on data from CRSP 1925 U.S. Stock Database, Ctr. Rsch. Sec. Prices, U. Chi. Booth Sch. Bus. (2023). The daily level of short selling is calculated for each stock as the daily number of shares sold short divided by the daily trading volume, averaged across stocks, and finally averaged across all days in the sample (Aug. 3, 2009 to Mar. 31, 2023). This number matches that of other studies. For example, Figure F.1 in the Congressional Study on Short Sale Reporting shows that the level of short selling as a percentage of trading volume grew from 2007 to close to 50% by 2013. *See Short Sale Position and Transaction Reporting* (June 5, 2014), *available at https://www.sec.gov/files/short-sale-position-and-transaction-reporting%2C0.pdf.* The Proposing Release stated that short selling was an average of 47.3% of trading volume for non-financial common stocks between Aug. 2009 and Feb. 2021. *See* Proposing Release, 88 FR 3786 at 3806 (Jan. 20, 2023). This is higher than the estimate above partially because, while the analysis in the Proposing Release included in the denominator only trading volume of those trading venues from which the Commission collected short volume data, the analysis above includes in the denominator all trading volume from CRSP in order to provide a more conservative estimate of short selling volume. Regardless of the methodology, both numbers reflect that short sales are a significant percentage of total trading volume.

[1392] One academic paper found that short selling by individual investors made up a much smaller percentage of overall shorting volume on NYSE (1% to 2%). The authors attribute the low number of on-exchange retail shorting to brokerage routing decisions. *See* Ekkehart Boehmer et al., *Which Shorts are Informed?,* 63 J. Fin. 491 (2008).

[1393] *See* Ekkehart Boehmer & Wanshan Song, *Smart Retail Traders, Short Sellers, and Stock Returns* (working paper Oct. 23, 2020) *available at https://papers.ssrn.com/sol3/papers.cfm?*

Continued

that short selling by institutional investors is largely the purview of hedge funds,[1394] which are estimated to make up around 85% of the short selling market.[1395] One academic paper finds that short sellers' choice of trading venue is highly dependent on its market design and that short sellers prefer trading venues that offer high execution speeds over those that offer low trading costs.[1396] Another academic study shows that wholesalers frequently offer price improvement to short sales and that including short sales in estimates of price improvement increases the total dollar value of net price improvement provided by more than 6%.[1397] Therefore, including information about the execution quality that reporting entities achieve for non-exempt short sale orders into Rule 605 disclosures will be relevant for a variety of investors who engage in short selling.

(2) Modernizing the Required Information

(a) Categorization by Order Size and Type

By enabling investors to make better apples-to-apples comparisons across reporting entities with potentially different order flow,[1398] the amendments expanding and modernizing order size and order type categories are expected to enhance competition among reporting entities on the basis of execution quality, resulting in improvements in execution quality for investors.[1399] Furthermore, for a specific order size or type, as order flow accumulates to the reporting entities offering the highest execution quality for these sizes and types of orders, this will in turn translate into improved execution quality for investors who have orders of these sizes and use these types of orders. For example, as a result of the adopted amendment expanding the order size categories to include information about odd-lots, market participants will have improved access to information about a market center's offering of price improvement and timely execution of odd-lots. The expected improvement in both the price and speed at which odd-lot orders are executed will benefit for both institutional and individual investors.[1400]

(i) Order Size Categories

The amendments modernizing the order size categories are expected to make Rule 605 reports more relevant by showing more meaningful differentiation in execution quality across different order sizes. This will allow consumers of Rule 605 reports to control for potential differences in order sizes across different reporting entities, while also increasing the extent to which reporting entities compete on the basis of execution quality across order sizes.

First, the amendments defining order size categories in terms of notional values[1401] will increase transparency regarding distribution of order sizes that a reporting entity handles, particularly for higher-priced stocks.[1402] Continuing the example from section IX.C.3.b)(1)(a), for a $500 stock, all orders for $100,000 (*i.e.,* 200 shares) or less will no longer be grouped into a single order size category (100 to 499 shares[1403]) or, if they are for less than 100 shares, excluded altogether from reporting requirements.[1404] Instead, these orders will be distributed across a number of order size buckets.[1405] To include larger-sized orders into Rule 605 reporting requirements while remaining consistent with Regulation NMS rules that exclude orders or trades that are sized above $200,000,[1406] these orders will be grouped into a separate category. This will facilitate market participants' ability to use these categories to compare across orders of different sizes in higher-priced stocks, while controlling for potential differences in the treatment of larger-sized orders. As a result, market participants will be better able to take into account potential differences in the distribution of order sizes that reporting entities typically handle for a given stock when comparing execution quality metrics across reporting entities, making these metrics more informative for making apples-to-apples comparisons of execution quality across reporting entities.

Figure 16 shows the distribution of orders across the adopted notional size buckets for stocks with different price levels, using a sample of CAT data for 400 stocks for Q1 2023.[1407] The results show that while, as expected, orders for lower-priced stocks tend to cluster in the smaller size buckets and orders for higher-priced stocks tend to cluster in the larger size buckets, in aggregate order flow appears reasonably well-distributed across the various order size buckets. Two exceptions are the smallest size bucket (orders for less than $250) and the largest size bucket (orders for $200,000 or more), both of which have little order flow. However, while there is relatively little order flow associated with the smallest notional size bucket (orders for less than $250),

abstract_id=3723096 (retrieved from SSRN Elsevier database).

[1394] *See* Peter Molk & Frank Partnoy, *Institutional Investors as Short Sellers?,* 99 B.U. L. Rev. 837, 839 (2019). Molk and Partnoy's paper ''identif[ies] the regulatory and other barriers that keep key categories of institutions[, specifically, mutual funds, insurance companies, banks, sovereign wealth funds, endowments, and foundations,] from acquiring significant short positions.'' *Id.* at 843. In addition, a Division of Economic and Risk Analysis White Paper survey of all mutual fund Form N–SAR filings in 2014 found that ''[w]hile 64% of all funds were allowed to engage in short selling, only 5% of all funds actually did so.'' Daniel Deli et al., *Use Of Derivatives By Registered Investment Companies,* SEC (2015), *available at https://www.sec.gov/files/derivatives12-2015.pdf.*

[1395] *See* Yawen Jiao et al., *Short Selling Meets Hedge Fund 13F: An Anatomy of Informed Demand,* 122 J. Fin. Econ. 544 (2016) (*citing* a 2009 report from Goldman Sachs).

[1396] *See* Adam V. Reed et al., *Shorting in Broad Daylight: Short Sales and Venue Choice,* 55 J. Fin. Quantitative Analysis 2246 (Nov. 2020).

[1397] *See* Battalio & Jennings, *supra* note 1253.

[1398] *See supra* note 984 for an example of how differences in order flow characteristics may impact inferences about execution quality.

[1399] The importance of being able to make apples-to-apples comparisons of execution quality in Rule 605 reports was referenced by some commenters. *See, e.g.,* SIFMA Letter II at 30, stating that ''Rule 605 data can present differently among firms with different customer bases and correspondingly different types of order flow,'' and Schwab Letter at 35, stating that ''providing [E/Q] information in a way that appears to be—but is not—an apples-to-apples comparison would create investor confusion rather than provide useful information on which to base decisions.''

[1400] *See supra* section IX.C.3.(b)(1)(a) for a discussion of the use of odd-lots by both individual and institutional investors.

[1401] *See* final 17 CFR 242.600(b)(18).

[1402] Several commenters agreed that a change from order size buckets defined in terms of share counts to notional order size buckets would be beneficial. *See, e.g.,* Fidelity Letter at 9; Rule 605 Citadel Letter at 6; Schwab Letter at 33; Nasdaq Letter at 45–46; and Angel Letter at 2. Many of these commenters compared the benefits of notional order size buckets to those of order size buckets defined in terms of number of round lots, as was proposed. *See infra* section IX.E.3.a)(1) for a discussion of these comments in the context of the Commission's consideration of a reasonable alternative that would define order size buckets in terms of number of round lots.

[1403] *See* prior 17 CFR 242.605(a)(1); *see also supra* note 1121 and corresponding text for a definition of the order size categories included in prior Rule 605 reporting requirements.

[1404] In addition, even prior to the implementation of the MDI Rules, a small number of NMS stocks have a round lot size smaller than 100. *See supra* note 1191.

[1405] These order size categories include (i) less than $250; (ii) $250 to less than $1,000; (iii) $1,000 to less than $5,000; (iv) $5,000 to less than $10,000; (v) $10,000 to less than $20,000; (vi) $20,000 to less than $50,000; and (vii) $50,000 to less than $200,000. An additional order size category includes orders for (viii) $200,000 or more. The order size categories provide additional differentiation for orders of less than a share, odd-lot orders, and orders of at least a round lot.

[1406] *See, e.g.,* the examples discussed in *supra* note 1187.

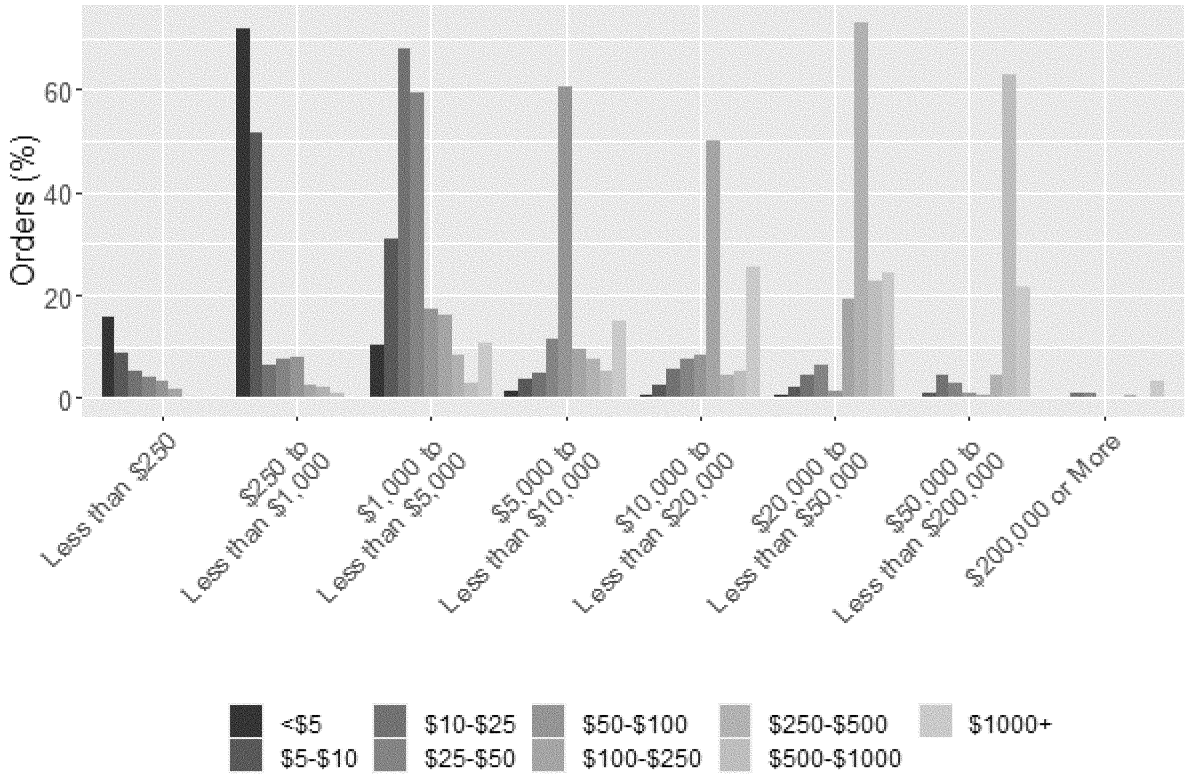
[1407] This analysis uses CAT data for 400 stocks for the period Q1 2023. *See supra* note 1211 for dataset description. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. *See supra* section IX.C.1.c)(2).

a further look at the data shows that a large portion of these orders are likely associated with individual investors.

Figure 17 shows the distribution across the notional order size buckets of orders associated with individual customer accounts as compared to those from institutional customer accounts,[1408] and shows that nearly 14.9% of orders from individual customer accounts are for less than $250. Therefore, including a separate order size category for these small-sized orders will be particularly beneficial for individual investors. Meanwhile, for the largest order size bucket, grouping these orders together and separately from other orders is consistent with Regulation NMS rules that exclude block orders or trades, which may result in different execution profiles for these orders.[1409] Furthermore, while these orders make up a small percentage of orders, they make up a significant percentage of share volume.[1410]

BILLING CODE 8011–01–P

Figure 16: Distribution of Orders Across Notional Order Size Buckets for Different Stock Price Groups, Q1 2023



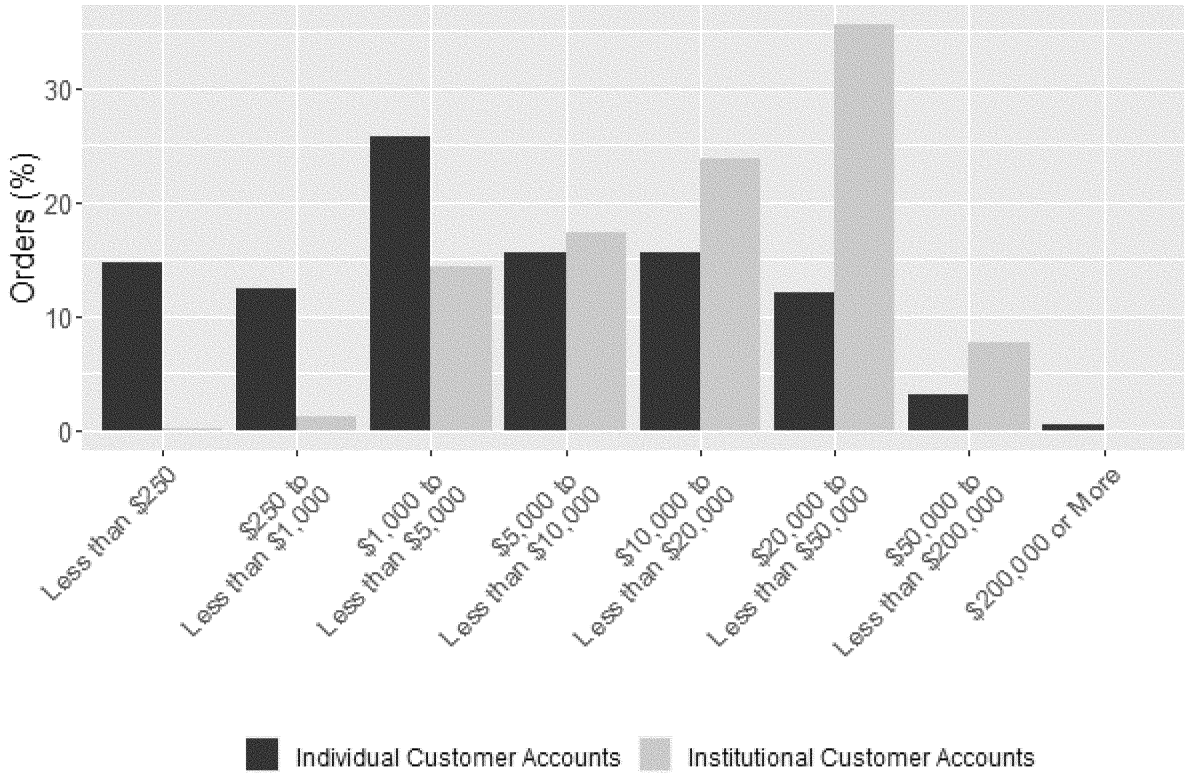
This figure shows the distribution of orders across notional order size buckets for different stock price groups. Percentages are calculated as the number of orders in a given order size bucket across all stocks within a given stock price group, summed across all days in the sample, divided by the total number of orders within a stock price group, summed across all days in the sample. The analysis uses a sample of CAT data for 400 stocks. See supra note 1211 for dataset description. This analysis uses data from prior to the implementation of the MDI Rules and specific numbers reported may be different following the implementation of the MDI Rules. See supra note 1407 and section IX.C.1.c)(2).

[1408] *See supra* note 1144 for a definition of account types in CAT.

[1409] *See supra* note 1187 for examples.

[1410] Specifically, an analysis of the CAT data in *supra* note 1211 finds that orders priced $200,000 or higher make up 18.0% of order flow in terms of share volume.

Figure 17: Distribution of Orders Across Notional Order Size Buckets for Different Customer Account Types, Q1 2023



This figure shows the distribution of orders across notional order size buckets for different stock price groups. Percentages are calculated as the number of orders in a given order size bucket that originated from a given account type, summed across all stocks and days in the sample, divided by the total number of orders originating from a given account type, summed across all days in the sample. The analysis uses a sample of CAT data for 400 stocks. See supra note 1211 for dataset description. This analysis uses data from prior to the implementation of the MDI Rules and specific numbers reported may be different following the implementation of the MDI Rules. See supra note 1407 and section IX.C.1.c)(2).

Second, as a result of the new order size categories, amended Rule 605 reports will contain information about some orders that were missing from preexisting Rule 605 reports, including orders less than a share, orders less than 100 shares, and larger-sized orders of 10,000 or more shares.[1411] The new order size categories will also help ensure that round lots for stocks with prices greater than $250 are not excluded from Rule 605 reports following the implementation of the MDI Rules.[1412] Analyses showed that the inclusion of odd-lot orders into Rule 605 reporting requirements will include up to an additional 16.9% of NMLOs (0.99% of NMLO share volume),[1413] and the inclusion of fractional shares will include up to an additional 16.4% of executions received by individual investors into Rule 605 reports.[1414] In addition, expanding Rule 605 coverage to include larger-sized orders [1415] will include up to an additional 30% of NMLO share volume,[1416] which will likely mostly be relevant for institutional investors, to the extent that some of these orders may not be split into smaller child orders.[1417] Including these order sizes within the scope of Rule 605 will help ensure that market participants are able to compare the execution quality of these orders across reporting entities,[1418] which will encourage reporting entities to compete for these orders on the basis of execution quality.

[1411] Because final Rule 605 reports will not define order size buckets in terms of share numbers, these orders will be distributed across the notional order size buckets described in note 1405 *supra,* according to their respective notional values.

[1412] *See supra* note 1190–1191 and corresponding text for further discussion.

[1413] *See* Figure 6, in *supra* section IX.C.3.b)(1)(a). As discussed in this section, odd-lots are submitted by both individual and institutional investors.

[1414] *See* analysis in *supra* section IX.C.3.b)(1)(b).

[1415] *See* final 17 CFR 242.600(b)(18). Furthermore, *see supra* section III.B.1.b) for a discussion of the Commission's decision to rescind the exemptive relief for orders of 10,000 or more shares and include these orders within the scope of Rule 605 reports.

[1416] *See* analysis in *supra* section IX.C.3.b)(1)(c).

[1417] The benefits of including larger-sized orders may be limited if most large institutional orders are not held orders and will thus be excluded from Rule 605 reporting requirements, and/or are broken up into smaller child orders that are likely to be smaller and have already been included in Rule 605 reporting requirements prior to these amendments. *See supra* sections IX.C.1.b) and IX.C.4.a)(1)(b).

[1418] For example, one academic study found that odd-lot orders often receive price improvement from wholesalers, and that incorporating information about price improvement received by odd-lots would increase dollar estimates of price improvement by 9.6%, even after adjusting the NBBO to incorporate the best displayed price. *See* Battalio & Jennings, *supra* note 1253, at 17.

Commenters generally supported the inclusion of odd-lots,[1419] fractional shares,[1420] and larger-sized orders [1421] into Rule 605 reporting requirements. However, one commenter did not support the inclusion of fractional shares, stating that, ''[g]iven the de minimis quantity of shares . . . this information is of limited value to investors.'' [1422] While the Commission agrees that, as a percentage of shares, fractional shares represent a small part of order flow,[1423] it disagrees that this means that information about these orders is of limited value to investors. Fractional orders less than a share represent a relatively high percentage (16.4%) of executions received by individual account holders in terms of number of trades.[1424] Furthermore, the execution quality received by fractional orders less than a share may be very different from that of full-share orders, which increases the relevance of execution quality metrics for these types of orders.[1425] Another commenter suggested that notional order size buckets be ''capped at block size'' so as to ''ensur[e] that statistics cover most retail trades.'' [1426] As discussed in the Baseline, while institutional investors likely have alternative sources of information about the execution quality of their orders, Rule 605 reports are likely still useful for institutional investors, for example, to assess the execution quality of the broker-dealers with which they do not currently do business, or to assess the execution quality of market centers to which their broker-dealers do not currently route orders.[1427] Therefore, information about larger-sized orders will be useful for consumers of Rule 605 reports.

Third, to further facilitate the comparison of execution quality across similar orders, these amendments will require information within each notional order size category to be separated according to whether the orders were odd-lots, round-lots, or fractional orders less than one share. Requiring information to be reported separately for round-lot orders and odd-lot orders within each notional order size category addresses a potential issue with notional order size buckets, namely, that while such categories remain in the spirit of distinguishing between ''small'' and ''large'' orders, they no longer produce a meaningful distinction between orders that may or may not be at quotes protected under Rule 611.[1428] Figure 18 shows the distribution of round lots and odd-lots across the notional order size buckets using the sample of CAT data described above.[1429] As expected, odd-lots tend to be clustered in the smaller notional size buckets, while round lots are clustered in the larger size buckets. However, the results show that most notional buckets will contain a mix of both round-lot and odd-lot orders, which supports the benefit of including separate information for each lot type within each notional size bucket.[1430]

[1419] *See, e.g.,* SIFMA Letter at 25; SIFMA AMG Letter at 6; and Nasdaq Letter at 44.

[1420] *See, e.g.,* Professor Schwarz et al. Letter at 4.

[1421] *See, e.g.,* Virtu Letter II at 9.

[1422] *See* SIFMA Letter at 31.

[1423] *See supra* note 1145, showing that executed fractional orders for less than one share made up about 0.001% of total executed share volume.

[1424] *See supra* note 1145 and corresponding text.

[1425] *See, e.g., infra* note 1434 and corresponding text for evidence of differences in execution quality for fractional orders less than a share.

[1426] *See* Nasdaq Letter at 44. This commenter also suggested increasing the block size threshold to $400,000.

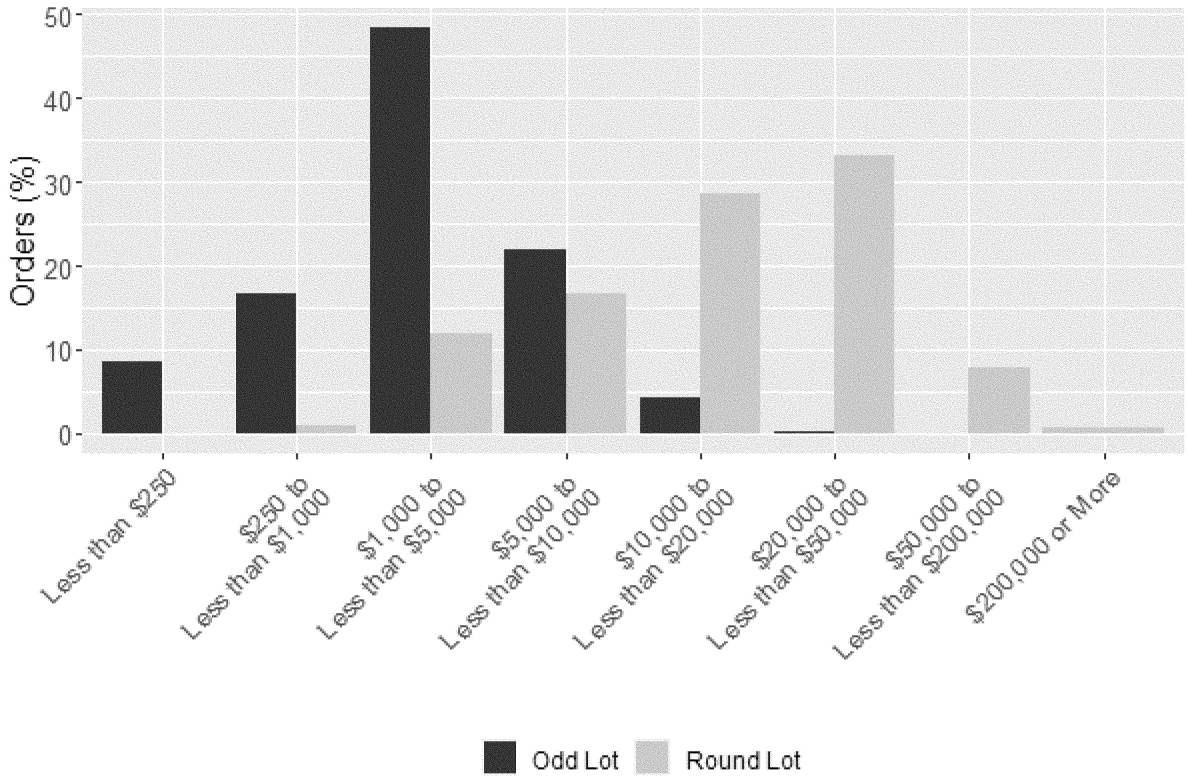
[1427] *See supra* section IX.C.2.c) for a discussion of the current usage of Rule 605 reports by institutional investors.

[1428] This issue was discussed as one of the potential disadvantages of using notional order size buckets in the Proposing Release. *See* Proposing Release, 88 FR 3786 at 3891 (Jan. 20, 2023).

[1429] This analysis uses CAT data for 400 stocks for the period Q1 2023. *See supra* note 1211 for dataset description. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. *See supra* section IX.C.1.c)(2) and *infra* note 1430.

[1430] Within a given notional order size bucket, the distribution of orders across round-lot and odd-lot categories may change following the implementation of the MDI Rules, particularly for those stocks whose round-lot size will be reduced. *See supra* section IX.C.1.c)(2). However, the distribution of orders across notional order size buckets will not be directly affected, as the notional size of an order is irrespective of its categorization as a round-lot or odd-lot. *See also supra* note 375 for further discussion of the interaction between the round lot definition under MDI and the order size categories under these amendments.

Figure 18: Distribution of Odd-Lot and Round Lot Orders Across Notional Order Size Buckets, Q1 2023



This figure shows the distribution of orders across notional order size buckets for odd-lots and round lots. Percentages are calculated as the number of orders in a given order size bucket for a given lot type, summed across all stocks and days in the sample, divided by the total number of orders for a given lot type, summed across all stocks and days. The analysis uses a sample of CAT data for 400 stocks. See supra note 1211 for dataset description. This analysis uses data from prior to the implementation of the MDI Rules and specific numbers reported may be different following the implementation of the MDI Rules. See supra note 1407 and section IX.C.1.c)(2).

Including separate execution quality information for fractional orders less than one share will provide greater insight into an important segment of individual investor order flow.[1431] This is particularly important given that the execution quality of orders for less than one share may vary across broker-dealers, who have different ways to handle these orders, such as internalizing such orders or aggregating them together for the purpose of rerouting to market centers.[1432] It is likely that the vast majority of fractional orders for less than one share will be captured within the smallest order size bucket; however, to the extent that there is fractional volume in other order size buckets, market participants will benefit from being able to differentiate fractional volume within these buckets. An analysis of CAT data[1433] found that, while 99.7% of fractional orders for less than one share are for $250 or less, four out of the eight notional size buckets contained at least one fractional order for less than a share.

[1431] Fractional orders less than a share represent a relatively high percentage (16.4%) of executions received by individual account holders in terms of number of trades. *See supra* note 1145 and corresponding text.

[1432] *See supra* section IX.C.3.b)(1)(b) for further discussion.

[1433] This analysis uses CAT data for 400 stocks for the period Q1 2023. *See supra* note 1211 for dataset description.

One commenter stated that, based on their trading experience, ''fractional market orders also receive widely different price improvement across brokers,'' and that ''full share price improvement statistics are not informative for the execution quality of our fractional trades.'' [1434] This implies that information about how well a reporting entity executes full-share orders is not necessarily useful for inferring how well that reporting entity will perform when executing a fractional order. The Commission agrees with the commenter that ''these results justify the need for fractional trades to have their own category in the Rule 605 disclosures,'' [1435] because these orders are especially likely to benefit from an increase in competition among reporting entities on the basis of execution quality.

Lastly, requiring order size categories under Rule 605 to include information about fractional orders less than one share [1436] will expand the number of reporting entities to include an estimated 20 market centers [1437] that exclusively execute fractional orders less than one share. Prior to these amendments, these market centers were not required to file Rule 605 reports due to their orders falling below the smallest order size category in preexisting Rule 605. This will increase transparency about the execution quality achieved by these market centers.[1438]

(ii) Order Type Categories

The amendments to Rule 605 modifying the order type categories required by Rule 605, including modifications to the coverage of NMLOs, and separate order type categories for marketable, midpoint-or-better, and other non-marketable IOCs, will improve the relevance of the information in Rule 605 reports regarding execution quality across different order types. This will facilitate comparisons and competition among reporting centers on the basis of execution quality for these orders.

The amendment modifying Rule 605's coverage of NMLOs so that reporting entities are required to disclose execution quality information only for those NMLOs that become executable [1439] (*i.e.,* eventually touch the NBBO) will facilitate comparisons between reporting entities, by ensuring that the execution quality statistics for NMLOs more meaningfully capture a market center's performance in handling NMLOs, rather than reflecting market conditions potentially outside of the market center's control, such as movements of the NBBO. This will be achieved because Rule 605 reports will more accurately exclude NMLOs that do not receive a meaningful opportunity to execute, for example, because the price moved away from the order and/or the order was cancelled before its limit price was reached, while including those NMLOs that investors could expect to have a reasonable chance of executing.[1440]

This is evident from an analysis comparing the fill rates of all near-the-quote and away-from-the-quote NMLOs to the fill rates of executable NMLOs, calculated using the sample of MIDAS data.[1441] Results are presented in Figure 19.[1442] While the fill rates of all near-the-quote and away-from-the-quote NMLOs are very low (0.27% and 0.02%, respectively), the fill rates of executable near-the-quote and away-from-the-quote NMLOs are much higher, and also very different from one another. In fact, at 32.5%, the average fill rate of executable away-from-the-quote NMLOs is relatively high, and actually higher than the average fill rate of executable near-the-quote orders (2.71%).[1443] This

[1434] *See* Professor Schwarz et al. Letter at 4. Specifically, the commenter found that E/Q ranged from 0.127 to 0.915 for fractional trades and ranged from 0.056 and 0.624 for full-share trades. *See* Professor Schwarz et al. Letter, Table 2. The commenter does not state whether these statistics include only fractional trades less than one share, or all trades that have fractional components.

[1435] *See* Professor Schwarz et al. Letter at 4.

[1436] *See* final 17 CFR 242.600(b)(18).

[1437] *See infra* note 1659 for further discussion of this estimate.

[1438] One commenter stated that, because much of today's market infrastructure does not yet support fractional share trading (including that ''FINRA does not currently have a mechanism to report fractional share trades''), ''the costs to fully modify [the reporting] infrastructure would be high compared to the minimal benefit of including fractional share reporting.'' SIFMA Letter at 31; *see infra* note 1673 and corresponding text for a discussion of and the Commission's response to this commenter.

[1439] *See* final 17 CFR 242.600(b)(39) (defining ''executable'') and final 17 CFR 242.600(b)(19) (defining ''categorized by order type'' to include categories for ''*executable* orders submitted with stop prices'' and ''*executable* non-marketable limit orders'') (emphasis added); *see also supra* sections III.A.2.b) and III.B.2.a)(2).

[1440] Several commenters generally supported a new requirement to report information about executable NMLOs. *See, e.g.,* Rule 605 Citadel Letter at 11; Nasdaq Letter at 44; SIFMA AMG Letter at 6; and SIFMA Letter at 25.

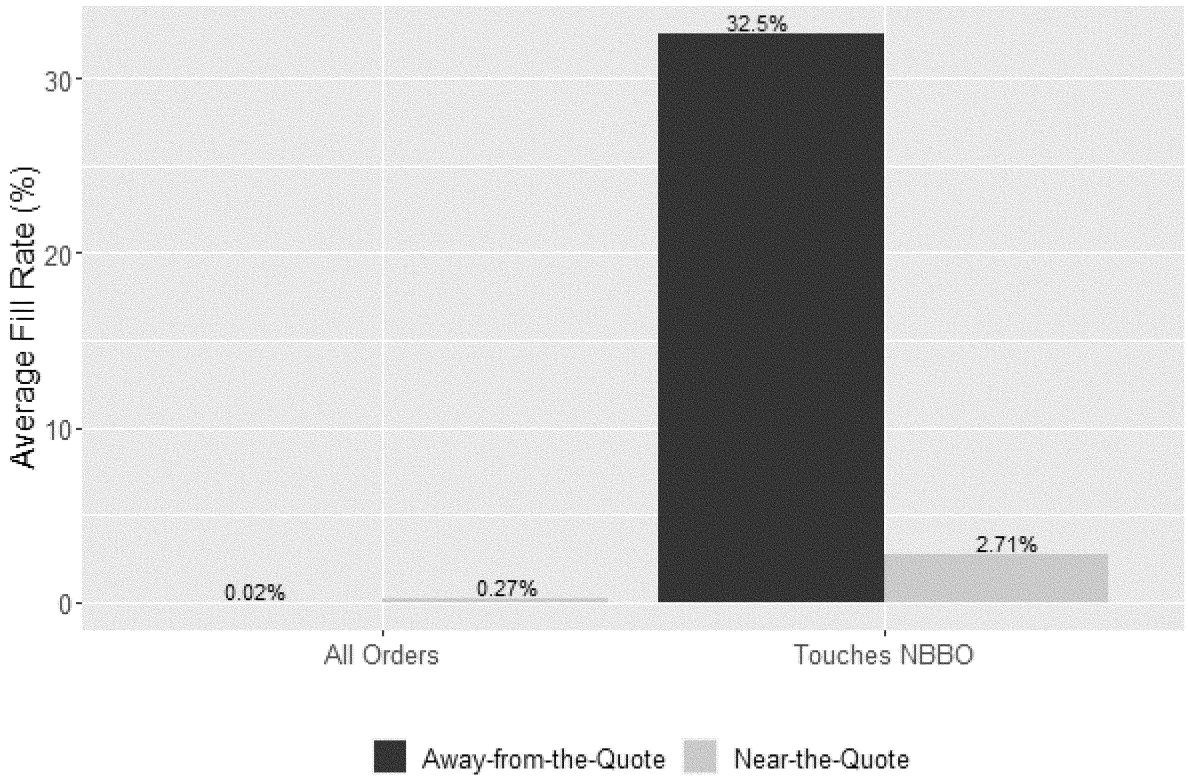
[1441] *See supra* note 1130 for a description of the dataset. The Commission found that only a small percentage of NMLOs eventually touch the NBBO: only 13.7% of near-the-quote NMLOs and 0.92% of away-from-the-quote NMLOs were executable during their lifespan. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. However, it is not clear how a change in the distribution of orders into various NMLO categories will affect the average fill rates of these NMLO categories. *See supra* section IX.C.1.c)(2). Also, by definition, all at-the-quote and inside-the-quote NMLOs are executable because they have a limit price equal to or better than the NBBO, and so the fill rates of executable at-the-quote and inside-the-quote NMLOs would be identical to those for at-the-quote and inside-the-quote NMLOs presented in Figure 9 *supra.*

[1442] The MIDAS data used in this analysis have been updated and corrected since the Proposing Release for the reasons described in *supra* note 1130. *See* Proposing Release, 88 FR 3786 at 3867 (Figure 15), 3842, n.634 (Jan. 20, 2023) (for data description). Results from Figure 19 are similar to those in Figure 15 in the Proposing Release after taking into account these updates and corrections. As discussed in *supra* note 1199, the analysis may overestimate fill rates due to the exclusion of orders with multiple submission messages. However, even in the alternative analysis without this exclusion described in *supra* note 1199, fill rates for executable away-from-the-quote NMLOs are still comparatively high, at 10.5%. While this alternative analysis, by assigning to the total submitted volume the price at the time of submission, tended to overestimate the number of executable NMLOs, it is unclear that this would systematically overestimate fill rates for executable NMLOs, as fill rates are calculated as the sum of executed shares divided by the sum of submitted shares and are thus indifferent to the distribution of shares across multiple submissions. For example, consider that a NMLO that consists of four separate submissions of 100 shares each, 100 shares of which execute, will have the same fill rate as an order for 400 shares, 100 shares of which executes (25%). Therefore, the Commission considers 10.5% to be an approximate lower bound for the fill rate of executable away-from-the-quote NMLOs. The results from both analyses show that many executable away-from-the-quote NMLOs have a meaningful opportunity to execute and many do. Therefore, changes to the MIDAS dataset did not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that removing near-the-quote NMLOs that are not executable results in a set of NMLOs with a more meaningful opportunity to execute, and that there are benefits to including executable away-from-the-quote NMLOs and to excluding near-the-quote NMLOs that are never executable.

[1443] This is likely because executable near-the-quote NMLOs are more likely than away-from-the-quote NMLOs to be cancelled after their limit prices are reached but before they execute. This could be the case, for example, because near-the-quote orders are more likely to be submitted by market participants such as market makers, who are more likely to actively monitor their limit orders and may cancel them to adjust them for changes in the market. Examining the distribution of cancellations of these orders reveals that a higher percentage of executable near-the-quote NMLOs are cancelled within a short period of time, as compared to executable away-from-the-quote NMLOs. Specifically, 14.2% of executable near-the-quote NMLO shares are cancelled within 100 milliseconds, vs. 7.7% of executable away-from-the-quote NMLOs, and that 36.7% of executable near-the-quote NMLO shares are cancelled within 1 second, vs. 13.9% of executable away-from-the-quote NMLOs. A similar analysis in the Proposing Release looked at the distribution of the cancellations of all (*i.e.,* both executable and non-executable) away-from-the-quote and near-the-quote NMLOs, and similarly found that a larger percentage of near-the-quote NMLOs have execution times below 100 milliseconds. *See* Proposing Release, 88 FR 3786 at 3867, n.841 (Jan. 20, 2023). To the extent that near-the-quote NMLOs are submitted by traders that are more likely to cancel these orders before they are executed, this could explain why executable near-the-quote NMLOs have lower fill rates than executable away-from-the-quote NMLOs.

reflects that even away-from-the-quote orders are likely to execute if prices move in a direction such that they have a meaningful opportunity to execute. Therefore, the execution quality statistics resulting from the amendments to Rule 605 better reflect a market center's performance in handling NMLOs, by including NMLOs with a meaningful opportunity to execute and excluding NMLOs without a meaningful opportunity to execute.

Figure 19: Fill Rates of Executable Away-from-the-Quote and Near-the-Quote NMLOs, Mar. 2023



This figure plots the fill rates of away-from-the-quote and near-the-quote NMLOs, using order submission data from MIDAS. See supra note 1130 for a description of the dataset. Fill rates are calculated as the number of shares executed of a given order type, summed across all stocks and days in the sample, as a percentage of the number of shares submitted of a given order type, summed across all stocks and days. Plotted are the fill rates for all away-from-the-quote and near-the-quote NMLOs, along with only those away-from-the-quote and near-the-quote NMLOs that eventually touch the NBBO (i.e., become executable). See supra note 1200 for definitions of these NMLO categories. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. See supra note 1442 and section IX.C.1.c)(2).

BILLING CODE 8011–01–C

The adopted amendment to include a separate order type category for midpoint-or-better orders [1444] will increase transparency on how reporting entities handle these types of orders (*e.g.,* whether or not they offer these orders price improvement) and reduce the extent to which including information about these orders along with other types of NMLOs may skew the execution quality statistics of other types of NMLOs. Several commenters stated that the proposed amendment should not create a separate category for beyond-the-midpoint limit orders, since it is not a large category of orders.[1445] One commenter additionally stated that the order category ''will become de minimis with the Market Data Infrastructure (''MDI'') round lot definitions.'' [1446] The Commission confirms that, while the adopted amendment to include both at-the-midpoint and beyond-the-midpoint orders into the new category will increase the size of the category, this category will still remain a relatively small percent of total orders.[1447] The Commission also acknowledges that the NBBO is anticipated to narrow for stocks priced above $250 as a result of the new definition of round lots, which would likely decrease the number of inside-the-quote NMLOs and increase the number of quotes at or outside of the quotes for these stocks.[1448] However,

[1444] *See* final 17 CFR 242.600(b)(19) (defining ''categorized by order type'' to include a category for midpoint-or-better limit orders); *see also supra* section III.B.2.b)(2).

[1445] *See, e.g.,* FIF Letter at 13; Schwab Letter II at 6; and Schwab Letter at 32.

[1446] *See* Schwab Letter II at 6.

[1447] As shown in Table 5, increasing the scope of this category to include at-the-midpoint NMLOs in addition to beyond-the-midpoint NMLOs will increase its size from 2.1% to 3.9% of shares submitted to exchanges at ATSs, and from 3.2% to 5.5% to shares submitted to wholesalers.

[1448] *See supra* section VII.C.1.d)(2) for further discussion. An analysis of the CAT data sample described in note 1182 *supra* shows that, in the quartile of stocks with the lowest quoted spreads

since some market centers treat these NMLOs more like marketable limit orders in certain contexts, it will be beneficial for market participants who use these orders as part of their trading strategies to have separate information about the execution quality of these orders,[1449] and thus the Commission has included them in the amended rule.

First, the high percentage of midpoint-or-better NMLOs submitted with IOC designations shown in Table 4 implies that a significant portion of these orders have the expectation of executing immediately, for example, against hidden or odd-lot liquidity inside of the spread. Therefore, these orders are likely to have different execution profiles than other types of NMLOs, such as faster time-to-execution. Furthermore, the Commission understands that different reporting entities treat beyond-the-midpoint NMLOs differently from other types of NMLOs, and that as a result beyond-the-midpoint NMLOs have systematically different execution quality characteristics than other types of NMLOs. For example, beyond-the-midpoint limit orders may be offered price improvement at some market centers, such as wholesalers, so the execution quality of these orders will be highly dependent on which type of market center to which the broker-dealer routes such orders.[1450] Requiring reporting entities to report execution quality statistics separately for midpoint-or-better orders will reveal differences in reporting entities' handling of these types of order.

Lastly, the adopted amendment assigns marketable, midpoint-or-better, and other non-marketable IOCs to separate order type categories so that they no longer will be commingled with other order types.[1451] This will increase transparency about the execution quality that reporting entities achieve both for IOCs and for other order types.[1452] Supporting the idea that IOCs tend to have different execution quality profiles than other orders, an analysis showed that IOCs on average have faster execution times and higher effective spreads than other orders, and that fill rates vary across market centers and according to order characteristics such as size.[1453] Information about the execution quality of IOCs will allow broker-dealers handling these types of orders to be able to better assess which market center on average offers better execution quality to these types of orders. These broker-dealers can thus make more informed decisions about where to route these orders. Furthermore, due to their different execution profiles, removing IOCs from other order categories will cause the execution quality metrics for other types of orders to more accurately reflect reporting entities' handling of other types of orders.[1454] The effect on the execution quality metrics of other types of orders will likely be significant, as an analysis of IOCs found that they make up more than 90% of marketable limit and midpoint-or-better share volume.[1455]

(b) Timestamp Conventions and Time-to-Execution

Several of these amendments will increase the relevance of time-to-execution information in Rule 605 reports, which in turn will improve market participants' ability to compare time-to-execution across reporting entities. For those investors that value fast executions, this is expected to lead to improved execution times, as investors will be better able to identify and route orders to reporting entities offering faster execution speeds.

First, the adopted amendment increasing the granularity of the timestamp conventions used for the time of order receipt and time of order execution from seconds to milliseconds, as well as requiring millisecond granularity for the time of executability,[1456] will make the time-to-execution statistics in Rule 605 more informative about the execution speeds achieved by a reporting entity.[1457] These statistics include the average share-weighted time-to-execution of shares executed with positive price improvement, without price improvement and with negative price improvement. Given that execution speeds measured in seconds are likely to miss much of the variation in execution times across reporting entities in today's markets, particularly for market and marketable orders,[1458] adding granularity to the timestamps used to calculate the time-to-execution speed measures included in Rule 605 reports will benefit market participants in their efforts to compare execution times across reporting entities.[1459]

One commenter, while generally recognizing benefits of smaller increments for time to execution statistics, stated that ''the more granular a timestamp needs to be, the more subject it is to variances across reporting entities,'' and that this has ''the potential to distort statistics.'' [1460] The commenter stated that such distortions derive from different practices around when to mark order receipt and from different geographic latencies in the receipt of market data, such as SIP data and exchange proprietary data feeds, used to assign quotation information to an event according to its timestamp. However, evidence suggests that geographic latencies, which may account for the majority of latency differences associated with the SIP data, are currently below a millisecond.[1461]

(an average quoted spread of around $0.026), midpoint-or-better orders still compromise a non-negligible percent of order flow, representing 5.15% of submitted orders (4.32% of submitted shares). This is compared to the quartile with the highest quoted spreads (an average quoted spread of $20.28), where midpoint-or-better orders are 9.66% of submitted orders (8.62% of submitted shares). Therefore, it is likely that midpoint-or-better orders will be a non-negligible percent of order flow, even if spreads narrow after the implementation of MDI.

[1449] *See also supra* section III.B.4.a)(2) for further discussion.

[1450] *See* Table 4, showing both beyond-the-midpoint and at-the-midpoint orders tend to have higher fill rates and faster execution time relative to other types of NMLOs.

[1451] To implement this change, the Commission is modifying the definition of ''categorized by order type'' to add midpoint-or-better limit orders that are immediate-or-cancel and executable non-marketable limit orders that are immediate-or-cancel, as well as to exclude IOCs from the order types for midpoint-or-better limit orders and executable NMLOs. *See* final 17 CFR 242.600(b)(19).

[1452] Commenters agreed that the separate reporting of IOC orders would make Rule 605 data more useful. *See, e.g.,* SIFMA AMG Letter at 6; SIFMA Letter at 25.

[1453] For example, exchanges and ATSs tend to have higher fill rates for IOC marketable limit orders (14.3%) than non-IOC marketable limit orders (11.6%), the opposite is true for wholesalers (18.3% compared to 74.3%). *See* Table 5 in *supra* section IX.C.3.c)(9).

[1454] *See supra* note 1265 and accompanying text for an example of how commingling IOCs with other order types can lower marker centers' incentives to improve execution quality for other marketable orders.

[1455] *See* Table 5 in *supra* section IX.C.3.c)(9) and corresponding discussion.

[1456] *See* final 17 CFR 242.600(b)(39), (102), and (103).

[1457] One commenter stated that more granular time-to-execution statistics would allow for more meaningful points of comparison. *See* Better Markets Letter at 8.

[1458] *See supra* section IX.C.3.c)(4) for a discussion of how the granularity of the time-to-execution categories previously defined in Rule 605 has lost relevance over time.

[1459] One commenter stated that the minimum granularity of milliseconds is ''the best approach at this time,'' stating that it is ''consistent with the Consolidated Audit Trail, which requires firms to report all order events with a minimum granularity of milliseconds.'' FIF Letter at 17.

[1460] *See* Robinhood Letter at 47.

[1461] *See, e.g.,* Letter from Patrick Sexton, EVP, General Counsel Corporate Secretary, *Cboe Global Markets, Inc. on the MDI Proposal,* (May 26, 2020) (stating that ''geographic latency accounts for the vast majority of the latency experienced by the SIPs today,'' and referencing geographic latency of around 416 microseconds between Carteret, NJ and Secaucus, NJ); *see also* Letter to Brent J. Fields, Secretary, Commission, from Michael Blaugrund, Head of Transactions, New York Stock Exchange (Oct. 24, 2018) (stating that, as ''processing time approaches zero, it is clear that the time required

Continued

Therefore, the distortions related to latencies are likely to be smaller than the timestamp granularity. Furthermore, it is likely that distortions may actually be reduced under these amendments. Under preexisting Rule 605, though many market centers timestamp to the millisecond or lower, market centers only had to look at timestamps at the second level, and match each order with the NBBO within that second. Matching to the second when there are multiple quotes per second can create distortions. Under preexisting Rule 605, when there are multiple quotes within a second, the market center would have needed to use a neutral method to assign the NBBO to an order. Of course, prior to these amendments, some market centers could have chosen to match to the millisecond as its neutral method. Under the final rule, reporting entities will be required to match to the millisecond. With latencies of under a millisecond and even with multiple quotes per millisecond, the distortions should be lower when matching to a millisecond than when matching to a second. In particular, the NBBO that is matched to a particular order is more likely to be closer to the actual time of order receipt.

Second, the amendments increasing the granularity of time-to-execution buckets [1462] will increase the relevance of the time-to-execution information in Rule 605, as the categories prior to these amendments have not been granular enough with respect to variations in execution times across reporting entities. One commenter stated that the inclusion of updated time-to-execution buckets in amended Rule 605 reports would provide greater granularity.[1463]

Figure 20 plots the distribution of share volume across the adopted time-to-execution buckets, using a sample of CAT data for 400 stocks for the period of Q1 2023.[1464] Since whether an order is submitted with an IOC designation can have a significant effect on its execution,[1465] results are presented separately for IOC and non-IOC orders. The results show that non-IOC shares are reasonably well distributed across the various buckets. While the majority of IOC orders (91.1%) are clustered in the shortest time bucket, some IOC volume is also distributed across longer time buckets. This shows that these time-to-execution buckets will also allow market participants to separate out IOC orders that are outliers in terms of time-to-execution.

for trade and quote data to travel from Participant datacenter -> SIP datacenter -> Recipient datacenter, or 'geographic latency,' is a larger portion of the total latency.''). In addition, *see* MDI Adopting Release, 86 FR 18596 at 18732 (Apr. 9, 2021), stating that ''[t]he record in this rulemaking suggests that the geographic latency of SIP data may be up to a millisecond.''

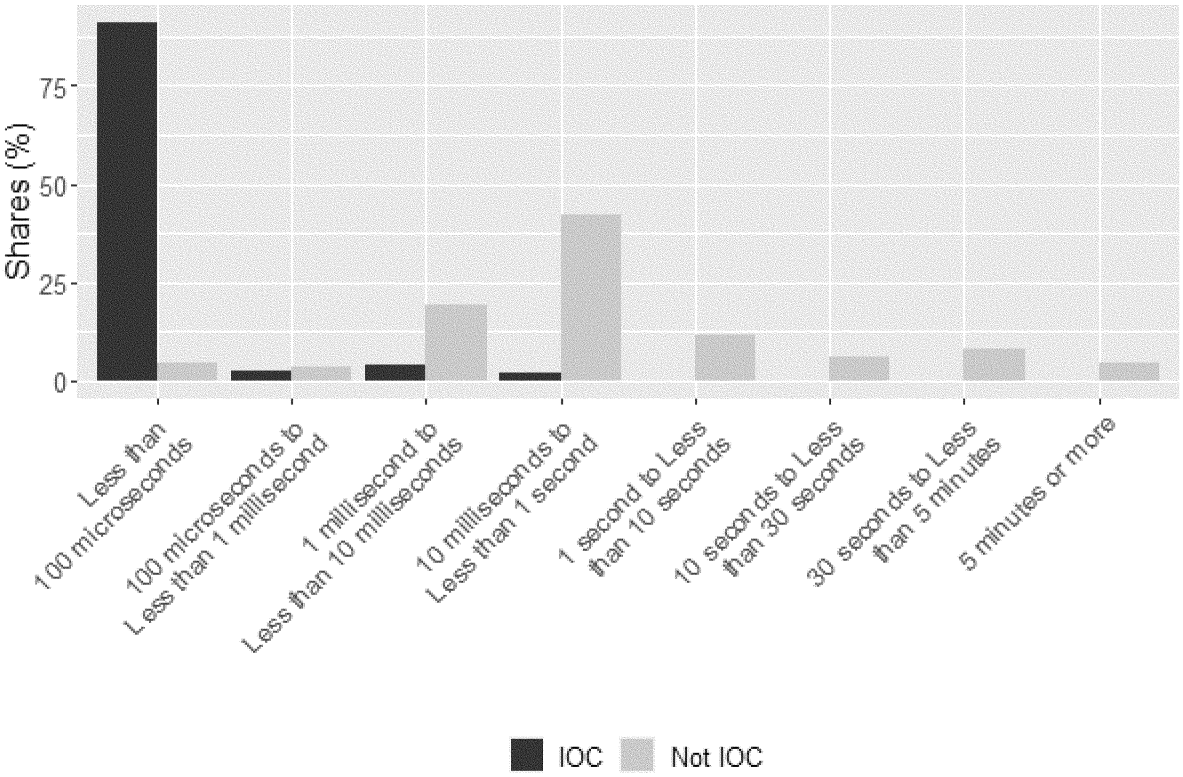
[1462] *See* prior 17 CFR 242.605(a)(1)(i)(F) through (J) (detailing time-to-execution buckets of 0 to 9 seconds, 10 to 29 seconds, 30 to 59 seconds, 60 to 299 seconds and 5 to 30 minutes after the time of order receipt). These will be replaced by the following buckets: less than 100 microseconds; 100 microseconds to less than 1 millisecond; 1 millisecond to less than 10 milliseconds; 10 milliseconds to less than 1 second; 1 second to less than 10 seconds; 10 seconds to less than 30 seconds; 30 seconds to less than 5 minutes; and 5 minutes or more. *See supra* section III.B.3.b) and final 17 CFR 242.605(a)(1)(i)(G) through (N).

[1463] *See* Healthy Markets Letter at 17. Specifically, the commenter stated that, ''[b]y creating buckets for timestamp, rather than average time to execution [as proposed], the reports would provide much greater granularity while still allowing a user of the data to recreate average time to execution.'' See the Proposing Release, 88 FR 3786 at 3812–3813 (Jan. 20, 2023), for a discussion of the proposed amendment to replace time-to-execution buckets with time-to-execution statistics; *see also infra* section IX.E.3.b)(1) for further discussion of adopting time-to-execution statistics as proposed as a reasonable alternative.

[1464] This analysis uses CAT data for 400 stocks for the period Q1 2023. *See supra* note 1211 for dataset description.

[1465] *See, e.g.,* the results in Table 5.

Figure 20: Distribution of Shares Across Time-to-Execution Buckets by IOC Type, Q1 2023

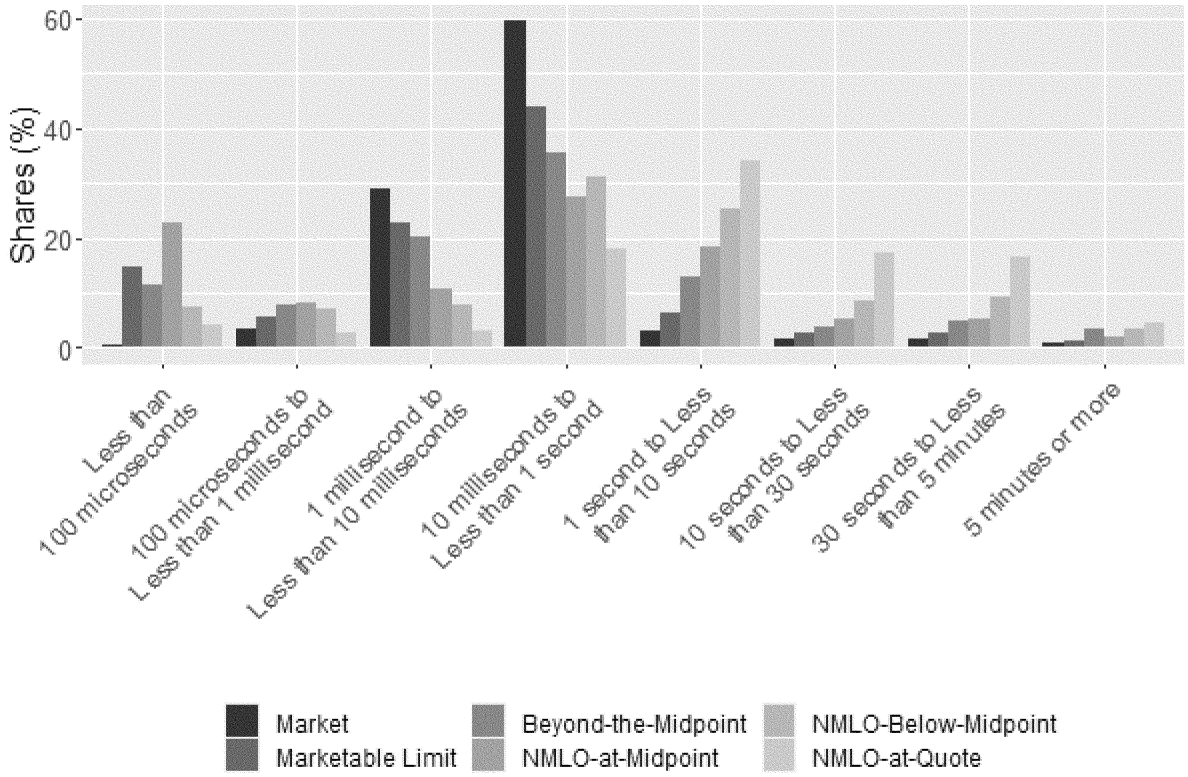


This figure shows the distribution of executed shares across time-to-execution buckets for IOC vs. non-IOC orders. Percentages are calculated as the number of shares that executed within a particular time horizon for a given IOC type, summed across all stocks and days in the sample, divided by the total number of executed shares for a given IOC type, summed across all stocks and days. Execution times are calculated as the time of order receipt (which, for at- and inside-the-quote NMLOs, is equivalent to the time of executability) to the first time that one or more of the order's shares are executed. The analysis uses a sample of CAT data for 400 stocks. See supra note 1211 for dataset description.

Figure 21 also plots the distribution of share volume across the adopted time-to-execution buckets, this time breaking the result down by order type.[1466] The results show that the time-to-execution buckets are also able to capture variation in execution times across different order types, with most market and marketable limit orders clustered at the faster time buckets, and most at-the-quote NMLOs clustered in the longer time buckets.

[1466] This analysis uses CAT data for 400 stocks for the period Q1 2023. *See supra* note 1211 for dataset description. This dataset is from prior to the implementation of the MDI Rules and the distribution of orders into various NMLO categories may change following the implementation of the MDI Rules. *See supra* note 1204 and section IX.C.1.c)(2). However, it is not clear how a change in the distribution of orders into various NMLO categories will affect the average time-to-execution of these NMLO categories.

Figure 21: Distribution of Shares Across Time-to-Execution Buckets by Order Type, Q1 2023



This figure shows the distribution of executed shares across time-to-execution buckets for different order types. Percentages are calculated as the number of shares that executed within a particular time horizon for a given order type, summed across all stocks and days in the sample, divided by the total number of executed shares for a given order type, summed across all stocks and days. The analysis uses a sample of CAT data for 400 stocks. See supra note 1211 for dataset description and supra note 1200 for definitions of the NMLO categories. Execution times are calculated as the time of order receipt (which, for at- and inside-the-quote NMLOs, is equivalent to the time of executability) to the first time that one or more of the order's shares are executed. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. See supra note 1466 and section IX.C.1.c)(2).

The amendments requiring time-to-execution information to be reported for all order types will help ensure that all order types benefit from increased transparency.[1467] However, commenters stated that, because marketable limit orders that exceed the consolidated quote size may be only partially executed or take longer to execute, time-to-execution information for this order type ''would be difficult to interpret'' [1468] and ''would be impacted by factors that do not reflect a true comparison of the execution performance across firms.'' [1469] The Commission recognizes that execution times will be longer for marketable limit orders that do not fully execute and are partially posted to the limit order book, and that this may in some cases be the result of factors that are not directly within a reporting entity's control, such as the size of the order. However, other information contained in Rule 605 reports, such as information about order size, will allow consumers of Rule 605 data to control for such factors, which will facilitate consumers' ability to interpret time-to-execution information for marketable limit orders and to make apples-to-apples comparisons across reporting entities.[1470]

Finally, these amendments will require NMLO execution times to be measured from the time that the order becomes executable rather than from the time of order receipt.[1471] This will help ensure that this metric is more likely to capture the portions of execution speed that are within a reporting entity's

[1467] One commenter supported the inclusion of time-to-execution information for all order types. *See* Nasdaq Letter at 45: ''We concur with the SEC that requiring average time-to-execution for all order types . . . would offer more consequential information.''

[1468] *See* Rule 605 Citadel Letter at 10.

[1469] *See* FIF Letter II at 3. Specifically, the commenter stated ''that firms that receive marketable orders that are larger relative to the opposite-side displayed NBBO quantity would show a longer time to execution as compared with firms that receive marketable orders that are smaller relative to the opposite-side displayed NBBO quantity.'' FIF Letter II at 3. Similarly, another commenter stated that ''the execution speed metric for marketable limit orders should be limited to the size available at the best protected quote at the far touch. This will ensure that orders larger than the quoted size that take out the best price and then are reflected for the balance don't skew statistics.'' Schwab Letter II at 32.

[1470] *See supra* section III.B.3.b) for further discussion.

[1471] *See* final 17 CFR 242.605(a)(1)(i)(G) through (N).

control, rather than dependent on market conditions.[1472]

For those investors that value fast executions, these amendments are expected to lead to improved execution times, as the increased transparency around reporting entities' execution times will increase these investors' ability to identify and route orders to reporting entities offering faster execution speeds.[1473] The Commission expects these benefits to mainly accrue to investors that value faster executions, as these investors (and their broker-dealers) will benefit from an improved ability to compare execution speeds across trading venues and route their orders accordingly. However, to the extent that changes in order flow will result in an increase in market centers' incentives to offer faster executions, *e.g.,* by investing in faster trading technology, this may result in a market-wide increase in trading speeds for all investors.

One individual investor stated that focusing on the speed of execution only benefits high-frequency traders, and that the commenter is more concerned as a retail investor with getting a fair price for their trades than with the speed of execution.[1474] The Commission recognizes that different investors benefit from faster execution times for different reasons, and that some investors will not always benefit from faster execution under all circumstances.[1475] However, individual investors will benefit from faster executions in circumstances where the faster execution of their orders results in better prices. For example, time-to-execution is an important metric for market orders submitted with stop prices, which an analysis finds constitute 4.91% of market orders submitted by individual investors.[1476] Since these orders tend to be triggered during volatile markets, any delay in execution can result in worse price if prices are increasing (for buy orders) or decreasing (for sell orders). For IOCs, a faster routing time reduces the chance of another order stepping in and removing liquidity before the order gets a chance to execute, thus increasing the order's probability of execution.[1477]

For institutional investors, the benefits of fast execution may be different.[1478] Institutional investors, who often need to trade large positions, may care more about reducing the price impact of their order rather than executing the order quickly.[1479] However, the academic literature suggests that institutional investors with short-lived private information may benefit from faster execution times, as they are able to profit from trading against other, slower institutions.[1480] On the same note, faster execution times benefit slower institutional investors by reducing their exposure to adverse selection as much as possible.[1481] Institutional investors may also care about the execution speed of their child orders.[1482]

(c) Execution Quality Metrics

The amendments to Rule 605 will improve the relevance of the information contained in Rule 605 reports by increasing the granularity of time-to-execution buckets; modifying the calculations of average realized spreads; expanding existing requirements to report average effective spreads to midpoint-or-better orders; adding additional metrics such as percentage realized and effective spreads, effective over quoted spreads, and size improvement; and modifying the categorization of riskless principal trades.

(i) Realized Spread

The adopted amendment modifying the time horizon used to calculate the realized spread from a single horizon of five minutes to a range of horizons between 50 milliseconds and 5 minutes[1483] will increase the relevance and usability of this measure. One of the uses of realized spread is to derive a measure of price impact of the order flow,[1484] which, depending on the horizon of the liquidity provider, can measure the adverse selection risk that the liquidity provider faces.[1485] Adverse

[1472] For example, even if a limit order is placed $0.05 away from the quote, if the market moves away and only 25 minutes later returns to a price level where the limit order executes, the time to execution for that order from the time of order receipt is less reflective of execution quality than of prevailing market conditions.

[1473] *See supra* section IX.C.3.c)(4) for a discussion of current executions speeds.

[1474] *See* Gillmore Letter.

[1475] *See, e.g.,* Ekkehart Boehmer, *Dimensions of Execution Quality: Recent Evidence for US Equity Markets,* 78 J. Fin. Econ. 553 (2005) (''Boehmer (2005)''), which documents a negative relationship between execution speed and price.

[1476] *See* Table 3 in *supra* section IX.C.3.b)(2).

[1477] *See, e.g.,* Matteo Aquilina et al., *Quantifying the High-Frequency Trading ''Arms Race,''* 137 Q. J. Econ. 493 (2021) (''Aquilina et al.''), who find that traders with failed attempts to trade or cancel orders, such as submitters of IOC orders that fail to execute, lose about half a tick as a result of the failure. While the per-trade cost is small, the cost of these failures adds up to around $5 billion annually in global equity markets.

[1478] While institutional investors are likely to have access to alternative sources of more granular information about execution speeds, such as reports obtained through TCA, the information on execution quality that is individually collected by institutional investors is typically nonpublic and highly individualized, and therefore limited to the execution quality obtained from broker-dealers with which the institutional investors currently do business. Since Rule 605 reports are public, institutional investors can use these reports to assess the execution quality of the broker-dealers and market centers with which they do not currently do business. *See supra* section IX.C.2.c) for further discussion.

[1479] *See supra* section IX.C.4.a)(1)(b) for a discussion of the handling of institutional orders by broker-dealers as not held orders.

[1480] *See, e.g.,* Kadan et al., *supra* note 1225.

[1481] *See, e.g.,* Brogaard et al., *supra* note 1225.

[1482] *See, e.g.,* Beason and Wahal at 17, who examine the time-to-fill of algorithmic child orders, and find that the time-to-execution and time-to-cancellation of these orders ''indicate a clear price-time tradeoff in the data.''

[1483] *See* final 17 CFR 242.605(a)(1)(i)(O) through (X); *see also supra* section III.B.4.a)(2).

[1484] *See supra* note 1228, describing how realized spreads can be decomposed into the difference between the effective spread and price impact. As discussed in note 1228, *supra,* differences between the times at which realized spreads and effective spreads are measured can cause this decomposition to be inexact. After the implementation of these amendments, the realized spread will continue to be measured using the price at the time of order execution, while effective spreads will be measured using the midpoint price at the time of order receipt (or order executability, in the case of midpoint-or-better orders). To the extent that there are significant differences in the time of order receipt (or executability) and the time of order execution, the decomposition of realized spreads in the amended Rule 605 reports into effective spreads and price impact will continue to not be exact. This effect is likely to vary depending on the order type. For example, Figure 21 shows that 37.5% of marketable limit orders are executed within 10 milliseconds after order receipt, while only 7.2% of at-the-quote NMLOs are executed within 10 milliseconds after order executability (which, for these orders, is the same as the time of order receipt). Therefore, for example, this effect is expected to be greater for at-the-quote NMLOs than for marketable limit orders.

[1485] *See supra* note 1229 and accompanying text for a discussion of price impact as a measure of the adverse selection risk faced by liquidity providers. In some cases, market participants will be able to use the data in amended Rule 605 reports to estimate price impact using effective and realized spreads. These estimates of price impact measures may be subject to the time asynchronies, and, as described in *supra* note 1484, the extent to which these asynchronies lead to inexact measures of price impact is likely to vary along with the order type. In addition, because the effective spread is required to be reported only for market and marketable order types as well as midpoint-or-better orders, the ability of market participants to estimate price impact will only be possible for these order types. *See supra* section III.B.4.b)(2) for further discussion. However, for those order types for which effective spreads are not available, or for which the time asynchronies are expected to lead to inexact measures of price impact, market participants will still be able to use the fact that amended Rule 605 reports will contain a broad range of realized spread time horizons to gain insights into adverse selection risk. Specifically, since price impact will increase as the time horizon increases (*see supra* note 1235 for further discussion), while the effective spread remains constant, examining how realized spreads change as the time horizon increases will give market participants insight into the rate at which the price impact, and therefore adverse selection risk, increases as the time horizon increases. Market participants could use this information to determine, for example, whether adverse selection

Continued

selection risk of order flow can vary over time and across stocks and entities. Therefore, realized spreads provide context for other measures of execution quality. The preexisting requirement to use a single five-minute time horizon to calculate realized spreads for the purposes of Rule 605 disclosures has likely limited market participants' ability to use realized spreads to control for adverse selection, particularly for larger and more liquid stocks.[1486]

Selecting an appropriate time horizon to calculate the realized spread must strike a balance between too short, which could fail to incorporate the realization of the price impact, and too long, which could include additional noise [1487] or the cumulative impact of subsequent market changes which are unrelated to the order's execution quality.

Referencing the Commission's analysis of realized spread time horizons in the Proposing Release, one commenter stated that ''the Commission has not appropriately analyzed inventory turnover, which is necessary to convey relevant meaning to the analysis.'' [1488] The Commission acknowledges that an ideal measurement horizon would be one that aligns with the amount of time an average liquidity provider holds onto the inventory positions established from providing liquidity. As discussed in the Proposing Release, the amount of time an average liquidity provider holds onto the inventory positions established from providing liquidity is not easily observable.[1489] Instead, the Commission's analysis of realized spreads in the Proposing Release [1490] was based on the theoretically motivated and empirically observed decline in realized spreads over increasing time horizons, similar to the academic literature.[1491]

Table 7 [1492] replicates this analysis using an updated sample of TAQ data for 400 stocks for the period of Q1 2023,[1493] and shows that the cumulative decline in realized spread captured at different time horizons varies by market capitalization. Approximately 90% of the cumulative decline in realized spread is captured by the 15-second horizon for the largest market capitalization group, compared to only about 50% for the smaller market capitalization groups. At the one-minute horizon, approximately 75% of the realized spread is captured for the smaller market capitalization groups. This echoes the results from the Proposing Release,[1494] and also supports results from the academic literature, as one paper similarly recommends a shorter time horizon for large stocks and a longer time horizon for small stocks.[1495]

Table 7: Cumulative Decline in Average Realized Spread, by Time Horizon

	Horizon					
Market Capitalization Group	**10ms-5min($)**	**50ms**	**1sec**	**15sec**	**1min**	**5min**
<$100 million	0.015	10.8%	15.7%	51.2%	77.4%	100.0%
$100 million - $1 billion	0.014	8.1%	22.5%	51.7%	74.4%	100.0%
$1 billion - $10 billion	0.018	8.3%	32.7%	67.6%	89.2%	100.0%
>$10 billion	0.020	11.5%	45.3%	89.5%	105.8%	100.0%

In order to examine the rate at which realized spreads decline across increasing time horizons, this table presents the difference between dollar realized spreads calculated using a 10-millisecond time horizon and realized spreads calculated using a five-minute time horizon, along with the cumulative percentage of this difference that realized at various intermediate time horizons (50 milliseconds, 1 second, 15 seconds, 1 minute, and 5 minutes), using data from TAQ. Results are presented for stocks across different market capitalization groups. Measures grouped by size quartile were calculated on a stock-day basis, then averaged by stock, then averaged within each size quartile. See supra note 1238 for dataset description. This analysis uses data from prior to the implementation of the MDI Rules and numbers may be different following the implementation of the MDI Rules. See supra note 1493 and supra section IX.C.1.c)(2).

risk increases at a rapid pace as the time horizon increase, which could signal more adverse market conditions.

[1486] A number of academic studies argue that the five-minute horizon is too long for a high-frequency environment. *See, e.g.,* O'Hara 2015; O'Hara et al.; Conrad and Wahal, *supra* note 544.

[1487] The term ''noise'' is used throughout in the statistical sense and refers to unexplained or unrelated variability in observations that degrades the efficiency of computed statistics or estimators.

[1488] *See* SIFMA Letter at 32.

[1489] *See* Proposing Release, 88 FR 3786 at 3854 (Jan. 20, 2023). For example, while it would be theoretically possible to use CAT data to estimate market maker turnover, it would not be possible to estimate inventory levels, as starting inventory levels accumulated prior to the availability of CAT data are not observable.

[1490] *See* Table 1 of the Proposing Release, 88 FR 3786 at 3815 (Jan. 20, 2023).

[1491] *See* Conrad and Wahal, *supra* note 544. As described in *supra* note 1235, one way to interpret the decline in realized spread is as a function of the realization of price impact. An optimal time horizon would be one that is long enough to capture most of the realization of price impact, but not long enough to incorporate noise.

[1492] The TAQ data used in this analysis have been updated since the Proposing Release to account for a more recent time period. In addition, the methodology has been updated to include additional time horizons. *See* Proposing Release, 88 FR 3786 at 3815 (fig. 1) (Jan. 20, 2023), which presents a similar analysis that uses data from Feb. 2021 (*see* Proposing Release, 88 FR 3786 at 3854, n.706 (Jan. 20, 2023), for data description), and includes six time horizons (1 second, 5 seconds, 10 seconds, 15 seconds, 1 minute, and 5 minutes); *see supra* note 1237. Also, while Table 1 of the Proposing Release similarly presented the additional (*i.e.,* non-cumulative) variation at each time interval, for clarity, the analysis in Table 7 presents the cumulative decline in average realized spreads at each time horizon. However, despite these updates, this analysis continues to show that time horizons of 15 seconds and one minute capture most of the realized spread information for larger stocks, for the two smaller-stock groups, a sizeable proportion of the overall decline does not occur until the 5-minute horizon.

[1493] *See supra* note 1238 for dataset description. This analysis uses data from prior to the implementation of the MDI Rules and the specific numbers may be different following the implementation of the MDI Rules. In particular, for certain stocks, the NBBO midpoint may change, though the Commission is uncertain of the direction of this effect. This may impact statistics that are based on these values, including realized spreads. *See supra* section IX.C.1.c)(2)IX.C.1.c)(2). While specific numbers might change, the Commission does not expect the relative variation in realized spreads across different time horizons to change as a result of the implementation of the MDI Rules.

[1494] *See* Table 1 of the Proposing Release, 88 FR 3786 at 3815 (Jan. 20, 2023).

[1495] *See* Conrad and Wahal, *supra* note 544.

Echoing the Commission's statements in the Proposing Release, Table 7 also shows that, for smaller stocks, a sizeable proportion of the overall decline in realized spreads (around 23–26%) does not occur until the five-minute horizon. Therefore, retaining the five-minute horizon will be useful in capturing additional information about realized spreads, particularly for the smallest stocks.[1496]

Other commenters similarly stated that the Commission did not provide a basis for its selection of realized spread time horizons.[1497] In response to commenters and to add robustness to its analysis, the Commission has expanded its analysis of optimal realized spread time horizons in this Adopting Release to include two additional empirical approaches.

First, as described in section IX.C.3.(c)(5), realized spreads can be decomposed into effective spreads and price impact. Price impact is designed to measure the change in a stock's fundamental value following a trade; if a market maker is trading against a more informed trader, price impact will capture the adverse price movement for the market maker resulting from the incorporation of the informed trader's private information into prices.[1498] If the time horizon is too short, this change in the fundamental value will not yet be fully realized, and thus the measure of price impact (and thus the measure of realized spreads) will be deficient. On the other hand, if the time horizon is too long, measures of price impact and realized spread will incorporate too much noise. Therefore, an ideal time horizon for calculating the realized spread would be one that incorporates the lowest amount of noise into the measurement of the price impact component of realized spreads. To examine how the noise evolves over different time horizons, the Commission used the sample of TAQ data described above to examine the noisiness of measurements of price impact at different time intervals for different market capitalization groups,[1499] measuring noise using the coefficient of variation (ratio of the standard deviation to the mean). The results are presented in Figure 22, which shows that the coefficient of variation of price impact decreases as the time horizon increases for smaller stocks, but increases as the time horizon increases for larger stocks. In other words, the time horizon that minimizes noise and best captures the inventory risk of liquidity providers varies depending on the market capitalization and liquidity of the stock. As a result, including multiple time horizons for realized spreads will make this measure more relevant across a wider range of stocks.

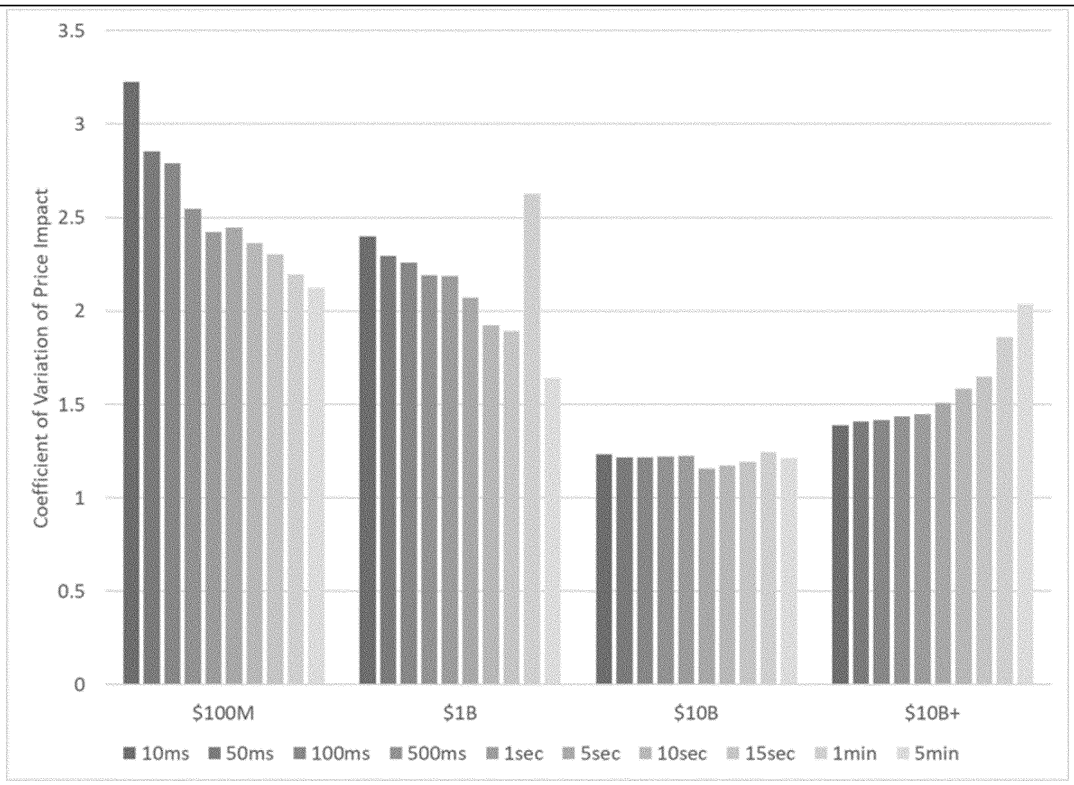
[1496] In the Proposing Release, the Commission stated that ''requiring an additional specification of realized spreads would entail adding another data item, which would also increase the complexity of Rule 605 reports.'' Proposing Release, 88 FR 3786 at 3892 (Jan. 20, 2023). For this reason, the Commission is requiring only two of the five realized spread horizons to be included in the Summary Reports (*see supra* section IV.B.1.b). However, for the full Rule 605 reports, the Commission agrees with a commenter that the detailed Rule 605 reports are ''intended to be machine-readable, not human-readable,'' and that ''[a]dding rows and columns to the Rule 605 report, within reason, would not materially increase the costs of processing these reports and storing the relevant data.'' FIF Letter at 16.

[1497] *See, e.g.,* Virtu Letter II at 14, stating that ''it is unclear what the basis is for bluntly measuring realized spreads at 15 seconds and one minute;'' and SIFMA Letter at 32, stating that ''The Commission also has not provided a rational basis for its method of calibrating the realized spread time frames (*i.e.,* 15 seconds and one minute).''

[1498] *See supra* note 1229 for an example.

[1499] Following the academic literature, results are presented separately for different market capitalization groups as a proxy for different liquidity variables, with high market capitalization correlating closely with higher liquidity. *See supra* note 1239 and corresponding text.

Figure 22: Coefficient of Variation of Price Impact Measures Across Time Horizons and Market Capitalization, Q1 2023



This figure plots coefficient of variation of price impact estimates across various time horizons, measuring the coefficient of variation as the ratio of the standard deviation of price impact measures within a time horizon to the mean measure of price impact. Price impact is measured as twice the signed different between the midpoint five minutes after an order's execution minus the midpoint at an order's time of execution. The measures are calculated using TAQ data for a sample of 400 stocks. Results are presented for stocks across different market capitalization groups. Measures grouped by size quartile were calculated on a stock-day basis, then averaged by stock, then averaged within each size quartile. See supra note 1493 for dataset description. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. See supra note 1493 and section IX.C.1.c)(2).

Second, as an additional method for measuring the time horizon that minimizes the noise embedded in the price impact component of realized spread measures, the Commission used the sample TAQ data described above [1500] to estimate the signal-to-noise ratio in price impact estimates using an Ordinary Least Squares (OLS) regression.[1501] The regression is estimated separately for each time interval considered.[1502] Subsequently, for each time interval, the signal-to-noise ratio is measured as the ratio of the variation in price impact that is explained by the explanatory variables of the regression (the ''signal'') to the standard deviation of the residual from the regression, *i.e.,* the variation in price impact that is uncorrelated with the explanatory variables (the ''noise'').[1503] A higher signal-to-noise ratio corresponds to a more informative measure of price impact, and therefore a more informative measure of realized spread.[1504]

Figure 23 presents these ratios over all the time intervals for four market capitalization groups and shows clear differences between smaller and larger stocks. First, it is clear from the figure that larger, more liquid stocks have more informative measures of price impact than smaller, less liquid stocks. Second, for the two smaller stock groups, the results show a small but steady increase in the signal-to-noise ratio as the time horizon increases, implying that realized spread measures are becoming more informative as the noise in the price impact component decreases. This result supports

[1500] *See supra* note 1238 for dataset description.

[1501] We regress price impact on explanatory variables identified as key drivers of price impact. Specifically, we include the (inverse of) trade price, logarithms of market capitalization and total trade volume, intra-day volatility and order imbalance, as well as the (logarithm of) share volume of retail trades and order imbalance of retail trades. These variables are similar to those in, *e.g.,* A. Anand, P. Irvine et al., *Performance of Institutional Trading Desks: An Analysis of Persistence in Trading Costs,* 25 Rev. Fin. Studs. 557 (2012) and G.W. Eaton et al., *Measuring Institutional Trading Costs and the Implications for Finance Research: The Case of Tick Size Reductions,* 139 J. Fin. Econ. 832 (2021). The regression is estimated using daily estimates at the stock level.

[1502] These time intervals are constructed using the following time horizons: 10 milliseconds, 50 milliseconds, 100 milliseconds, 500 milliseconds, 1 second, 5 seconds, 10 seconds, 15 seconds, 1 minute, and 5 minutes.

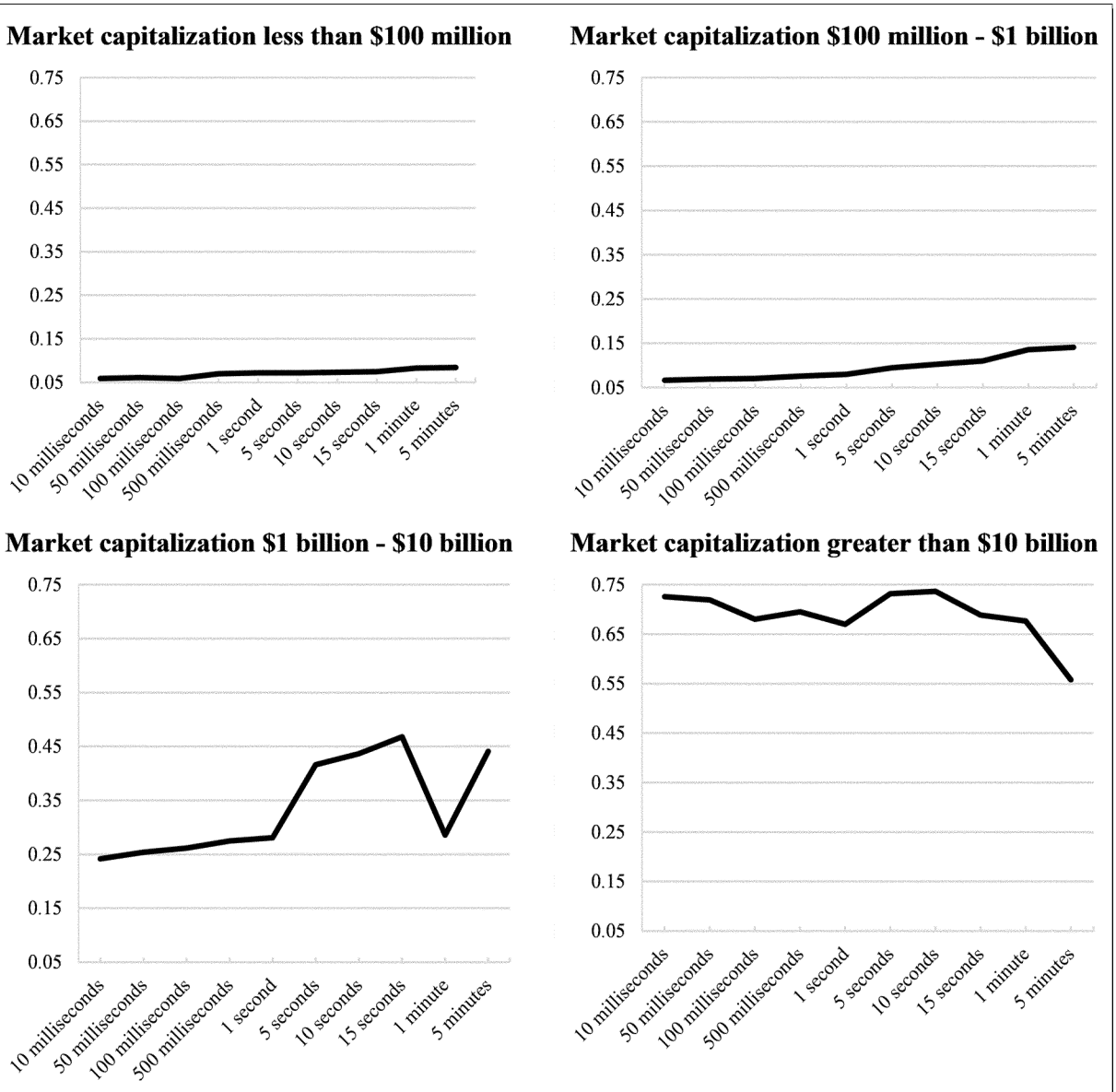
[1503] The underlying assumption is that the systematic variation in price impact is fully explained by the explanatory variables described in note 1501, *supra.* It is possible that there are variables, not included in the regression and not sufficiently correlated with the included variables, that are systematically driving the variation in price impact. These variables would be captured in the regression residual, which would inflate the estimate of the noise. However, to the extent that the effects of these omitted variables are relatively constant across time horizons, this should not drive the patterns in the signal-to-noise ratios across time horizons observed in Figure 19 *infra.*

[1504] *See, e.g.,* G.P. Swann, *Is Precise Econometrics An Illusion?,* 50 J. Econ. Educ. 343–355 (2019).

including a longer time horizon, *i.e.,* 5 minutes, which maximizes the signal-to-noise ratio for these stocks.[1505] Meanwhile, the largest stock group shows a different pattern: for these stocks, the signal-to-noise ratio is largely decreasing in the time horizon, meaning that realized spreads are less informative at longer intervals. This result supports including a shorter time horizon, *i.e.,* 10 or 50 milliseconds. The fact that the analysis for the smallest market capitalization stocks supports the inclusion of the longest time horizon examined, while the analysis for the largest market capitalization group points to the inclusion of the shortest time horizon examined, supports the inclusion of multiple time horizons across a broad range.

[1505] Figure 23 also shows a slight and temporary increase in the signal-to-noise ratio between 1 to 10 seconds for the largest market capitalization group, which could imply that a 1-second horizon is as informative as a 10 or 50 millisecond horizon. However, Figure 18 shows a monotonic increase in noise as the time horizon increases for the largest market capitalization group, implying that a shorter time horizon is always less noisy than a longer time horizon for these stocks. For this reason, there is additional value in including a time horizon that is shorter than one second.

Figure 23: Signal-to-Noise Ratios in Price Impact Measures by Market Capitalization and Time Horizon, Q1 2023



This figure plots the estimated signal-to-noise ratios for different market capitalization groups over different time intervals. The signals and noises are estimated using the predicted values and residuals form regression analyses where price impacts are regressed on security and transaction characteristics. Signals are measured with the variation in the predicted values of price impacts while noises are measured using the variation in residuals. The analysis used data from TAQ, see supra note 1023 for dataset description. Measures are winsorized at the 5% and 95% level. Measures grouped by size quartile were calculated on a stock-day basis, then averaged by stock, then averaged within each size quartile. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. See supra note 1025 and section IX.C.1.d)(2).

While some commenters supported the usefulness of realized spreads as a measure of order flow characteristics,[1506] several commenters opposed the inclusion of realized spread statistics in amended Rule 605 reports.[1507] One commenter stated that they ''[do] not believe a one-size-fits-all metric can work'' because ''market participants all have different views as to what time period(s) is appropriate to measure realized spread, and this can also vary based on the specific symbol and type of order flow involved.'' [1508] The Commission agrees, and this is why the Commission is adopting a range of realized spread metrics, each with a different time horizon, such that consumers of Rule 605 reports will be able to use different realized spread according to their potentially different needs or preferences. Another commenter stated realized spreads ''become largely useless when attempting to compare different types of order flow or market centers,'' such as between on-exchange and off-exchange trading.[1509] While the commenter did not clarify why realized spreads are not able to be used to compare different types of order flow, offering market participants a range of time horizons will help market participants control for differences in order flow and market conditions, as they will be able to choose the time horizons that best suit their needs and the reporting entities' mix of stocks in terms of size and liquidity. Offering a range of realized spread time horizons is also consistent with industry practice among market participants, who often use ''mark-out curves'' to compare across a range of time horizons, including at time horizons less than one second.[1510] In addition, the Commission understands that the one-second time horizon is often used in industry,[1511] and so including the one-second horizon in Rule 605 reports will help bring reported realized spreads in line with industry practice.

(ii) Effective Spread

The adopted amendment to require reporting entities to include information about average effective spreads for midpoint-or-better NMLOs,[1512] in addition to market and marketable limit order types, will increase transparency about the availability of favorable executions for these types of orders.

For midpoint-or-better NMLOs, the high percentage of these orders submitted with IOC designations shown in Table 4 implies that a significant portion of these orders have the expectation of executing immediately, for example, against hidden or odd-lot liquidity inside of the spread. By definition, midpoint-or-better NMLOs will have an effective spread that is either zero (if at-the-midpoint) or positive (if beyond-the-midpoint), reflecting that the more aggressive of these orders are paying a higher percentage of the spread for this immediacy.[1513] If a market center is offering lower effective spreads for midpoint-or-better NMLOs on average, that means that the market center is able to execute these orders closer to the midpoint, *e.g.,* because the market center has liquidity available within the spread, or, in the case of wholesalers, the market center is willing to offer price improvement to beyond-the-midpoint orders and execute them at the midpoint. Therefore, information about effective spreads for midpoint-or-better NMLOs will allow traders that use these orders as part of their trading strategies (and their broker-dealers) to make comparisons across market centers based on the profitability of these strategies.

One commenter disagreed that price improvement information for beyond-the-midpoint orders will be useful for comparing across market centers because some of the price improvement of these orders is driven by the order's limit price, which is controlled by the investor, and not the market center.[1514] The Commission agrees with the commenter that some of the price improvement for midpoint-or-better NMLOs, including the average effective spread, will be driven by the average limit prices of these orders received by a market center.[1515] This may make it so

[1506] These commenters discussed the usefulness of realized spreads within the context of advocating for their inclusion in Rule 605 summary reports. In particular, one commenter stated that, when combined with effective spread statistics to calculate price impact, realized spreads ''provide better transparency regarding the distinct characteristics of order flow among brokers.'' Schwab Letter II at 3. Another commenter stated that ''the impact of . . . order flow characteristics [such as whether orders are classified by market participants as more or less informed or the size of orders relative to a stock's average daily value] can be measured, at least in part, through statistics such as realized spread and price impact.'' FIF Letter at 31–32.

[1507] *See, e.g.,* SIFMA Letter at 32; Virtu Letter at 12; Rule 605 Citadel Letter at 8. In addition, one commenter stated that they ''do not believe realized spread is a key execution quality metric for retail investors.'' Robinhood at 46. The Commission agrees that realized spread is not a measure of execution quality. As stated in the Proposing Release and elsewhere in this release, realized spreads are useful for allowing market participants to control for differences in adverse selection risk across different market centers. *See, e.g.,* Proposing Release, 88 FR 3786 at 3853, n.701 (Jan. 20, 2023) and corresponding text.

[1508] *See* SIFMA Letter at 32.

[1509] *See* Citadel Letter at 8.

[1510] *See, e.g., Bringing the Power of Signal V6 to D-Limit,* IEX (Oct. 31, 2023), *available at https://www.iex.io/article/bringing-the-power-of-signal-v6-to-d-limit* (looking at mark-outs ranging from 1 millisecond to 1 minute); What Markouts Are and Why They Don't Always Matter, *supra* note 551 (looking at mark-outs ranging from 0 milliseconds to 1 minute); Securities Exchange Act Release No. 98625 (Sept. 28, 2023), 88 FR 68711 at 68713 (Oct. 4, 2023) (SR–IEX–2023–10) (looking at mark-outs ranging from 1 millisecond to 1 second); *The Midpoint Extended Life Order (M–ELO): M–ELO Holding Period,* NASDAQ (Feb. 13, 2020, 3:57 p.m. EST), *available at https://www.nasdaq.com/articles/the-midpoint-extended-life-order-m-elo%3A-m-elo-holding-period-2020-02-13* (looking at mark-outs ranging from 0 milliseconds to 1 minute); *MatchIt ATS Monthly Execution Metrics,* Virtu, *available at https://www.virtu.com/about/transparency/* (last visited Feb. 1, 2024, 1:34 p.m.) (looking at mark-outs ranging from 500 milliseconds to 1 minute); and *How Periodic Auctions Enhance Trading in Europe and the U.S.,* CBOE (Sept. 13, 2023), *available at https://www.cboe.com/insights/posts/how-periodic-auctions-enhance-trading-in-europe-and-the-u-s/* (looking at mark-outs ranging from 0 milliseconds to 1 second).

[1511] *See, e.g.,* All-in Economics to Trade Are What Matters Most, *supra* note 551; Proof's Public-facing TCA: Latest Results Over One Year of Data, ProofTrading (Mar. 23, 2023), *available at https://prooftrading.com/docs/tca-202303.pdf*; and Securities Exchange Act Release No. 81484 (Sept. 28, 2023), 88 FR 68711 at 68713 (Oct. 4, 2023) (SR–IEX–2023–10); Sean Spector & Tori Dewey, *Minimum Quantities Part I: Adverse Selection,* IEX (Nov. 11, 2020), *available at https://www.iex.io/article/minimum-quantities-part-i-adverse-selection*; and Diana Kafkes et al., *Applying Artificial Intelligence & Reinforcement Learning Methods Towards Improving Execution Outcomes* (working paper Oct. 10, 2022), *available at https://ssrn.com/abstract=4243985* (retrieved from SSRN Elsevier database).

[1512] *See* final 17 CFR 242.605(a)(1)(ii)(B); *see also supra* section III.B.4.(b)(2).

[1513] By contrast, NMLOs that are priced worse than the midpoint will tend to have negative effective spreads (*i.e.,* a gain). The Commission proposed including effective spreads for all NMLOs, and stated that effective spreads for NMLOs can be negative. Further, the Commission characterized the effective spread for NMLOs as a measure of ''how much customers can expect to be compensated for providing liquidity.'' Proposing Release, 88 FR 3786 at 3869 (Jan. 20, 2023). One commenter stated that ''[t]he effective spread is not widely accepted as a meaningful measure of execution quality for NMLOs,'' and that ''[f]or orders submitted outside of the NBBO, the metric essentially amounts to negative one times the quoted spread at the moment the order becomes executable.'' Virtu Letter at 14. The Commission agrees that this is the case. Furthermore, this will also be the case for orders submitted at the NBBO as well. Thus, for these orders, effective spread is a less meaningful measure of execution quality than for midpoint-or-better NMLOs, and thus is not adopting a requirement for effective spreads to be reported for NMLOs submitted at or below the NBBO.

[1514] *See* Schwab Letter at 32.

[1515] This is true of all inside-the-quote NMLOs that are posted to the limit order book. For these orders, since the effective spread is measured using the midpoint as of the time of order executability (*see* final 17 CFR 242.600(b)(8)), the effective spread will simply be equal to the signed difference between the limit price and the midpoint at the time of executability, which, for inside-the-quote

Continued

that a reporting entity that consistently handles more aggressively priced midpoint-or-better NMLOs reflects higher effective spreads on average. However, the Commission disagrees that this will make it so that these measures will not be comparable across reporting entities. To the extent that a market center is able to improve upon a midpoint-or-better order's limit price by, *e.g.,* offering better-priced liquidity within the spread and/or by offering the order price improvement, this will be reflected in and result in a better effective spread measure for that market center.

One commenter stated that ''the effective spread is not widely accepted as a meaningful measure of execution quality for NMLOs,'' and ''does not measure a dimension of execution quality that is likely to differ across market centers'' because ''the NBBO midpoint at the moment the NBBO first touches the limit price . . . mechanically must be the same on every market center.'' [1516] The commenter also states that ''[f]or orders submitted outside of the NBBO, the metric essentially amounts to negative one times the quoted spread at the moment the order becomes executable.'' [1517] The Commission agrees that the distance between a NMLO's limit price and the NBBO will be the same across any market center, and also agrees that effective spreads may not be a meaningful measure of execution quality for NMLOs submitted outside of the NBBO for the reason referenced by the commenter. However, since midpoint-or-better NMLOs are able to transact at prices better than their limit prices (*e.g.,* if there is liquidity available inside the quote), effective spreads for midpoint-or-better NMLOs will differ according to a market centers' ability to offer inside-the-quote liquidity or to execute beyond-the-midpoint orders at the midpoint. Therefore, while the Commission agrees with the commenter that effective spreads may not be a meaningful measure of execution quality NMLOs submitted at or outside of the NBBO, there are benefits to including information about effective spreads narrowly for midpoint-or-better NMLOs.

(iii) Percentage Spreads (Effective and Realized)

The adopted amendment requiring reporting entities to report average effective spreads and average realized spreads in percentage terms,[1518] in addition to the preexisting requirement to report them in dollar terms,[1519] will allow market participants to evaluate and compare the actual per-share dollar premium paid (or amount earned) captured by the spread, and use average percentage measures to compare aggregate spreads across broker-dealers that handle different mixes of stocks and/or stocks with significant price volatility.[1520] Since average spread measures represent a per-share cost, the real costs to (or premiums earned by) investors captured by average spread measures can be very different, depending on the stock price.[1521] Percentage average spread measures, on the other hand, will better account for these differences in stock prices.[1522] As different reporting entities handle and/or transact in different mixes of stocks with varying prices, including information about average percentage spreads will make it possible for market participants who want to compare reporting entities' overall spread measures or their spread measures for baskets of stocks to aggregate average spreads for a variety of stocks with varying prices.[1523] This will facilitate a more apples-to-apples comparison of both average effective and average realized spreads across reporting entities. Requiring information on the average percentage effective spread in addition to the average effective spread will facilitate more apples-to-apples comparisons of execution prices across reporting entities, permitting greater competition and resulting in lower effective spreads, *i.e.,* better execution prices.

(iv) Effective Over Quoted Spread (E/Q)

The adopted amendment requiring reporting entities to include information on effective over quoted spreads [1524] will increase market participants' access to information about price improvement. The Commission understands that the effective over quoted spread (E/Q) is a measure often used in industry practice.[1525] Therefore, including this measure will improve upon the accessibility of price improvement information contained in Rule 605 reports by making more readily available a measure that is already used and well understood by industry participants.[1526] This is expected to result in increased competition on the basis of execution prices, which is expected to result in improved execution prices.

Consistent with commenters' suggestions,[1527] the Commission is adopting a spread-weighted average E/Q statistic, which is equivalent to the average effective spread divided by the average quoted spread, expressed as a percentage.[1528] As stated by commenters, a key benefit of spread-weighted average E/Q statistics is that this method of weighting avoids the possibility that a market center could improve its E/Q statistics simply by reallocating its price improvement away from wide-spread stocks and to stocks

NMLOs, will be equivalent to the time of order submission.

[1516] *See* Virtu Letter II at 14.

[1517] *See* Virtu Letter II at 14.

[1518] *See* final 17 CFR 242.605(a)(1)(i)(P), (R), (T), (V), and (X).

[1519] *See* prior 17 CFR 242.605(a)(1)(i)(K) and (a)(1)(ii)(A).

[1520] This was supported by a commenter, who stated that ''percentage-based spread measures would provide additional information at the individual stock level where there is a significant price change during a month.'' Better Markets Letter at 9.

[1521] *See supra* note 1247 and accompanying text for an example showing that the total cost of accumulating the same position in terms of dollar value in two stocks with the same per-share dollar effective spread can differ significantly in terms of total transaction costs if one stock is priced much lower than the other.

[1522] *See* example in *supra* note 1247. While the $250 stock and the $2.50 stock would have the same average effective spread, the average percentage effective spreads of these stocks would be 0.004% and 0.4%, respectively, which indicates that investors would face higher costs from accumulating a position in the $2.50 stock than they would from accumulating an equal-value position in the $250 stock.

[1523] While the main purpose of Rule 605 is to facilitate comparisons across reporting entities on the basis of execution quality within a particular security, the Commission understands that access to aggregated information is useful for market participants. The adopted amendment to require reporting entities to prepare summary reports that aggregate execution quality information for S&P 500 stocks, along with all NMS stocks, will give market participants access to aggregate effective spreads for one commonly used basket of stocks. Meanwhile, per-stock percentage spread information will enhance market participant's ability to aggregate effective spread information across baskets of stocks other than the S&P 500.

[1524] *See* final 17 CFR 242.605(a)(1)(ii)(D); *see also supra* section III.B.4.(d)(2).

[1525] *See, e.g., About Us: Brokerage Built for You,* Vanguard, *available at https://investor.vanguard.com/about-us/brokerage-order-execution-quality* (last visited Feb. 1, 2024, 1:41 p.m.). This was also confirmed by one commenter; *see* Schwab Letter at 3, stating that E/Q is a ''very common metric used within the industry to judge execution quality.''

[1526] Several commenters supported the idea that E/Q is a useful measure of price improvement. *See, e.g.,* Better Markets Letter at 9; Vanguard Letter at 4; Schwab Letter at 31.

[1527] *See, e.g.,* FIF Letter at 23–24; Rule 605 Citadel Letter at 5; Schwab Letter at 31; and Schwab Letter II at 4.

[1528] To see this, consider that the formula for calculating the spread-weighted average E/Q in the case of two trades of size s_1 and s_2 with per-share effective spreads E_1 and E_2 and per-share quoted spreads Q_1 and Q_2, would be $[s_1Q_1/(s_1Q_1 + s_2Q_2) \times (s_1E_1/s_1Q_1)] + [s_2Q_2/(s_1Q_1 + s_2Q_2) \times (s_2E_2/s_2Q_2)]$. This simplifies to $(s_1E_1 + s_2E_2)/(s_1Q_1 + s_2Q_2)$, which is equivalent to the average effective spread divided by the average quoted spread. This result holds irrespective of the number of trades.

with narrower spreads.[1529] To see this, consider a market center that executes 100-share trades in two stocks with very different spreads: Stock A with a quoted spread of $0.02, and Stock B with a quoted spread of $1.00. The market center offers both trades $0.01 of price improvement per share. Using a weighting scheme other than spread-weighting, such as share-weighting,[1530] the market center's average E/Q would be 0.5 * ($0.00/$0.02) + 0.5 * ($0.98/$1.00) = 49%. The market center could lower its average E/Q by simply reallocating the $0.01 of price improvement it offered to Stock B to Stock A; in this case, its average E/Q would be 0.5 * (−$0.02/$0.02) + 0.5 * ($1.00/$1.00) = 0%.[1531] This illustrates that share-weighting would allow a market center to improve its E/Q substantially by reallocating price improvement from wide-spread stocks to narrow-spread stocks, even though the dollar amount of price improvement that it offered to market participants did not change. With spread-weighting, however, the market center's E/Q after offering $0.01 to each stock would be 94.2%; after the reallocation of price improvement from Stock B to Stock A, the spread-weighted average E/Q would also be 94.2%.[1532] In other words, the market center will not be able to improve its E/Q simply by reallocating its dollar price improvement among stocks with different spreads. This will lead to a more accurate measure of execution quality that is better able to facilitate comparisons of E/Q across market centers.

Several commenters suggested that Rule 605 reports not include E/Q and leave it to users of the report to calculate E/Q from other statistics.[1533] In the Proposing Release, the Commission stated that, while E/Q can already be calculated from data that are already required by preexisting Rule 605,[1534] calculating a share-weighted monthly average E/Q as the ratio of average effective spread to average quoted spread produces a noisier E/Q measure than one calculated on a per transaction basis.[1535] The Commission made this statement in reference to the use of this ratio as an approximation of a *share-weighted* measure of E/Q, as was proposed. For spread-weighted measures of E/Q, the formula for aggregating per-transaction measures of E/Q simplifies to precisely the ratio of average effective spreads to average quoted spreads.[1536] Therefore, this issue of the usage of existing Rule 605 data producing a ''noisy'' approximation of E/Q is not relevant to the adopted amendment. Nevertheless, requiring a separate field for E/Q will increase the ability of market participants to access and utilize E/Q.[1537] Furthermore, the Commission agrees with a commenter that adding rows and columns to the Rule 605 report will not substantially increase the costs to data users of processing these reports and storing the relevant data.[1538] The added rows and columns will be part of the same machine-readable file using the same pipe-delimited ASCII format as the existing rows and columns, so data users will not incur any costs associated with converting between formats in order to store and use the newly reported information. Therefore, the marginal cost to data users of including E/Q as an additional column should be minimal. Because of the amended rule requiring the reporting of average quoted spread,[1539] market participants will also be able to compare the spread-weighted average E/Q column directly to the columns containing average quoted spreads and average effective spreads.[1540]

(v) Size Improvement

The adopted amendment expanding Rule 605 reporting requirements to include measures of size improvement will provide market participants with more information about an additional dimension of execution quality that has not been not fully captured by preexisting Rule 605 statistics.[1541] We expect this to be beneficial for evaluating execution of larger-sized orders, as these orders are the most likely to exceed the liquidity available at the best quotes and are therefore in a position to benefit the most from size improvement.

The adopted amendment will require reporting entities to report, for executions of covered shares, a benchmark metric calculated as the consolidated reference quote size, capped at the size of the order at the time of order receipt (or order executability in the case of marketable stop orders and midpoint-or-better orders) (''order size benchmark'').[1542] Subtracting the order size benchmark from number of submitted shares yields ''outsized share count''—a measure of the opportunity to provide size

[1529] *See, e.g.,* FIF Letter at 23–24; Rule 605 Citadel Letter at 5; Schwab Letter at 31; and Schwab Letter II at 4.

[1530] The formula for calculating the share-weighted average E/Q in the case of two trades of sizes s_1 and s_2, with per-share effective spreads E_1 and E_2 and per-share quoted spreads Q_1 and Q_2, would be $[s_1/(s_1 + s_2) \times (E_1/Q_1)] + [s_2/(s_1 + s_2) \times (E_2/Q_2)]$.

[1531] A lower E/Q corresponds to a better execution quality, as the trader whose order is being executed is paying a smaller percentage of the spread.

[1532] *See supra* note 1528 for the formula for calculating spread-weighted E/Q in the case of two trades.

[1533] *See* FIF Letter at 20–21 (stating that for marketable order types, it is not necessary to include E/Q in the detailed reports required by Rule 605(a)(1) because E/Q can be derived from other data that are already included and these data, specifically, are found in the price improvement, price dis-improvement, and effective spread statistics); Schwab Letter at 31 (suggesting that the reports include effective and quoted spread and then allow individuals to compute E/Q).

[1534] *See* Proposing Release, 88 FR 3786 at 3817, n.399 (Jan. 20, 2023): ''[Share-weighted] average quoted spread can be derived on a per symbol basis by adding average effective spread and double the amount of total average per share price improvement or dis-improvement (*i.e.,* amount of price improvement times price improved share count, less amount of price dis-improvement times price dis-improved share count, divided by total number of executed shares).''

[1535] To see this, consider a market center that, in a given month, executes two orders of sizes s_1 and s_2, with per-share effective spreads E_1 and E_2 and per-share quoted spreads Q_1 and Q_2. The formula for the share-weighted average E/Q is given in *supra* note 1530. Approximating the share-weighted average E/Q from share-weighted average effective and quoted spreads would yield $[s_1/(s_1\ Q_1 + s_2\ Q_2) \times E_1] + [s_2/(s_1\ Q_1 + s_2\ Q_2) \times E_2]$.

[1536] *See supra* note 1528 for the formula for calculating spread-weighted E/Q in the case of two trades.

[1537] *See supra* section III.B.4.d)(2) for further discussion.

[1538] *See supra* note 1496 and corresponding text for further discussion.

[1539] *See* final 17 CFR 242.605(a)(1)(ii)(A).

[1540] *See, e.g.,* Professor Spatt et al. Letter, stating that ''quoted spreads, for example, are critical for understanding and weighting both effective spreads and EFQ ratios.''

[1541] This was also supported by one commenter, who stated that ''[i]ncluding size improvement metrics will provide market participants with important information about an additional dimension of execution quality that is not currently captured by current Rule 605 statistics.'' Rule 605 Citadel Letter at 11. Another commenter stated that, along with other enhancements, the inclusion of the size improvement metric would ''improve order execution information available for market participants to make trading and order routing decisions . . .'' SIFMA Letter II at 25.

[1542] *See* final 17 CFR 242.605(a)(1)(ii)(R). As discussed in *supra* section III.B.4.e)(2), this metric is designed to capture whether the depth available at the best market prices is sufficient to fully execute against a given order, or whether the order would need to walk the book to fully execute. Since size improvement is measured using NBBO depth at the time of order receipt, a marketable limit order that partially executes, is posted to the limit order book, and then fully executes later, will be reflected in size improvement statistics. For example, assume that a market center receives a 500-share marketable limit order when there are 300 shares available at the NBBO. The market center executes 300 of the 500 shares against the available depth and posts the remaining 200 shares to the limit order book, which becomes the new NBBO. A market order subsequently executes against those 200 shares. Since size improvement is based on order receipt time, the market center would record an order size benchmark of 300, 500 shares executed at the NBBO or better, and thus a size-improved outsized share count of 200 shares.

improvement.[1543] In response to a commenter, Rule 605 reports as amended will also include a size improvement metric that will measure the level of size improvement in those instances in which the order presents an opportunity for size improvement (the ''size improved outsized shares'').[1544] Dividing size-improved outsized shares by outsized share count yields the number of shares that receive size improvement (on orders in which size improvement is possible) as a fraction of the number of shares for which there is an opportunity to provide size improvement.

If information about size improvement were already captured by preexisting Rule 605 statistics, the addition of the order size benchmark and information about size improved outsized shares would not increase transparency. To examine the extent to which size improvement measures calculated using these metrics will contain information that is different from measures required by preexisting Rule 605, data from the Tick Size Pilot B.II Market and Marketable Limit Order dataset [1545] were analyzed to calculate the average correlation [1546] between price improvement, effective spreads, and the size improved outsized shares divided by the outsized share count (''outsized size improvement rate'').[1547] As national securities exchanges and off-exchange market centers differ in the extent to which they can offer size and price improvement, the Commission performed this analysis separately for these two different types of market centers.

[1543] Outsized Share Count = Number of Submitted Shares − Order Size Benchmark. Continuing the example from *supra* note 1557, while both Market Centers A and B would show a size improvement share count of 0, Market Center A will show an outsized share count of 500 − 500 = 0, while Market Center B will show an outsized share count of 500 − 300 = 200.

[1544] *See* final 17 CFR 242.605(a)(1)(ii)(S), requiring the reporting of ''the sum of, for each execution of a covered order, the greater of: the total number of shares executed with price improvement plus the total number of shares executed at the quote minus the order size benchmark, or zero.'' The ''total number of shares executed with price improvement plus the total number of shares executed at the quote minus the order size benchmark'' (''net size improvement'') will only be a strictly positive number for those orders that are both eligible to receive size improve and receive size improvement, and thus is equivalent to a measure of shares that are eligible to and that received size improvement. To see this, consider that an order (''Order A'') whose size is less than the available NBBO depth will have a net size improvement of 0, an order (''Order B'') that is not executed despite available depth (or is executed as prices worse than the NBBO) will have a negative net size improvement, and an order (''Order C'') whose size exceeds the available NBBO depth by 300 shares and receives price improvement on those 300 shares will have a net size improvement of 300 shares. Capping the net size improvement for these three orders at zero and then summing then would only capture the net size improvement for that order that was eligible to receive size improvement and that received size improvement, *i.e.,* 0 + 0 + 300 shares. A substantively similar measure (''the number (or percentage) of shares within the outsized orders that received size improvement (*i.e.,* were executed at or better than the NBBO price, in excess of the amount of aggregate displayed liquidity at the NBBO)'') was suggested by a commenter. *See* Virtu Letter at 10. To the extent that the metric suggested by the commenter could capture size dis-improvement (*i.e.,* negative values of net size improvement), this metric may not be equivalent to the size improved outsized share count.

[1545] *See* Tick Size Pilot Plan, *supra* note 1115. This dataset contains information for approximately 2,400 small cap stocks for a period from Apr. 2016 to Mar. 2019. Orders with special handling codes are discarded, as are orders marked as short sales (''SS''). As the Tick Size Pilot collected data only for small cap stocks, these execution times are not necessarily representative of all stocks. The Commission limited this analysis to a randomly selected sample of 100 stocks and for the time period of Mar. 2019. This dataset was then merged with MIDAS data to obtain the consolidated depth available at the NBBO at the time of the market and marketable limit order submissions, along with data on odd-lots and consolidated volume at prices outside of the NBBO. This analysis uses data from prior to the implementation of the MDI Rules and the specific numbers may be different following the implementation of the MDI Rules. In particular, for certain stocks, the NBBO quoted spread is expected to narrow, the liquidity available at the NBBO may decrease, and the NBBO midpoint may change, though the Commission is uncertain of the direction of this effect. This may impact statistics that are based on these values, including measures of price and size improvement and effective spreads. *See supra* section IX.C.1.c)(2). However, it is unclear whether or how these effects would impact the correlations between these measures documented in this analysis.

[1546] Correlation is calculated using the Pearson correlation coefficient, which measures the linear correlation between two sets of data, ranging from −1 to 1, with −1 representing perfect negative correlation and 1 representing perfect positive correlation. To construct a measure of average correlation, the Pearson correlation coefficient is first calculated for each pair of execution quality metrics, for each market center-stock combination. Then value-weighted average correlation coefficient across all stocks for each market center is constructed, using dollar volume as weights. The resulting correlation coefficients are then averaged across market centers using an equal-weighted average.

[1547] *See* final 17 CFR 242.605(a)(1)(ii)(S), requiring the reporting of the greater of the net size improvement rate and zero. *See also supra* note 1544. The size improved outsized shares are divided by the outsized share count to control for differences in size improvement opportunities at different market centers. For example, if Market Centers A and B both have 200,000 size improved outsized share counts, but Market Center A has an outsized share count of 800,000, and Market Center B has an outsized share count of 1,800,000, Market Center A will be offering a higher rate of size improvement since it had fewer opportunities to provide size improvement. To capture this, the size improved outsized share count is divided by the outsized share count, such that Market Center A will have an outsized size improvement rate of 200,000/800,000 = 25% and Exchange B will have an outsized size improvement rate of 200,000/1,800,000 = 11%. This difference recognizes that Exchange A and Exchange B provided size improvement to the same number of shares, but Exchange A gave size improvement to a larger percentage of its orders for which there was an opportunity to provide size improvement.

Results are presented in Table 8 [1548] and show that, for both national securities exchanges and off-exchange market centers, effective spreads are modestly (negatively) correlated with price improvement, confirming that effective spreads contain some of the same information as price improvement measures. However, this correlation is nearly zero for the outsized size improvement rate, implying that effective spreads are a poor measure of size improvement.

Table 8: Average Correlation between Measures of Price and Size Improvement

Variables	National Securities Exchanges	Off-Exchange Market Centers
Price Improvement and Effective Spreads	-0.257	-0.205
Outsized Size Improvement Rate and Effective Spreads	-0.001	0.026
Price Improvement and Outsized Size Improvement Rate	0.024	0.022

This table presents correlations between three measures of price improvement and size improvement: price improvement, calculated as the signed difference between the execution price and the NBBO; the effective spread, calculated as twice the signed difference between the execution price and the NBBO midpoint; and the outsized size improvement rate, calculated as size improved outsized shares divided by the outsized share count (see supra note 1547 and accompanying text for a detailed description of the latter two measures). This analysis uses data from the Tick Size Pilot B.II Market and Marketable Limit Order dataset. See supra note 1545 for dataset description and supra note 1546 for methodology. To construct a measure of average correlation, the Pearson correlation coefficient is first calculated for each pair of execution quality metrics, for each market center-stock combination. Then value-weighted average correlation coefficient across all stocks for each market center is constructed, using dollar volume as weights. The resulting correlation coefficients are then averaged across market centers using an equal-weighted average. This analysis uses data from prior to the implementation of the MDI Rules and results may be different following the implementation of the MDI Rules. See supra note 1545 and section IX.C.1.c)(2).

The correlation between price improvement and the outsized size improvement rate is comparatively low. The fact that price improvement and size improvement metrics are not strongly correlated implies that each of these measures to some degree conveys different information about execution quality. Therefore, including the order size benchmark and size improved outsized shares into Rule 605 reporting requirements will provide market participants with more information about an additional dimension of execution quality that was not fully captured by Rule 605 statistics prior to these amendments.

The Commission expects that these amendments will improve execution quality in terms of size improvement by increasing the extent to which market centers and broker-dealers compete with one another on the basis of their ability to offer size improvement. In order to attract broker-dealer order flow, market centers will be incentivized to compete on the basis of size improvement, for example by executing orders against their own inventory at or better than the NBBO, or offering additional incentives to attract hidden liquidity priced at or better than the NBBO. Investors that particularly value the ability of reporting entities to offer size improvement, such as investors trading in larger order sizes, will be able to use this metric to discern which reporting entity might offer better size improvement to their orders, which will allow them to make better routing decisions and obtain increased size improvement as a result.[1549] As a result, competition on the basis of size improvement among reporting entities is expected to increase in order to attract these customers and their orders.

One commenter stated that ''[to] accurately identify size improvement not only would proprietary depth of book feeds be required, the statistic would be misleading as it would not reflect . . . top of book across public quotes, nor would it reflect hidden or mid-point priced orders which are extremely prevalent in today's market if sole reliance was on the SIP.'' [1550] The Commission acknowledges that the adopted measures of size improvement in some cases will not be as informative as a measure that incorporates full depth-of-book information.[1551] The Commission also acknowledges that it might not reflect top of book across

[1548] This analysis has been updated from the Proposing Release; *see* Proposing Release, 88 FR 3786 at 3871 (Jan. 20, 2023). In the Proposing Release, the measure of size improvement used in the analysis was constructed as the net size improvement divided by the order size benchmark. In response to commenters, the measure of size improvement used in the analysis in Table 8 has been updated in two ways. First, the size improvement measure has been updated to include outsized share count in the denominator, rather than the order size benchmark. As pointed out by commenters, since the order size benchmark contains information about the volumes of orders that do not have an opportunity to receive size improvement, dividing size improvement metrics by this number will dilute measures of size improvement. *See supra* note 1555 and corresponding text for further discussion. Second, the size improvement measure has been updated to use the size improved outsized share count in the numerator, rather than net size improvement. This is because net size improvement contains information about size dis-improvement, which can be negative even for orders that do not have an opportunity to receive size improvement. *See supra* note 1544 for further discussion. Using the size improved outsized share count focuses the analysis on those orders that are eligible to receive size improvement and receive size improvement. The Commission is amending Rule 605 to include the size improved outsized share count in response to a commenter, who suggested a similar measure. *See* Virtu Letter at 10; *see also* supra note 1544. However, both size improvement measures lead to similar average correlations, and thus these changes did not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that price improvement and size improvement each convey different information about execution quality.

[1549] *See supra* note 1257 for an example of how a size improvement measure might be useful for a trader when deciding between different market centers.

[1550] *See* Healthy Markets Letter at 18.

[1551] *See infra* sections IX.E.3.d)(1) and IX.E.3.d)(2) for a discussion of two reasonable alternatives related to including dollar size improvement relative to full depth-of-book in amended Rule 605 reports.

public quotes,[1552] or reflect hidden liquidity. However, the adopted measures will not be misleading as stated by the commenter,[1553] but will be useful for investors for the reasons given above. For example, size improvement statistics for exchanges will account for hidden liquidity, and therefore, by comparing size improvement across exchange and off-exchange market centers, investors could account for the effects of hidden liquidity.[1554]

One commenter stated that the proposed size improvement benchmark metric ''is not a useful measure of the actual size improvement,'' because the benchmark measure will ''include all orders in the calculation, even when there is no opportunity to provide size improvement,'' which ''dilutes the amount and obfuscates the value of size improvement provided when the need for size improvement actually exists.'' [1555] The commenter suggested that the Commission consider requiring the reporting of several additional metrics that are ''not affected by orders in which there was no need to provide size improvement.'' [1556]

The Commission agrees that whether there was an opportunity to provide size improvement is an important aspect of an analysis of size improvement.[1557] The Commission is adopting a metric (the size-improved outsized shares) that is substantively similar to the commenter's suggested metric, namely the number of shares within outsized orders that receive size improvement.[1558] The Commission observes further that the opportunity to provide size improvement can be calculated using a combination of two metrics that will be available in the amended reports: number of submitted shares and benchmark order size. Subtracting the order size benchmark from number of submitted shares yields ''outsized share count''—a measure of the opportunity to provide size improvement.[1559] Because the benchmark order size is capped at the order size, and thus will be equal to zero for orders sized below available NBBO depth, the outsized share count will be the same number regardless of whether it includes all orders or only all outsized orders. Dividing size-improved outsized shares by outsized share count yields the number of shares that receive size improvement (on orders in which size improvement is possible) as a fraction of the number of shares for which there is an opportunity to provide size improvement. It is thus a measure of size improvement diluted by orders for which there were no opportunities to provide size improvement.

Another commenter was critical of the benefits of the proposed size improvement measure because ''it would indicate only whether and the number of shares for which size improvement was achieved,'' and ''it would not indicate whether and to what extent such size improvement increased the amount of price improvement.'' [1560] The Commission acknowledges that the measures of size improvement included in the amended rule will measure size improvement in terms of numbers of shares, and not in terms of a dollar value of price improvement resulting from size improvement. The Commission considered but is not adopting several alternatives that would measure size improvement in terms of a dollar amount of price improvement.[1561] Market participants will be able to assess some information about price improvement from the price improvement statistics included in the amended reports, though these measures of price improvement will not consider prices and depth beyond those at or inside of the NBBO.[1562]

(vi) Riskless Principal Trades

The adopted amendment requiring that market centers include riskless principal trades in the category of trades executed away from the market center [1563] will increase transparency about internalization by wholesalers, as information on the extent to which wholesalers internalize order flow has been obscured by the preexisting Rule 605 requirement to include riskless principal trades into the category of trades executed at, rather than away from, the market center.[1564] Market participants will be more informed about potential differences in execution quality between wholesalers that largely internalize order flow as compared to those whose orders are subject to competition from other interested parties quoting on external market centers.

One commenter stated that the statement in the Proposing Release that ''execution quality statistics would be more informative to market participants'' [1565] as a result of the re-classification of riskless principal trades was ''misleading,'' because ''[t]he execution quality metrics reported under Rule 605 correctly take into account all orders routed to a wholesale broker-dealer (irrespective of where execution occurs)'' and ''[t]his would not change under the Proposal.'' [1566] The Commission agrees that the calculation of execution quality metrics takes into account both executions at and away from the reporting center, and that this will not change after the re-classification of riskless principal trades. However, as the Commission stated in the Proposing Release, requiring the separate reporting of

[1552] For example, if Exchange A's top-of-book is quoting $10.00–$10.01 and sets the NBBO, and Exchange B's top-of-book is quoting $9.99–$10.02, the adopted size improvement measures will only include volume quoting at $10.00–$10.01. Depth quoted at $9.99–$10.02, while protected, will not be incorporated into the adopted size improvement metrics. *See* 17 CFR 242.600(b)(70) for the definition of a protected bid and protected offer.

[1553] *See* Healthy Markets Letter at 18.

[1554] Since information about hidden liquidity is not publicly available, even a size improvement measure that incorporate full depth-of-book information would not incorporate information about hidden liquidity. The Commission acknowledges that, to the extent that including measures of size improvement in Rule 605 reports incentivizes hidden liquidity at the cost of displayed orders, this represents a potential cost of the amendments, though the Commission does not believe that this scenario is likely. See infra section IX.D.2.b)(3) for a full discussion.

[1555] *See* Virtu Letter at 10.

[1556] *See* Virtu Letter at 10.

[1557] To see this, consider two market centers, A and B, that both receive a market sell order for 500 shares. When Market Center A receives the order, there are 600 shares available at the NBB, and Market Center A executes the entire 500-share order at the NBB. Meanwhile, while Market Center B receives the order, there are 300 shares available at the NBB. Market Center B executes 300 of the 500 shares at the NBB, and the remaining 200 shares walk the book. Both market centers would similarly show a size improvement share count of 0. However, this would not capture the fact that Market Center A never had the opportunity to provide size improvement (because the NBB depth was sufficient to fill the order), and Market Center B did not provide size improvement, though it had the opportunity to do so.

[1558] *See* Virtu Letter at 10, stating ''the number (or percentage) of shares within the outsized orders that received size improvement (*i.e.,* were executed at or better than the NBBO price, in excess of the amount of aggregate displayed liquidity at the NBBO).'' This measure is substantively similar to the measure of size improved outsized shares included in the amended rule. *See* final 17 CFR 242.605(a)(1)(ii)(S).

[1559] Outsized Share Count = Number of Submitted Shares − Order Size Benchmark. Continuing the example from *supra* note 1557, while both Market Centers A and B will show a size improvement share count of 0, Market Center A will show an outsized share count of 500 − 500 = 0, while Market Center B will show an outsized share count of 500 − 300 = 200.

[1560] *See* CCMR Letter at 12.

[1561] *See infra* sections IX.E.3.d)(1) and IX.E.3.d)(2).

[1562] This includes, for example, price improvement relative to the NBBO, price improvement relative to the best displayed price, and the effective spread. *See* final 17 CFR 242.605(a)(ii)(B), (F), and (M).

[1563] *See* final 17 CFR 242.605(a)(1)(i)(F).

[1564] *See supra* section IX.C.3.c)(10) for a discussion of how classifying riskless principal trades in the category of executions taking place at the market center may have obscured the extent to which wholesalers internalize order flow prior to these amendments.

[1565] *See* Proposing Release, 88 FR 3786 at 3819 (Jan. 20, 2023).

[1566] *See* Rule 605 Citadel Letter at 10.

riskless principal transactions from executions at the market center will be useful ''when interpreting and comparing information about wholesalers' execution quality.'' [1567] For example, if market participants observe a persistent difference in execution quality between wholesalers that largely internalize order flow and wholesalers that execute most on a riskless principal basis, they may surmise that this difference in execution quality is driven at least in part by the levels of internalization. In this way, execution quality statistics will be more informative.

(vii) Price Improvement

The amendment to Rule 605 requiring, for marketable order types (*i.e.,* market, marketable limit, and marketable IOC orders), as well as for midpoint-or-better limit orders, reporting entities to disclose price improvement statistics using the best available displayed price as the benchmark [1568] will give market participants access to price improvement information relative to a benchmark price that more accurately reflects liquidity available in the market. For example, if a market center internalizes an order with $0.05 of price improvement relative to the NBBO, but odd-lots are available on another market center at prices that are $0.10 better than the NBBO, this measure will reflect a price dis-improvement of $0.05. This will indicate that the investor could have received a better price if the market center had routed the order to execute against the available odd-lot liquidity. Thus, market participants (including broker-dealers) will be able to identify those market centers that execute orders at prices better than the best available displayed price, taking into account all available displayed liquidity.[1569] This will promote incentives for reporting entities to seek out or offer price improvement relative to the best displayed price, taking into account all available displayed liquidity (including odd-lots). Continuing the previous example, a market center internalizing an order will not be able to post a positive price improvement metric when a better-priced odd-lot was available at another market center.[1570] Instead, the market center may be incentivized to increase its offering of price improvement from $0.05 above the NBBO to $0.15 above the NBBO (*i.e.,* $0.05 above the best displayed price), in order to maintain the same level of price improvement in its Rule 605 report.

Multiple commenters supported including a measure of price improvement relative to the best displayed price.[1571] However, several commenters stated that the measure would be ''misleading,'' particularly because it does not account for the size available at the best displayed price.[1572] The Commission recognizes that an odd-lot price that is better than the NBBO may not reflect sufficient quantity to execute certain orders, particularly larger-sized orders, and, as a result, price improvement relative to the best displayed price will be more relevant in some cases and for some orders than for others.[1573] However, the Commission disagrees that this will result in the measure being misleading. First, since orders will be grouped in notional order size buckets and broken out separately into fractional, odd-lot, and round lot orders, Rule 605 reports will present the price improvement statistics related to best available displayed price in a format that will make it possible to focus in on those smaller-sized orders for which the measure is most informative.[1574] Second, in cases where the depth available at the best displayed price is insufficient to fill all or most orders, such that executions relative to the best displayed price reflect price dis-improvement, this will be similarly true for all reporting entities. If the reporting entity does execute against the depth that is available, and/or otherwise achieves price improvement for its handled orders, the reporting entity may still reflect a negative value for price improvement relative to the best displayed price, but less negative than that of a reporting entity that did not offer any price improvement. Thus, to the extent that Rule 605 reports will primarily be used by market participants to compare execution quality across market centers and across broker-dealers, a measure of price improvement relative to the best displayed price will not be misleading and will still allow market participants to identify reporting entities offering better execution quality, in terms of which reporting entity has offered a lower amount of price dis-improvement relative to the best displayed price (*i.e.,* a less negative number).[1575]

Other commenters stated that including two sets of price improvement metrics using two different reference points would be confusing for retail investors,[1576] and that including price improvement relative to the best displayed price would ''add unnecessary complexity to the report.'' [1577] The Commission is mindful that an increase in the complexity of Rule 605 reports may make it difficult for individual investors to review and digest the detailed reports. However, it is also important that market participants have access to a variety of detailed execution quality information to meet their various purposes. Statistics on price improvement relative to the best available displayed price will provide a useful data point for market participants to consider, in addition to statistics on price improvement relative

[1567] *See* Proposing Release, 88 FR 3786 at 3858 (Jan. 20, 2023).

[1568] *See* final 17 CFR 242.600(b)(14) (defining the ''best available displayed price'') and 242.605(a)(1)(ii)(M) through (Q); *see also supra* section III.B.4.g)(2) for further discussion of these amendments.

[1569] If only the NBBO is used as the benchmark for the adopted price improvement statistic relative to the best available displayed price, because, for example, odd-lots inside the NBBO are not available or because information about the best odd-lot orders available in the market inside the NBBO is not or is not yet available in consolidated market data, then these additional price improvement statistics will be the same as the price improvement statistics currently included in Rule 605 and will not have significant economic effects. *See supra* note 719.

[1570] One academic study found that incorporating information about the best odd-lot price into the NBBO for the purposes of calculating price improvement decreased estimates of price improvement by 2.44 percentage points. *See* Battalio & Jennings, *supra* note 1253, at 17.

[1571] *See, e.g.,* Better Markets Letter at 9; Angel Letter at 3.

[1572] *See, e.g.,* SIFMA Letter at 32; Schwab Letter II at 6; Rule 605 Citadel Letter at 6; Robinhood Letter at 47.

[1573] For example, price improvement relative to the best displayed price will typically always be relevant for fractional orders less than one share, and may often be relevant for odd-lots, since it is more likely that odd-lot volume would equal or exceed depth at the best displayed price. Price improvement relative to the best displayed price may also be relevant for round lots if aggregated odd-lot volume across market centers is sufficient to fill the order, if there is hidden liquidity available at the best displayed price, or if market centers such as wholesalers take the best displayed price into account when actively offering price improvement when executing orders against its own inventory.

[1574] *See supra* section III.B.4.g)(2) for further discussion.

[1575] For example, consider an extreme case in which the volume available at the best displayed price is only one share. Unless it is a fractional order, in all likelihood a market center will not be able to execute sufficient volume at the best displayed price, and thus would always reflect dis-improvement relative to the best displayed price (unless it was able to achieve price improvement via other means). For example, assuming that the best displayed price is $0.01 better than the NBBO, for a market center that was able to execute a 100-share order against that 1 share, its share-weighted average price dis-improvement relative to the best displayed price would be −$0.009, compared to −$0.01 for a market center that executed an entire 100-share order at the NBBO.

[1576] *See* Robinhood Letter at 47. Similarly, another commenter stated that ''an odd-lot NBBO creates ambiguity.'' Data Boiler Letter at 28.

[1577] *See* Schwab Letter II at 6.

to the NBBO.[1578] Furthermore, it is likely that many individual investors will not face this issue as the Commission expects that many will exclusively make use of Rule 605 summary reports, which will only include one measure of price improvement, *i.e.,* price improvement relative to the NBBO.[1579]

Commenters were also critical of the inclusion of price improvement information for non-marketable limit orders, because ''price improvement is only a relevant statistic for marketable group orders'' [1580] and because, for beyond-the-midpoint orders, ''the fact that the limit order's price between the midpoint and far touch (exclusive) is a variable controlled by the individual investor—and is responsible for some of its 'price improvement.' '' [1581] The Commission agrees that some of the price improvement associated with non-marketable limit orders will be driven by the order's limit price, which is outside of a reporting entities' control. In Rule 605 as amended, price improvement will be required to be reported only for one particular type of non-marketable limit order, *i.e.,* midpoint-or-better NMLOs. These NMLOs in particular can execute at prices better than their limit price, particularly if they have a significant likelihood to immediately execute against hidden or odd-lot liquidity inside the spread.[1582] Therefore, it is not always the case that price improvement statistics for non-marketable limit order will be a function of the order's limit price alone, but will also reflect a reporting entities' ability to offer inside-the-quote liquidity that is priced better than the order's limit price. This will particularly be the case for midpoint-or-better NMLOs. Therefore, price improvement statistics for this order type will benefit consumers of Rule 605 reports.

(viii) Relative Fill Rates

The adopted amendment requiring reporting entities to report the number of shares that executed regular way at prices that could have filled an executable NMLO while the order was in force will promote transparency regarding differences in the execution probabilities of NMLOs between reporting entities. This will increase the ability of investors and their broker-dealers to route orders to those reporting entities with higher fill rates of executable NMLOs (including limit orders submitted with stop prices and at-and-beyond-the-midpoint NMLOs). Market participants will have access to information about the extent to which a NMLO did not execute or executed after a large number of shares executed elsewhere in the market, despite the fact that the NMLO was executable. In order to attract this order flow, reporting entities will need to improve their ability to achieve executions for executable NMLOs. Market centers can achieve higher fill rates for NMLOs, for example, by reducing access fees to encourage more marketable orders to execute against resting NMLOs, or by discouraging excessive submissions and cancellations of NMLOs, for example by instituting or raising excessive messaging fees.[1583] Broker-dealers can achieve higher fill rates for NMLOs by improving their order routing methods and by routing orders to market centers that achieve higher fill rates for NMLOs. Reporting entities will be required to report the cumulative number of shares both across all market centers, as well as only across national securities exchanges. The Commission agrees with a commenter that information about the cumulative number of shares executed regular way on national securities exchanges will be useful for market participants because it will exclude liquidity that potentially was not accessible to a reporting entity.[1584]

Furthermore, the adopted amendment requiring the reporting of the number of orders that received either a complete or partial fill will provide important additional information about the nature of a market center or broker-dealer's NMLO and stop order executions—*e.g.,* whether a high executed cumulative count represents, on average, larger execution sizes or a higher count of orders receiving executions.[1585]

(3) Improvements to Accessibility

Execution quality will also increase as a result of the adopted amendment requiring reporting entities to prepare human-readable summary reports,[1586] as market participants will be better able to use information from Rule 605 reports to compare execution quality across reporting entities and competition among reporting entities on the basis of execution quality will increase as a result. The data generated under Rule 605 are complex, and the raw data may be difficult for some market participants to interpret and aggregate. Specifically individual investors, who may be less likely to have access to the resources to retrieve and process the raw data in Rule 605 reports, will be better able to access information from Rule 605 reports to compare execution quality across larger broker-dealers, which will increase the extent to which these broker-dealers will need to compete on the basis of execution quality to attract and retain these customers.

The usefulness of summary reports particularly for individual investors was supported by several commenters.[1587] However, other commenters stated that summary reports could be misleading if they do not allow investors to control for potential differences in reporting entities' order flow characteristics when assessing execution quality.[1588] The Commission agrees that differences in execution quality can be driven by differences between reporting entities other than differences in their skills at handling and/or executing orders, such as differences in the characteristics of their order flow,[1589] and thus recognizes that it is important to strike a balance between sufficient aggregation of orders to produce statistics that are meaningful and sufficient differentiation of orders to facilitate fair comparisons of execution quality across reporting

[1578] *See supra* section III.B.4.g)(2) for further discussion.

[1579] *See supra* section III.B.4.g)(2) for further discussion.

[1580] *See* FIF Letter at 21.

[1581] *See* Schwab Letter II at 7. Though the commenter only mentioned the importance of an order's limit price in the context of price improvement for beyond-the-midpoint orders, the Commission recognizes that the same could be said for other types of non-marketable limit orders.

[1582] *See, e.g.,* results from Table 4, showing that a larger percentage of these orders are submitted with IOC designations.

[1583] *See, e.g., Price List—Trading Connectivity,* NASDAQ, *available at https://www.nasdaqtrader.com/trader.aspx?id=pricelisttrading2* (last visited Feb. 1, 2024, 3:52 p.m.), which describes how one market center charges its members a penalty for exceeding a certain ''Weighted Order-to-Trade Ratio.''

[1584] *See* FIF Letter at 22. For example, there are difference in fair access rules between national securities exchanges and other trading venues, such as ATSs.

[1585] For example, say that a reporting entity discloses in its Rule 605 reports that it received 100 orders sized 100 round lots or greater in a stock with a 100-share round lot, and that these orders had a cumulative number of shares of 1,000,000, and furthermore that it executed 990,000 of those shares. Information on the number of complete or partial fills would help to clarify whether the reporting entity, *e.g.,* executed 99 orders of 10,000 shares each, or a single order of 990,000 shares.

[1586] *See* final 17 CFR 242.605(a)(2).

[1587] *See, e.g.,* Vanguard Letter at 4; Nasdaq Letter at 46; Fidelity Letter at 1; NASAA Letter at 6.

[1588] *See, e.g.,* Virtu Letter at 6; Rule 605 Citadel Letter at 4. Another commenter, while agreeing with the Commission's intent of ''enhanced disclosure,'' was critical of the summary report as proposed, stating that it ''fails to allow for an apples-to-apples comparison, which directly subverts the Commission's stated goals.'' Schwab Letter at 31.

[1589] *See supra* note 984 for an example of how differences in order flow characteristics can impact inferences about execution quality.

entities.[1590] The statistics required in the summary reports will strike this balance. First, market participants will be able to control for the average order sizes handled by a particular market center in several ways. For example, the summary reports will allow market participants to examine execution quality statistics separately for different notional order size buckets,[1591] as well as to control for the average notional order size within each order size bucket.[1592] Second, information about realized spreads will allow market participants to control for differences in reporting entities' order handling practices during times of market stress or high adverse selection.[1593]

In a change from the proposal, the amended rules require the use of CSV and PDF formats for the summary report, rather than XML and PDF formats as proposed.[1594] One commenter recommended the use of CSV rather than XML for the summary reports, stating that CSV ''would allow investors to compare summary data across firms more readily.'' [1595] Like XML and PDF, CSV is an ''open standard,'' a term that is generally applied to technological specifications that are widely available to the public, royalty-free, at no cost. Many investors and other members of the public may find a CSV file format preferable to an XML file format because the data can be more readily viewed and analyzed in widely used spreadsheet applications. Replacing the proposed XML format requirement with a CSV format requirement will likely facilitate use of the summary reports, thereby heightening the transparency benefits that the summary reports will create.[1596]

Unlike the CSV format, the PDF format is generally meant for a human reader rather than for a machine reader. Requiring market centers and broker-dealers to post a PDF version of the summary report will allow an individual human reader to open and read a summary report without having to download the data into a spreadsheet or other analytical program. This will make the information in the summary reports accessible to a broader range of individual users. In addition, because PDF documents are presented consistently across websites, operating systems, and applications, the PDF requirement will provide individual human readers with more comparable summary reports and facilitate their understanding of the reported summary execution statistics.

Requiring market centers to post summary reports in two formats (PDF and CSV) will permit market participants to use the summary reports for a variety of different purposes. For example, a retail investor could use the PDF version of a market center's latest summary report to easily identify the percentage of shares executed at the quote or better at that market center. By contrast, a broker-dealer assessing its own order routing practices could download the CSV versions of 10 different market centers' summary reports in each of the preceding 12 months, and identify which of those market centers had consistent month-to-month increases in percentage of shares executed at the quote over that period.

(c) Other Benefits From Increased Competition

To the extent that these amendments to Rule 605 increase incentives for reporting entities to compete in areas other than improved execution quality, customers may benefit from improvements that are not directly related to execution quality, such as lower fees, higher rebates, new products or functionalities, or better customer service. Improvements in areas other than execution quality because of the increase in competition among reporting entities may be either complementary to or a substitute for improvements in execution quality. Investors are more likely to see an overall benefit from these amendments to the extent that these improvements are complementary. Furthermore, to the extent that these amendments increase competition in related markets, market participants may benefit from lower costs and/or improved quality in these markets. For example, the quality of TCA reports may improve if their publishers need to offer better products to compete with the publicly available data under Rule 605.

(d) Potential Limitations to Benefits

There are certain factors, however, that could limit the benefits of these amendments for transparency and competition, which could limit the effectiveness of these amendments in improving execution quality.

(1) Effect on Smaller Broker-Dealers

The expanded scope of Rule 605 includes only larger broker-dealers. Hence, investors, as they gain transparency into the execution at these larger broker-dealers, may route more transactions to these broker-dealers at the expense of smaller broker-dealers who are not included in the scope of Rule 605. That said, smaller broker-dealers may gain a competitive advantage relative to larger broker-dealers, as they will not incur the compliance costs of preparing Rule 605 reports. Also, increased levels of competition among larger broker-dealers may spill over to affect smaller broker-dealers, as their customers may expect more transparency, and smaller broker-dealers will continue to be able to publish ad hoc execution quality reports that focus on execution quality metrics in which they perform well.[1597] Altogether, the cumulative effects on smaller broker-dealers, who handle only a fraction of all customer accounts and a minority of orders,[1598] and whose customers may be more likely to be institutional investors (who have alternative sources of information about their broker-dealers' execution quality) [1599] are likely to be small, and limiting the scope of Rule 605 to larger broker-dealers is designed to achieve the competitive effects discussed in prior sections.[1600]

One commenter stated that smaller broker-dealers could be disadvantaged by not being required to prepare Rule 605 reports, which could lead to the

[1590] *See, e.g.,* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75423 (Dec. 1, 2000).

[1591] *See* final 17 CFR 242.605(a)(2).

[1592] *See* final 17 CFR 242.605(a)(2)(ii). The inclusion of average notional order size in the summary reports was suggested by a commenter, who stated that, ''since a broker's average order size can impact its average execution quality metrics, providing this transparency to users of the Summary Report will mitigate the potential for misinterpretation of the data and better inform individual investors when they compare brokers.'' Schwab Letter II at 3.

[1593] As suggested by commenters, information about average realized spreads may also allow market participants to control for potential differences in order flow characteristics. *See, e.g.,* FIF Letter at 32; Schwab Letter II at 3. One commenter specifically mentioned the extent to which market participants classify order flow as informed and the size of an order relative to the ADV of a stock as examples of such order characteristics. *See* FIF Letter at 32.

[1594] *See* final 17 CFR 242.605(a)(2).

[1595] *See* FIF letter at 5, 32.

[1596] The efficiency of processing and analyzing summary reports may further increase if a third-party determined to provide a centralized location from which market participants can retrieve all summary reports. *See, e.g.,* Regulatory Notice.

[1597] These information asymmetries are described in more detail in *supra* section IX.C.1.a).

[1598] *See infra* section IX.E.1.a) for a discussion of an analysis showing that broker-dealers with 100,000 customers or greater handled 59.5% of customer orders and 98.3% of customer accounts identified in the data sample. If these smaller broker-dealers attract enough customers such that they represent a more significant fraction of orders, it is likely they will also subsequently fall above the customer account threshold and be required to begin publishing Rule 605 reports.

[1599] *See* discussion *infra* section IX.E.1.a).

[1600] *See supra* section IX.D.1.a)(1) for a discussion of the effects of the amendments expanding the scope of reporting entities to include larger broker-dealers on competition among broker-dealers on the basis of execution quality.

''further concentration and funneling of customer order flow among a small portion of broker-dealers.'' The commenter stated that ''[p]roviding execution quality reports constitute a significant advantage . . . and could be a tipping point in their decision to part away with their current broker-dealer.'' [1601] As discussed above, it is also possible that smaller broker-dealers may gain a competitive advantage in the form of lower costs because of not having to prepare Rule 605 reports. To the extent the smaller broker-dealers are disadvantaged by not making Rule 605 reports available, there is nothing that precludes them from preparing and publishing reports that comply with Rule 605 requirements.[1602] However, the Commission acknowledges that it is possible that, because of these amendments, smaller broker-dealers that are unable,[1603] or choose not, to offer the same levels of transparency as larger broker-dealers may lose customers to larger broker-dealers for which better execution quality information is available, which may cause some smaller broker-dealers to exit the market.[1604] The Commission is unable to quantify the likelihood that a brokerage firm will cease operating because of an inability to compete with the transparency offered by larger broker-dealers, and commenters did not provide data that would support such an analysis. Even if some smaller broker-dealers were to exit, the Commission does not believe this will significantly impact competition in the market for brokerage services because the market is served by a large number of broker-dealers.[1605] The Commission recognizes that smaller broker-dealers may have unique business models that are not currently offered by competitors, but other broker-dealers, including new entrants, could create similar business models if demand is adequate.

One commenter stated that excluding smaller broker-dealers from reporting requirements means that ''only 6.7% of broker-dealers'' would be subject to reporting requirements, and ''[c]ustomers who use smaller broker-dealers are just as entitled to information about how their orders are or may be handled as customers who use larger broker-dealers.'' [1606] The Commission agrees that lowering the threshold would be beneficial if more broker-dealer customers are able to benefit from the adopted modifications to reporting entities; however, an analysis shows that a customer account threshold of 100,000 customer accounts includes more than 98% customer accounts, and that those customers whose accounts are not included are more likely to be institutional investors, who have alternative sources of information about their broker-dealers' execution quality.[1607]

The same commenter also stated that limiting the Rule 605 reporting requirements to larger broker-dealers would ''create an information gap about new entrants to the retail broker-dealer space where there may be a greater need to see data about execution quality.'' [1608] As stated above, it is possible that an increase in competition among larger broker-dealers on the basis of execution quality may spill over to affect smaller broker-dealers, as their customers may expect more transparency; [1609] this could be true of new entrants to the market for brokerage services as well. If this occurs, then customers of new entrants may also benefit from increased transparency. However, absent the standardized reporting standards under Rule 605, new entrants may be able to publish ad hoc execution quality reports that focus on execution quality metrics in which they perform well, and thus it is possible that these customers may continue to face some information asymmetries.[1610] As described above, this is expected to be a minority of customers.[1611]

(2) Switching Costs

The effects of these amendments to Rule 605 on competition among reporting entities may be limited if investors incur high costs to switch between broker-dealers, and/or if broker-dealers incur costs to switch between market centers in response to information about execution quality. To the extent that competition among reporting entities on the basis of execution quality is limited, this could limit the extent to which execution quality will improve as a result of these amendments.[1612]

First, if the costs for customers to switch broker-dealers are significant,[1613] this will limit the extent to which Rule 605 promotes competition among broker-dealers on the basis of execution quality. However, switching costs for both individual and institutional investors may be limited. For example, institutional investors are likely to have multiple broker-dealers, which facilitates the transfer of business to better-performing broker-dealers, and, for individual investors, transferring between retail brokers may be less costly, for example, because some retail brokers will compensate new customers for transfer fees that their outgoing broker-dealer may charge them.[1614]

Second, the presence of switching costs that broker-dealers incur from changing the primary trading venues to which they route orders [1615] may limit the effects of these amendments on competition among market centers. However, the Commission expects this to be less of an issue for the larger broker-dealers that will be required to produce Rule 605 reports,[1616] as these broker-dealers will likely face lower switching costs. For example, larger broker-dealers are likely already connected to multiple national securities exchanges. They are experienced with routing order flow across a larger variety of market centers and/or have sufficient bargaining power to renegotiate any agreements that they

[1601] *See* Letter from JT at 1–2.

[1602] The costs for smaller broker-dealers to prepare execution quality reports may not be the same as the costs for larger broker-dealers. *See infra* section IX.D.2.b)(2) for further discussion.

[1603] For example, if investors make use of third-party summaries of Rule 605 reports, these summaries may not incorporate execution quality information outside of ''official'' Rule 605 reports. In that way, smaller broker-dealers may be unable to offer the same level of transparency even if they prepare an execution quality report containing all of the information and according to the exact specifications of Rule 605.

[1604] This was also acknowledged in the Proposing Release. *See* Proposing Release, 88 FR 3786 at 3876 (Jan. 20, 2023).

[1605] *See supra* section IX.C.4.a)(1) for a discussion of the current structure of the market for brokerage services.

[1606] *See* Robinhood Letter at 45.

[1607] *See* discussion *infra* section IX.E.1.a).

[1608] *See* Robinhood Letter at 45.

[1609] *See also* Proposing Release, 88 FR 3786 at 3876 (Jan. 20, 2023).

[1610] These information asymmetries are described in more detail in *supra* section IX.C.1.a).

[1611] *See supra* note 1599 and corresponding text.

[1612] The effect of switching costs on competition may also depend on the variability of reporting entities' execution quality over time. For example, if the execution quality of any given reporting entity varies significantly over time, customers of those reporting entities may find it optimal to switch between reporting entities with some frequency, which would increase their overall switching costs. On the other hand, if the execution quality of reporting entities is relatively constant over time, the number of times that a customer will optimally want to switch between reporting entities will likely be more limited, and in this case switching costs may be a relatively small and/or short-term friction.

[1613] *See supra* section IX.C.4.a)(1) for a discussion of costs related to switching broker-dealers.

[1614] *See supra* note 1289 for an example.

[1615] *See supra* section IX.C.4.b)(2) for discussions of costs broker-dealers may face when switching trading venues.

[1616] The competitive effects of these amendments will principally accrue to larger broker-dealers, who will be required to prepare Rule 605 reports, and thus will be the most likely to be incentivized to switch market-centers as a result of additional information about market center execution quality. However, these effects may spill over to smaller broker-dealers as well per the discussion in *supra* section IX.D.2.b)(2). For these smaller broker-dealers, switching costs may be more binding.

might have with individual market centers.

(3) Limited Usage and Search Costs

The benefits of these amendments to Rule 605 for transparency, competition, and execution quality may be limited if market participants are not likely to make use of the additional information available under these amendments, *e.g.,* because this information is difficult to access or is not useful to market participants due to the availability of other sources of information about execution quality.

For example, investors currently have access to information about the execution quality achieved by their broker-dealers for their not held orders,[1617] which in certain circumstances may be more relevant for institutional investors than aggregate information about the execution quality of broker-dealers' held orders [1618] and may lead to a low usage rate by institutional investors of larger broker-dealers' Rule 605 reports. This could limit the benefits of these amendments for competition in the market for institutional brokerage services. However, to the extent that institutional investors' alternative sources of execution quality information do not contain information about all of their relevant orders, and/or cannot be easily used to compare across broker-dealers with which an investor does not do business,[1619] these amendments will likely impact competition for institutional brokerage services as well.

Furthermore, the volume and complexity of data produced by Rule 605 reports (*i.e.,* both the number of rows and columns of Rule 605 reports) will increase as a result of the amendments modifying the coverage of orders and expanding the information required by Rule 605.[1620] As stated by some commenters,[1621] both of these factors may make the evaluation of the raw data in Rule 605 reports costlier. One commenter stated that ''[f]urther transparency that generates costs, but if not used by customers, is a waste of resources and ultimately would create costs without any real benefits.'' [1622] The Commission disagrees that the amended rule will result in costs without any benefits. The amended rule will result in numerous benefits described above. Furthermore, the increase in complexity of Rule 605 reports is not likely to significantly reduce the benefits of the amended rule. The Commission agrees with a commenter's statement that, since they are designed to be machine-readable, increasing the number of rows in Rule 605 reports is not likely to significantly increase market participants' cost to process and interpret these reports.[1623] Market participants that currently have the resources to process and analyze the raw data contained in Rule 605 reports are likely to have the resources to process and analyze the additional data elements. To the extent that some investors may not have access to the resources to directly analyze the raw Rule 605 data as a result of its increase in complexity,[1624] the Commission expects that independent analysts, consultants, broker-dealers, the financial press, academics, and market centers will continue to respond to the needs of investors by analyzing the disclosures and producing more digestible information using the data.[1625] This was supported by one commenter, who stated that ''even though a certain percentage of retail investors may not read the Rule 605 reports, they will still benefit indirectly as the enhanced disclosure will promote competition, improve regulatory oversight, and facilitate use by third-party researchers and academics.'' [1626]

The benefits of these amendments to Rule 605 for transparency, competition, and execution quality may also be limited by the presence of search costs. These amendments are expected to increase the number of Rule 605 reporting entities from 228 to 343.[1627] Market participants that demand a complete or mostly complete set of Rule 605 reports will need to search through and download reports from a greater number of websites, which will increase their search costs.[1628] If, in order to avoid this increase in search costs, market participants do not incorporate execution quality information from the additional reporting entities into their search or analysis of Rule 605 reports, this will limit the benefits of the expansion of Rule 605 reporting entities.

(4) Liquidity Externalities

The effects of these amendments to Rule 605 on competition among market centers may be limited by the development of liquidity externalities, or the consolidation of liquidity on a few dominant market centers.[1629] Under such circumstances, while the consolidation of liquidity on market centers offering superior execution quality may benefit market participants in the short run,[1630] it may also lead to barriers to entry in the market for trading services, as new entrants may have a harder time attracting sufficient liquidity away from established liquidity centers. This could also lead to consolidation or exit by smaller market centers. This could have the effect of reducing competition in the market for trading services. The Commission is unable to quantify the likelihood that some smaller market centers will cease

[1617] *See supra* note 1003 and accompanying text discussing broker-dealers' requirements under Rule 606(b)(3) to provide individualized reports of execution quality upon request for not held orders.

[1618] *See supra* section IX.C.4.a)(1)(b) for a discussion of institutional investors' usage of not held orders.

[1619] *See* discussion in *supra* section IX.C.2.c).

[1620] For example, dividing each notional order size bucket up into further categories to capture lot type will increase the complexity of Rule 605 reports by increasing the number of rows.

[1621] *See, e.g.,* Robinhood Letter at 41–42, stating that ''the volume and complexity of Rule 605 reports would only increase if Proposed Rule 605 were adopted because more market participants, more orders, and more statistics would be included in the reporting, making them even harder to read;'' Data Boiler Letter, stating that the proposed statistics were ''overly complicated for the average investors to digest;'' Tastytrade Letter at 4, stating that ''under the new proposal by the Commission, 605 reports would expand to thirty-seven columns wide and forty-two rows deep. That will result in 1,554 data points per ticker on a universe of approximately 10,000 NMS traded products.''

[1622] *See* Tastytrade Letter at 5.

[1623] *See, e.g.,* FIF Letter at 16, stating that ''[a]dding rows and columns to the Rule 605 report, within reason, would not materially increase the costs of processing these reports and storing the relevant data,'' and that ''[the Rule 605 report] is intended to be machine-readable, not human-readable.''

[1624] *See supra* section IX.C.2.b) for a discussion of the difficulties that individual investors may face when accessing Rule 605 reports.

[1625] *See, e.g., supra* notes 1076–1077, describing the use of Rule 605 data in academic literature, in comment letters related to Commission and SRO rulemaking, and the financial press.

[1626] *See* Better Markets Letter at 9–10.

[1627] *See supra* section VIII.C for a description of these estimates.

[1628] *See supra* section IX.C.3.d) for a discussion of the search costs associated with collecting information from Rule 605 reports.

[1629] For theoretical discussions of liquidity externalities, *see* Marco Pagano, *Trading Volume and Asset Liquidity,* 104 Q. J. Econ. 255 (1989); Ananth Madhavan, *Consolidation, Fragmentation, and the Disclosure of Trading Information,* 8 Rev. Fin. Stud. 579 (1995).

[1630] There is a large body of academic literature that examines the benefits to traders from the consolidation of liquidity. *See, e.g.,* H. Mendelson, *Consolidation, Fragmentation, and Market Performance,* 22 J. Fin. and Quantitative Analysis 189 (1987), in which the author finds that ''fragmentation reduces the expected quantity traded, increases the price variance faced by individual traders, and reduces the expected gains from trade.'' *See also* Pagano, *supra* note 1629, in which the author finds that the concentration of liquidity is generally more efficient than fragmentation, and Madhavan, *supra* note 1629, in which the author finds that ''fragmentation results in higher price volatility and violations of price efficiency.'' At the same time, there is also a large body of literature examining the competitive benefits of fragmentation; *see, e.g.,* T. Hendershott & H. Mendelson, *Crossing Networks and Dealer Markets: Competition and Performance,* 55 J. Fin. 2071 (2000); B. Boehmer & E. Boehmer, *Trading Your Neighbor's ETFs: Competition or Fragmentation?,* 27 J. Banking & Fin. 1667 (2003).

operating, and commenters did not provide data to support such an analysis.

(5) Dimensions of Execution Quality Not Captured by Rule 605 Reports

The expected benefits from these amendments to Rule 605 may be lessened to the extent that there are dimensions of execution quality not captured by Rule 605 reports which drive order handling decisions. For example, the ability of customers and/or traders to remain anonymous or limit information leakage may not be a dimension that is easily discernible from looking at Rule 605 data, though it is a feature of execution quality that may be valued by some investors.[1631]

Furthermore, the extent to which the reported statistics are perceived as an insufficiently timely proxy for a reporting entities' ability to secure favorable executions may dampen the benefits of these amendments for execution quality. This may happen if, for example, future market developments render the monthly reporting requirement too infrequent to be useful.

In this vein, one commenter stated that policymakers should not ''prescribe or endorse certain statistical benchmarks,'' because ''other shopping comparisons emphasize different aspects, such as customer service,'' [1632] and that ''one group may prefer one set of benchmarks that make their brands look better.'' [1633] This commenter instead stated that, ''[i]f any constituent including the regulators want to have comprehensive metrics produced, let's have the vendors compete for their business.'' [1634] The Commission agrees with the commenter that different market participants may have preferences for different aspects of execution quality, and acknowledges that not all of these aspects may be included in Rule 605 reports as amended. The Commission also acknowledges that, to the extent that this causes market participants to focus on some dimensions of execution quality to the detriment of others, these amendments may reduce execution quality along certain dimensions that may be relevant to some investors.[1635] The Commission also recognizes that the different reporting entities may also have a preference for those benchmarks that make them look the most favorable.[1636] However, rather than being exacerbated by the ''prescription'' of standardized metrics, having a standardized set of execution quality metrics will alleviate this concern by requiring the disclosure of metrics that market participants are able to compare across reporting entities using the same set of metrics. It is unlikely that a set of standardized metrics will result from a competitive environment, for the reasons described in the Market Failures section.[1637]

(e) Interacting Benefits of the Final Rule and the MDI Rules

The Commission received a comment stating that the MDI Rules, once implemented, could have positive interacting effects with the final Rule 605 amendments.[1638] The Commission anticipates that the additional information contained in consolidated market data once the MDI Rules are implemented will allow more informed order routing decisions. This in turn will help facilitate best execution, which will reduce transaction costs and increase execution quality.[1639] However, given that the MDI Rules have not yet been implemented, data that will be required for a quantitative analysis of a baseline that includes the effects of the MDI Rules, and of the benefits of the final Rule 605 amendments with new baseline assumptions, are not available. Instead, the Commission has included assumptions about the effect of the MDI Rules in its baseline and has analyzed the benefits and costs relative to this baseline.[1640]

2. Costs

As discussed in detail below, the Commission recognizes that these amendments to Rule 605 will result in initial and ongoing compliance costs to reporting entities. The Commission quantifies the costs where possible and provides qualitative discussion when quantifying costs is not feasible. Most of the compliance costs related to these amendments to Rule 605 involve a collection of information, and these costs are discussed above in relation to the expected burdens under the Paperwork Reduction Act, with those estimates being used in the economic analysis below.[1641]

(a) Compliance Costs

The majority of costs related to these amendments to Rule 605 will be in the form of compliance costs, including both initial and ongoing. Table 9 provides a summary of the estimated change in compliances costs [1642] resulting from these amendments. The majority of both initial and ongoing compliance costs will be related to expanding the scope of reporting entities. However, a significant portion of initial compliance costs will also result from the amendments modifying the coverage of orders and information required by Rule 605, as market centers that were required to prepare Rule 605 reports (''prior reporters'') will need to update their systems, and additionally some new market centers trading in fractional shares will be required to report. Lastly, compliance costs resulting from the amendment requiring reporting entities to prepare summary execution quality reports will mostly be ongoing.

[1631] *See, e.g.,* Carole Comerton-Forde & Kar Mei Tang, *Anonymity, Liquidity and Fragmentation,* 12 J. Fin. Mkt. 337 (2009), who found evidence of a migration in order flow from the non-anonymous New Zealand Exchange (NZX) to the Australian Stock Exchange after the latter increased anonymity by removing broker identifiers from the central limit order book.

[1632] *See* Data Boiler Letter II at 1. Another commenter similarly stated that the use of the summary reports to compare across broker-dealers could be misleading if they do not account for ''other aspects of the services that brokers provide or offer, including fees, interest rates, commissions, ease of use, customer service, accessibility, tools, and educational resources.'' Virtu Letter at 11.

[1633] *See* Data Boiler Letter II at 1. This commenter also stated that they did not support the prescription or endorsement of statistical benchmarks because ''[s]ome benchmarks use the average rather than the median (tail risk).'' The Commission agrees that statistics calculated using the median rather than the mean is often preferred when dealing with data that contain extreme outliers, such as some of the data being collected under Rule 605 (such as time-to-execution). However, as stated by another commenter, medians are problematic in that they cannot be aggregated across rows. *See* FIF Letter at 21–22; *see also infra* section IX.E.3.b)(1) for further discussion.

[1634] *See* Data Boiler Letter II at 1.

[1635] *See infra* section IX.D.2.b)(3) for further discussion.

[1636] *See supra* section IX.B for further discussion.

[1637] *See supra* note 976 and corresponding text.

[1638] *See* Robinhood Letter at 39 (''The SEC contemplates that amending Rule 605 could improve execution quality, including by improving execution prices, execution speeds, size improvement, and fill rates. . . . These potential benefits are likely enhanced when combined with the anticipated effects of the pending MDI Rules and our recommended changes regarding the Tick Size Proposal . . . the MDI Rules, by adjusting round lot sizes and enhancing the information displayed on the consolidated market data feeds, are expected to increase competition and encourage price improvement''); *id.* at 40.

[1639] *See* section IX.C.1.c)(2), *infra,* discussing benefits and costs based on implementation assumptions.

[1640] *See id.*

[1641] *See supra* section VIII for a discussion of how these amendments will create burdens under the PRA.

[1642] The discussion in section VIII.D considers the total expected ongoing compliance costs for all reporting entities, both new respondents and prior respondents. To focus on the costs that will directly follow from these amendments, this section focuses on the expected change in ongoing costs, which excludes the portions of ongoing costs that prior respondents incurred prior to these amendments.

Table 9: Estimated Aggregate Compliance Costs, by Cost Category

Cost Category	Initial Aggregate Compliance Costs	Ongoing Aggregate Compliance Costs
Expanding the Scope of Reporting Entities	$3.8 million	$4.9 million
Modifications to Information Required	$3.6 million	$5.3 million
Proposed Summary Execution Quality Reports	$1.8 million	$1.1 million
Total	**$9.3 million**	**$11.3 million**

This table presents estimates of the compliance costs related the to three broad categories of the amendments to Rule 605 (expanding the scope of reporting entities, modifications to the coverage of orders and information required, and requiring the preparation of summary reports). Numbers are based on the estimated number of respondents and PRA costs in sections VIII.C and VIII.D supra and have been rounded to the nearest tenth of million to avoid false precision. Further breakdowns of these estimates are presented in Tables 10, 11, and 12.

Table 9 further breaks aggregate compliance costs down into three separate categories—costs related to the expansion of reporting entities, costs related to modifications to information required, and costs related to the preparation of summary execution quality reports. Estimates for the costs in each of these categories depend on a number of factors, including wages, inflation, and firm size, and the Commission acknowledges that the aggregate costs presented may be underestimated to the extent that wages and/or inflation are higher than those used in the estimation. Meanwhile, costs in each of these categories may also be overestimated if reporting entities are able to more cost-effectively contract with third-party vendors to prepare their reports.[1643] Due to their ability to leverage their technical expertise and potential economies of scale, third-party vendors may be able to prepare Rule 605 reports for a lower cost than if each individual reporting entity prepares its own report, and could pass these lower costs on to their customers, resulting in lower compliance costs. However, the Commission is unable to know the percentage of entities that made use of third-party vendors to prepare their Rule 605 reports prior to these amendments, nor the percentage of entities that will make use of third-party vendors following these amendments. Therefore, the Commission is basing its compliance cost estimates on the highest of its estimated costs to prepare of Rule 605 reports in order to be conservative, which is equivalent to the cost of in-house preparation of Rule 605 reports ($51,648 per respondent per year).[1644]

(1) Compliance Costs Related To Expanding the Scope of Rule 605 Reporting Entities

As a result of the amendments expanding the scope of Rule 605 reporting entities, market centers and broker-dealers that were not required to publish Rule 605 reports prior to these amendments will incur initial costs to prepare and post Rule 605 reports for the first time, which may include developing any policies and procedures that may be needed to do so, and ongoing costs to continue to prepare them each month. Larger broker-dealers will incur initial and ongoing compliance costs as a result of the amendment expanding the scope of Rule 605 reporting entities to include larger broker-dealers. Similarly, the amendments requiring reporting entities to prepare separate reports for their SDPs will result in market centers that, prior to these amendments, were not required to prepare Rule 605 reports facing initial and ongoing compliance costs. The Commission estimates that 85 broker-dealers, along with 10 SDPs operated by broker-dealers,[1645] will be required to start publishing Rule 605 reports as a result of the amendment expanding the scope of Rule 605 reporting entities.[1646] Table 10 breaks down the initial and ongoing compliance costs associated with these two types of reporting entities.

[1643] The Commission estimates that, while preparing in-house reports will result in an annualized ongoing cost of $51,648 per respondent, contracting with a third party to prepare Rule 605 of their behalf will result in an annualized ongoing cost of between $36,000 and $42,000 per respondent. *See supra* note 957 and corresponding text. The Commission uses the higher estimate of in-house reporting in the present analysis to obtain a more conservative estimate of potential costs.

[1644] *See supra* note 1643.

[1645] *See infra* section IX.E.1.a) for a discussion of the estimated number of larger broker-dealers (*i.e.,* broker-dealers that introduce or carry customers above a threshold number of customer accounts), that will be required to prepare execution quality reports pursuant to final Rule 605, defining the customer account threshold as 100,000 customer accounts.

[1646] In addition, the Commission estimates that 20 market centers that trade exclusively in fractional shares will be required to prepare Rule 605 reports for the first time. *See infra* section IX.D.2.a)(2) for a discussion of the expected compliance costs for these reporting entities.

Table 10: Estimated Aggregate Compliance Costs Related to Proposed Expansion of Rule 605 Reporting Entities

	Number of Respondents	Initial Aggregate Compliance Costs	Ongoing Aggregate Compliance Costs
Broker-Dealers	85[a]	$3.4 million [b]	$4.4 million [c]
SDPs	10[d]	$0.4 million [d]	$0.5 million [c]
Total	**95**	**$3.8 million**	**$4.9 million**

This table presents estimates of the compliance costs related to the amendments to Rule 605 expanding the scope of reporting entities. Numbers are based on the estimated number of respondents and PRA costs in sections VIII.C and VIII.D supra and have been rounded to the nearest tenth of million to avoid false precision.

[a] The number of new broker-dealer respondents is estimated using data from 2022 FOCUS Report Form X-17A-5 Schedule I filings and CAT, according to the procedure described in detail in infra note 1743.

[b] The estimate of initial compliance costs to new reporters is based on the monetized initial burden in supra note 955 for new respondents, assuming that these respondents will incur 100 initial burden hours at an average hourly cost of ($40,150/100 hours) = $401.50 per respondent per hour.

[c] The estimate of ongoing compliance costs to new reporters is based on the monetized annual burden in supra note 952 for new respondents, assuming that these respondents will incur 11 ongoing burden hours per month at an average hourly cost of ($51,648/(11 hours * 12 months)) = $391.00 per respondent per hour.

[d] The Commission does not have knowledge of the number of SDPs in operation and therefore has chosen a conservative estimate of 10 SDPs operated by broker-dealers.

New reporters will face one-time, initial compliance costs to prepare Rule 605 reports for the first time, which may include costs to develop and implement procedures. It is likely that the majority of these costs will relate to the development of systems to obtain, store and process the data required for Rule 605 reports.

Larger broker-dealers that generally or exclusively route orders away will need to obtain information, such as the time of order execution and execution price, from trade confirmations provided by the execution venue. In addition, both broker-dealers and market centers will need to match their order information to historical price and depth information available via the exclusive SIPs or, following the implementation of the MDI Rules, competing consolidators,[1647] to determine the NBBO (and/or best displayed) quote and size at the time of order receipt (or executability) and at the time of order execution, and use this data to calculate the required statistics.[1648] These new reporters likely retained most, if not all, of the underlying raw data necessary to generate these reports in electronic format prior to these amendments, or obtained this information from publicly available data sources, and calculated similar measures to those that will be required under Rule 605 for their own internal purposes prior to these amendments.[1649] However, as a result of the amendments, new reporters may have to acquire or develop data specialists and/or programmers to the extent that the information required by Rule 605 is different or more complex than the information that the new reporters typically process, and/or acquire legal specialists to help ensure compliance with Rule 605.

One commenter stated that requiring larger broker-dealers to newly prepare Rule 605 reports will be costly because ''[t]his is not a type of report that broker-dealers that are not also market centers generally prepare.'' [1650] Another commenter stated that the broad scope of the proposed inclusion of larger retail broker-dealers will impose significant costs.[1651] The Commission acknowledges that many larger broker-dealers will not have previous experience with preparing Rule 605 reports, and for that reason has allocated estimates of initial compliance costs to first-time reporters, including broker-dealers, that are higher than those allocated to prior reporters.[1652]

These compliance costs related to expanding the scope of Rule 605 reporting entities may be under- or overestimated to the extent that larger broker-dealers, which are assumed to have the same ongoing compliance costs as market centers and the same initial and ongoing compliance costs as SDPs operated by broker-dealers, may experience higher or lower initial and/or ongoing costs than other types of reporting entities. For example, larger broker-dealers may incur higher initial costs to the extent that they did not obtain transaction information, such as the time of order execution and execution price, from trade confirmations provided by execution venues prior to these amendments, and therefore will need to develop the procedures for doing so. Broker-dealers

[1647] *See supra* section IX.C.1.c)(2) for a discussion of the unimplemented MDI Rules.

[1648] For example, a broker-dealer that routes an order away for execution will receive time of order execution and execution price as part of the trade confirmation provided by the execution venue. The broker-dealer can then use historical price information available via the exclusive SIPs to determine the NBBO at the time of order receipt and at the time of order execution, the number of shares displayed at the NBBO, and the best available displayed price, if such price is being disseminated, and use this data to calculate the required execution quality statistics. With respect to NMLOs, the broker-dealer can also use this historical price information available via the exclusive SIPs to determine when the order became executable, based on when the NBBO first reached the order's limit price.

[1649] For example, broker-dealers may calculate similar measures as part of their Best Execution Committees' periodic review. *See supra* note 1100 and accompanying text.

[1650] *See* Robinhood Letter at 42. The commenter suggested that, rather than Rule 605 reports, broker-dealers should be required to submit expanded Rule 606 reports that contain information about execution quality. *See infra* section IX.E.5.b) for a discussion and the Commission's response to this alternative.

[1651] *See* Cambridge Letter at 7.

[1652] Specifically, while the analysis in Table 9 assigns first-time respondents, such as larger broker-dealers, a per-respondent initial compliance cost of $40,150, the analysis in Table 10 assigns preexisting reporting entities, who have experience with preparing Rule 605 reports, a much lower initial per-respondent cost of $20,075.

may also face higher ongoing costs as compared to market centers that mostly execute the shares that they receive, if collecting information for trades executed at away market centers is costlier than analyzing in-house trade information, *e.g.,* because it results in delays in processing the trade information. On the other hand, larger broker-dealers may incur lower initial costs if they are more likely than market centers to have calculated similar measures as part of their Best Execution Committees' periodic review prior to these amendments.[1653] In addition, the Commission does not believe that there will be significant additional costs to collecting information for trades executed at away market centers, as given the monthly reporting frequency of Rule 605 reports, broker-dealers should have sufficient time to collect and process the information. Since it is not possible to determine whether larger broker-dealers will face higher or lower compliance costs than market centers, the Commission is conservatively estimating that broker-dealers will incur the same compliance costs as other types of reporting entities.

Furthermore, many of the larger broker-dealers that will be newly included in the scope of reporting requirements have experience with filing Rule 605 reports prior to these amendments; *e.g.,* because they operate an ATS, engage in market making, or are otherwise affiliated with market centers that filed Rule 605 reports prior to these amendments.[1654] Likewise, broker-dealers that operate SDPs could also have lower initial costs to the extent that these SDPs qualified as market centers that were required to publish Rule 605 reports prior to these amendments. In both cases, these reporting entities can leverage this experience to prepare the reports for these additional lines of businesses more cost effectively.

One commenter stated that ''many broker-dealers outsource reporting,'' and that ''bringing that reporting in-house would be a substantial cost.'' [1655] The amended rule does not preclude larger broker-dealers from outsourcing the preparation of its Rule 605 reports by contracting with third parties. Broker-dealers that are scoped into Rule 605 reporting requirements will be able to continue to use third parties to prepare their execution quality metrics, to the same extent that they found it optimal to do so prior to these amendments.

(2) Compliance Costs Related to Modifications to the Coverage of Orders and Information Required by Rule 605 Reports

As a result of the amendments modernizing and expanding the coverage of orders and information required by Rule 605 reports, reporting entities will incur initial compliance costs and additional ongoing compliance costs.[1656] First, the estimated 228 prior reporters [1657] will incur initial costs to update their systems to collect and store new information and to calculate modernized and additional metrics, as well as a potential increase in ongoing costs as a result of additional data that will need to be collected and stored.[1658] Second, the adopted amendment expanding the coverage of order sizes included in Rule 605 to include orders for less than one share will result in an additional estimated 20 market centers that trade exclusively in fractional shares to be required to begin filing Rule 605 reports.[1659] Third, the 16 national securities exchanges and 1 national securities association will be required to amend the Rule 605 NMS Plan to account for the new data fields required to be reported. Table 11 breaks down the associated initial and ongoing compliance costs.

BILLING CODE 8011–01–P

[1653] *See supra* section IX.C.2.d); *see, e.g.,* Virtu Letter at 11, stating that ''many retail brokers already monitor execution quality on these and other order types excluded under current Rule 605 when measuring the execution quality provided by market centers.''

[1654] For example, based on larger broker-dealers' answers in their Q4 2022 FOCUS Report Form X–17A–5 Schedules I and II, the Commission estimates that 28 out of the 85 broker-dealers identified as introducing or carrying at least 100,000 customer accounts also engage in OTC or specialist market making activities. Specifically, 16 of these larger broker-dealers answered ''Yes'' to item 8075 of Schedule I, asking whether a respondent is registered as a specialist on a national securities exchange in equity securities, 19 of them reported non-missing gains or losses from OTC market making in exchange listed equity securities in item 3943 of Schedule II, while 7 of them reported both OTC and specialist equity market maker activities. An analysis in the Proposing Release of Q4 2021 FOCUS Report Form X–17A–5 Schedules I and II found similar results. *See* Proposing Release, 88 FR 3786 at 3880, n.968 (Jan. 20, 2023).

[1655] *See* TastyTrade Letter at 5.

[1656] This analysis compares the costs that will accrue to new reporting entities, including larger broker-dealers and SDPs, to a baseline world in which these entities do not have to publish Rule 605 reports. As such, this section does not consider the cost of the amendments modifying the coverage and information required by Rule 605 to apply to first-time reporting entities, as these entities instead will face the costs of initially developing systems to prepare Rule 695 reports (rather than, *e.g.,* modifying existing systems).

[1657] *See supra* note 942 and accompanying text for a discussion of this estimate.

[1658] One commenter stated that ''[a]dding rows and columns to the Rule 605 report, within reason, would not materially increase the costs of processing these reports and storing the relevant data.'' FIF Letter at 16. If so, then this could be a mitigating factor to the Commission's estimates of the increase in current reporting entities' compliance costs.

[1659] Using a sample of CAT from Mar. 2022, the Commission identified 19 firm MPIDs that executed fractional shares during the sample time period that did not have a corresponding Rule 605 report; this was rounded up to 20 to be conservative. A similar analysis using a more recent sample of CAT data found 19 firms that exclusively executed fractional shares for at least one month during calendar year 2023; however, an estimate of 20 firms has been maintained to be conservative. Based on FOCUS data from calendar year 2022, these firms are relatively large, with an average net capital of $1.75 billion, which is similar to the average net capital of all larger broker-dealers that meet the customer account threshold of at least 100,000 customer accounts ($1.6 billion). In fact, the Commission estimates that 15 of these market centers that exclusively execute fractional shares are also larger broker-dealers that meet the customer account threshold. This implies that there may be 5 broker-dealers that will be newly required to produce Rule 605 reports related to their activity as market centers as a result of trading in fractional shares, that will not be larger broker-dealers and thus will not need to produce Rule 605 reports related to their broker-dealer activities. *See supra* section II.A.2.b) for a discussion of the requirement that larger broker-dealers that are also market centers produce separate reports pertaining to each function. However, the Commission believes this to be an upper bound, as several of these identified broker-dealers either engage in trading of non-fractional orders in some months (likely odd lots), or have greater than 100,000 customers in some months. Similar numbers were found using 2021 FOCUS data in the Proposing Release; Proposing Release, 88 FR 3786 at 3880, n.971 (Jan. 20, 2023). To the extent that a market center that exclusively executes fractional shares is also a broker-dealer that meets or exceeds the customer account threshold, then this reporting entity will be required to file separate Rule 605 reports pertaining to each function. *See supra* section II.A.2.b).

Table 11: Estimated Aggregate Compliance Costs Related to Amendments Modifying the Information Required by Rule 605

	Number of Respondents	Initial Aggregate Compliance Costs	Ongoing Aggregate Compliance Costs
Costs to Prior Reporters	228 [a]	$2.7 million [b]	$4.3 million [c]
Costs to Market Centers Trading Fractional Shares	20 [d]	$0.8 million [e]	$1.0 million [f]
Cost to NMS Plan Participants to Update Data Fields	17 [g]	$0.06 million [h]	$0 [i]
Total	**265**	**$3.6 million**	**$5.3 million**

This table presents estimates of the compliance costs related to the amendments to Rule 605 modifying the coverage of orders and information required by Rule 605 reports. Numbers are based on the estimated number of respondents and PRA costs in sections VIII.C and VIII.D supra and have been rounded to the nearest tenth of million to avoid false precision.

[a] The number of prior respondents includes 16 national securities exchanges, 1 securities association, 33 ATSs (based on the number of effective Form ATS-N filings), and an estimated 91 OTC market makers and 87 exchange market makers (based on firms' responses on their 2022 FOCUS Report Form X-17A-5 Schedules I and II).

[b] The estimate of initial compliance costs to prior reporters is based on the monetized initial burden in supra note 951 for prior respondents, assuming that these respondents will incur 30 initial burden hours as a result of the amendments at an average hourly cost of ($20,075/50 hours) =$401.50 per respondent per hour.

[c] The estimate of ongoing compliance costs to prior reporters is based on the monetized annual burden in supra note 952. It is assumed that the cost increase associated with the amendments for preexisting respondents is equivalent to four additional ongoing burden hours per month (24 per year) at an average hourly cost of ($51,648/(11 hours *12 months))=$391.00 per respondent per hour.

[d] The Commission estimates that 20 firms will newly be required to file Rule 605 reports as a result of the inclusion of fractional orders less than one share. See supra note 1659.

[e] The estimate of initial compliance costs to new respondents (in this case, market centers that will newly be required to prepare Rule 605 reports as a result of trading fractional shares) is based on the monetized initial burden in supra note 955 for new respondents, assuming that these respondents will incur 100 initial burden hours at an average hourly cost of ($40,150/100 hours) =$401.50 per respondent per hour.

[f] The estimate of ongoing compliance costs to market centers that will newly be required to prepare Rule 605 reports as a result of trading fractional shares is based on is based on the monetized annual burden in supra note 952 for new respondents, assuming that these respondents will incur 11 ongoing burden hours per month at an average hourly cost of ($51,648/(11 hours * 12 months)) = $391.00 per respondent per hour.

[g] The number of NMS plan participants includes 16 national securities exchanges and 1 securities association.

[h] The estimate that the monetized initial burden for preparing and filing an amendment to the NMS Plan will include approximately $43,605 in aggregate internal costs per participants as well as an aggregate external cost of $19,550 resulting from outsourced legal work. See supra section VIII.D.

[i] The Commission estimates that the costs related to updating data fields will be a one-time cost, and thus will not incur any additional ongoing compliance costs.

BILLING CODE 8011–01–C

As a result of these amendments, prior reporters will incur initial compliance costs to update their systems to collect and store new information.[1660] For example, prior reporters will need to expand their data collection systems to include additional order types, such as stop orders, short sale orders, and orders submitted outside of regular trading hours, and will need to update their systems to reclassify certain orders, such as IOCs, riskless principal orders, and midpoint-or-better NMLOs, into new or different order type categories. Similarly, prior reporters will need to expand their data collection systems to incorporate additional order sizes, including odd-lots, fractional orders, and larger-sized orders.

Prior reporters will also incur initial compliance costs to update their data

[1660] The Commission assumes that the majority of reporting entities' initial burden hours under the PRA will be spent updating current systems as a result of the many changes to Rule 605, and thus estimates that 30 of the 50 initial burden hours estimated for prior reporters and described in *supra* note 951 will be allocated to compliance with the amendments modifying the information contained in Rule 605.

processing software to generate modernized and additional metrics. For example, prior reporters will need to update their methodologies for calculating realized spread to include additional measures, and will need to develop programs (*i.e.,* code) to calculate newly required metrics, such as E/Q. Some of the metrics will involve matching trade information to data elements that were not required by Rule 605 prior to these amendments but that can be obtained from public data sources, such as the best displayed price for calculating price improvement relative to the best displayed price,[1661] and the number of shares displayed at the NBBO for calculating the benchmark measure related to size improvement.[1662] As stated by a commenter, the Consolidated Audit Trail currently requires firms to report order events with at least a millisecond granularity.[1663] Thus, it is likely that the cost to prior reporters of updating their systems to record timestamps in terms of milliseconds rather than seconds will be minimal.[1664]

After prior reporters update their systems to reflect the amendments, it is likely that changes to their ongoing costs will be limited, as the process for generating and publishing Rule 605 reports will largely be unchanged.[1665] This is because most reporting entities retained most, if not all, of the underlying raw data necessary to generate the additional data elements prior to these amendments, or are easily able to obtain this information from publicly available data sources. Furthermore, once reporting entities have developed the necessary programs to calculate the required metrics, there is limited additional effort that needs to be made beyond what prior reporters are already doing, such as monitoring and debugging these statistical programs.

One commenter stated that some of the amendments will impose additional costs on reporting entities as a result of an increase in the complexity of the calculations.[1666] Another commenter stated that they believe that the estimated annual costs associated with the Proposed Rule 605 were underestimated, because they ''neglect[ed] to take into account dedicated staff time needed for data reconciliation and validation and other ongoing compliance costs.'' These commenters did not provide the Commission with data regarding what an appropriate estimate of the annual compliance burden would be. However, the Commission recognizes that there may be some additional ongoing costs to the extent that some metrics introduced under these amendments may require more data storage or more complex calculations, such that the cost of preparing monthly Rule 605 reports may increase. Therefore, in response to these commenters, the Commission has increased its allocation of additional ongoing costs to account for additional costs of maintaining programmers and systems analysts for the ongoing technical support of Rule 605 reports.[1667]

As a result of the adopted amendment expanding the scope of Rule 605 to include information about orders for less than one share, the Commission estimates that some broker-dealers that exclusively execute fractional shares, and therefore, prior to these amendments, were not required to file Rule 605 reports in their capacity as a market center due to fractional shares falling below the smallest order size category in Rule 605 prior to these amendments, will be required to begin publishing Rule 605 reports. The Commission is assuming that these broker-dealers will incur similar initial and ongoing costs as those discussed above for larger broker-dealers and SDPs. These compliance costs may be over- or underestimated if broker-dealers that exclusively execute fractional shares have different characteristics (*e.g.,* fewer customers) than the larger broker-dealers that will be included because of the expanded scope of reporting entities. However, these firms are relatively large, with an average net capital similar to that of all larger broker-dealers that meet the customer account threshold of at least 100,000 customer accounts, and an estimated 15 of these market centers are also larger broker-dealers that meet the customer account threshold.[1668]

One commenter stated that the requirement for market centers that exclusively engage in fractional trading to comply with Rule 605 ''would harm smaller broker-dealers by creating a barrier to entry to support fractional share programs.'' [1669] The Commission acknowledges that, to the extent that a smaller broker-dealer intends to begin executing fractional shares internally, it will need to incur the initial and ongoing costs associated with complying with Rule 605. However, these compliance costs are not large enough such that this is likely, as compliance costs are estimated to be a small fraction of broker-dealer revenues, even for broker-dealers with fewer than 100,000 customers.[1670] Furthermore, as previously discussed, an analysis of firm MPIDs that exclusively execute fractional shares found that these firms tend to be relatively large, and that the majority of them will also meet the customer account threshold.[1671] Thus, there are likely barriers to entry for smaller broker-dealers to offer fractional programs that exist apart from these

[1661] *See supra* section III.B.4.g)(2) for a discussion of the data required to calculate this measure. Under MDI Rules, competing consolidators are not required to offer products that include all core data items, and therefore some competing consolidators may offer products that do not contain all information that will be required for calculating Rule 605 statistics, such as odd-lot information for the purposes of calculating the best displayed price. However, as discussed in section IX.C.1.c)(2) *supra,* the Commission believes that for competitive reasons at least one competing consolidator will offer a data product that contains all core market data items. To the extent that a reporting entity would have subscribed to a cheaper data product if not for these amendments to Rule 605, the need to subscribe to a more expensive data product represents an additional cost of complying with Rule 605 as amended.

[1662] *See supra* section III.B.4.e)(2) for a discussion of the data required to calculate this measure.

[1663] *See* FIF Letter at 17.

[1664] The commenter also stated that many market centers typically already record events with even greater precision. *See* FIF Letter at 17, stating that ''[m]arket centers, in particular, typically record trading events with greater precision than milliseconds.''

[1665] One exception is the adopted amendment requiring reporting entities to prepare summary reports summarizing key information from their Rule 605 reports. The Commission assumes that current reporters will face additional ongoing costs as a result of this amendment, and discuss these costs in *infra* section IX.D.2.a)(3).

[1666] *See, e.g.,* BlackRock Letter at 4.

[1667] Specifically, three additional ongoing monthly burden hours per respondent have been allocated to prior reporters to account for the need to maintain a technical staff, such as programmer(s) and systems analyst(s), in addition to the one additional hour in the Proposing Release. *See* footnote to Table 10; *see also* Proposing Release, 88 FR 3786 at 3881, n.976 (Jan. 20, 2023); *see also supra* note 954 and corresponding text for further discussion of the Commission's adjustment of its burden estimates in response to commenters. This additional allocation of three ongoing monthly burden hours is similar to the technology-related burdens in other rules; *see, e.g.,* Securities Exchange Act Release No. 98738 (Oct. 13, 2023), 88 FR 75100 (PRA Table 1) (Nov. 1, 2023) (allocating an additional 2 hours of work by a programmer for the purposes of preparing reports using a structured XML-based data language).

[1668] *See supra* note 1659.

[1669] *See* SIFMA Letter at 31.

[1670] For example, data on broker-dealers' median monthly revenues from FOCUS Report Form X–17A–5 Schedule II from Q4 2022 show that the estimated monthly compliance cost will represent 0.02% of the monthly revenues of broker-dealers with 100,000 customers or less, and 0.002% of the monthly revenues of broker-dealers with 100,000 customers or more. An analysis in the Proposing Release of FOCUS Report Form X–17A–5 Schedule II from Q4 2021 found similar results. *See* Proposing Release, 88 FR 3786 at 3882, n.981 (Jan. 20, 2023).

[1671] *See supra* note 1659 for further discussion of this analysis.

amendments.[1672] Therefore, the Commission does not believe that the requirement for market centers that exclusively engage in fractional trading to comply with Rule 605 will significantly increase barriers to entry for fractional share programs.

In addition, according to this commenter, because ''much of today's market infrastructure does not yet support fractional share trading,'' (including that ''FINRA does not currently have a mechanism to report fractional share trades''), ''the costs to fully modify this infrastructure would be high compared to the minimal benefit of including fractional share reporting.'' [1673] The Commission acknowledges that prior reporters will incur a cost associated with expanding their data collection systems to incorporate additional order sizes, including odd-lots, fractional orders, and larger-sized orders, and has accounted for this in its estimates of compliance costs.[1674] The Commission disagrees with the commenter that the benefits of including fractional share reporting will be minimal, particularly considering that fractional shares are a significant percentage of orders associated with individual accounts,[1675] and because there is a significant amount of variation in the execution quality received by these orders.[1676]

Lastly, the Commission estimates that the 16 national securities exchanges and 1 national securities association will incur a one-time initial cost to amend the NMS Plan to account for the new data fields required to be reported. The Commission estimates that this will mostly consist of legal time to develop and draft the amendments to the NMS Plan.

(3) Compliance Costs Related to Summary Execution Quality Reports

The estimated 228 prior reporters [1677] will face additional initial and ongoing compliance cost as a result of the adopted amendment requiring reporting entities to prepare summary reports summarizing key information from their Rule 605 reports.[1678] Table 12 breaks down the initial and ongoing compliance costs associated with this amendment.

Table 12: Estimated Aggregate Compliance Costs Related to Amendment Requiring Summary Execution Quality Reports

	Number of Respondents	Initial Aggregate Compliance Costs	Ongoing Aggregate Compliance Costs
Costs to Prepare Summary Execution Quality Reports	228 [a]	$1.8 million [b]	$1.1 million [c]

This table presents estimates of the compliance costs related to the amendment to Rule 605 requiring Rule 605 reporting entities to prepare summary execution quality reports. Numbers are based on the estimated number of respondents and PRA costs in sections VIII.C and VIII.D supra and have been rounded to the nearest tenth of million to avoid false precision.

[a] The number of preexisting respondents includes 16 national securities exchanges, 1 securities association, 33 ATSs (based on the number of effective Form ATS-N filings), and an estimated 91 OTC market makers and 87 exchange market makers (based on firms' responses on their 2022 FOCUS Report Form X-17A-5 Schedules I and II).

[b] The estimate of initial compliance costs to preexisting respondents is based on the monetized initial burden in supra note 951 for preexisting respondents, assuming that these respondents will incur 20 initial burden hours as a result of the amendments at an average hourly cost of ($20,075/50 hours)=$401.50 per respondent per hour.

[c] The estimate of ongoing compliance costs to new reporters is based on the monetized annual burden in supra note 952 for new respondents, assuming that these respondents will incur 1 additional ongoing burden hours per month (12 per year) at an average hourly cost of ($51,648/(1 hours * 12 months)) = $391.00 per respondent per hour.

The Commission estimates that these costs will not comprise the majority of overall costs to comply with Rule 605 reporting requirements, because Rule 605 summary reports contain only a small subset of the information published in the fuller Rule 605 reports. However, there may be incremental costs in structuring these summary reports using a custom CSV schema and providing these reports in a human-readable format using a PDF

[1672] Smaller introducing broker-dealers (with under 100,000 customers) could still offer their customers fractional share trading without having to prepare Rule 605 reports if their clearing broker executes the fractional share trades. If an introducing broker's fractional share orders are executed by their clearing broker, then the clearing broker will have to prepare a Rule 605 report as a market center if it meets the definition of an ''OTC market maker'' and receives ''covered orders'' for execution in such capacity. *See supra* note 170 and accompanying text for further discussion on the preparation of Rule 605 reports with respect to fractional share orders.

[1673] *See* SIFMA Letter at 31.

[1674] This was also acknowledged in the Proposing Release. *See, e.g.,* Proposing Release 88 FR 3786 at 3881 (Jan. 20, 2023), stating that ''current reporters would need to expand their data collection systems to incorporate additional order sizes, including odd-lots, fractional orders, and larger-sized orders.''

[1675] Fractional orders less than a share represent a relatively high fraction (16.4%) of executions received by individual account holders in terms of number of trades. *See supra* note 1145 and corresponding text.

[1676] *See, e.g.,* Professor Schwarz et al. Letter at 4, describing an analysis showing that E/Q received by fractional trades ranged between 0.127 to 0.915, as compared to 0.056 and 0.624 for full-share trades. *See* Professor Schwarz et al. Letter, Table 2. The commenter does not state whether these statistics include only fractional trades less than one share, or all trades that have a fractional components.

[1677] This section does not consider the cost of these amendments to those reporting entities that will begin publishing Rule 605 reports as a result of the amendments expanding the scope of Rule 605 reporting entities. *See* explanation in *supra* note 1656.

[1678] The Commission estimates that a significant portion of reporting entities' initial burden hours under the PRA will be allocated to updating current systems to prepare summary reports, which will entail both a new format and a new level of information aggregation as compared to prior Rule 605, and thus estimates that 20 of the 50 initial burden hours estimated for prior reporters and described in *supra* note 951 will be allocated to compliance with the amendments modifying the information contained in Rule 605.

renderer.[1679] Many broker-dealers already have experience structuring their data using machine-readable schemas and rendering them using a PDF renderer. For example, the Commission requires broker-dealers to submit quarterly and customer-specific order handling reports required under Rule 606 using an XML schema and associated PDF renderer.[1680]

(4) Implications of Compliance Costs for Competition

While the primary competitive effect of these amendments to Rule 605 will be to increase competition among reporting entities on the basis of execution quality,[1681] it is possible that these amendments will have a negative impact on competition if the associated compliance costs described above prevent the entry of new reporting entities or cause some entities to leave the market.[1682]

The Commission is unable to quantify the likelihood that either a trading venue or a brokerage firm will cease operating as a result of the compliance costs associated with these amendments. While the Commission does not believe that these compliance costs are large enough such that this will be likely,[1683] the Commission recognizes this possibility depends in part on whether the compliance costs associated with Rule 605 are likely to be fixed or variable. If Rule 605 compliance costs represent a fixed cost, these costs could represent a significant portion of a smaller reporting entity's revenue, such that the reporting entity may become unprofitable if subjected to these costs.[1684] This may impact competition among reporting entities, for example, by causing some reporting entities to leave the market, or preventing the entry of new ones. It may also result in broker-dealers avoiding taking on more than 100,000 customers, to avoid crossing the customer account threshold such that they need to begin complying with Rule 605 reporting requirements.

On the other hand, if Rule 605 compliance costs are variable, then the scalability of compliance costs means that smaller reporting entities will incur lower compliance costs related to execution quality reports, which will mitigate some of these concerns. Rule 605 compliance costs may be variable, *e.g.,* because smaller reporting entities handle lower order volumes and therefore will require less data storage and less complexity when calculating the metrics required by these amendments.

Furthermore, even if compliance costs are fixed from the perspective of reporting entities (which will be the case, *e.g.,* if variable costs such as data storage are dominated by fixed costs such as costs for compliance and data personnel), they may be lower if reporting entities make use of third-party vendors, who can leverage economies of scale to spread fixed costs across the potentially many reporting entities that they service, to prepare Rule 605 reports on their behalf. Therefore, to the extent that reporting entities make use of third-party vendors to prepare their Rule 605 reports, and these vendors charge reporting entities variable report preparation fees (*e.g.,* based on the amount of data), this could lead to data vendors charging lower prices to prepare the Rule 605 reports of smaller reporting entities. This could also reduce the burdens of compliance costs for smaller reporting entities.

However, even if some smaller reporting entities were to exit, the Commission does not believe this would significantly impact competition in either the market for brokerage services or the market for trading services, because both markets are served by a large number of competitors.[1685] The Commission recognizes that smaller reporting entities may have unique business models that are not currently offered by competitors, but a competitor could create similar business models if demand were adequate.

(5) Implementation Costs From Overlapping Compliance Periods

Some commenters stated that proposed Rule 605 and another recently adopted rule, the Settlement Cycle Adopting Release, would have interacting effects. Commenters stated that implementing the rules together would impact industry resources, or that the rules had uncertain interacting effects.[1686] The Commission acknowledges that the effects of any final rule may be impacted by recently adopted rules that precede it. Accordingly, each economic analysis in each adopting release considers an updated economic baseline that incorporates any new regulatory requirements, including compliance costs, at the time of each adoption, and considers the incremental new benefits and incremental new costs over those already resulting from the preceding rules. In some cases, resource limitations can lead to higher compliance costs when the compliance period of the rule being considered overlaps with the compliance period of other rules. In determining compliance periods, the Commission considers the benefits of the rules as well as the costs of delayed compliance periods and potential overlapping compliance periods.

The Commission acknowledges that there are compliance dates for certain requirements of the Settlement Cycle Adopting Release that overlap in time with the amended rule, which may impose costs on resource-constrained entities affected by multiple rules.[1687] The broker-dealers with compliance obligations under the Settlement Cycle Adopting Release will incur one-time costs in connection with a May 2024 compliance date for the Settlement

[1679] For example, a single letter ''a'' results in a PDF file of 7,706 bytes vs. a TXT file of 1 byte. *See, e.g., File Size,* U.S. Pat. & Trademark Off., *available at https://www.uspto.gov/patents/apply/applying-online/file-size.* However, the lower information content of the summary file PDFs and CSVs likely results in lower file sizes despite the larger per-pixel storage requirements.

[1680] 17 CFR 242.606(a)(1) and (b)(3). The Commission does not expect that the process of using a CSV schema for preparing Rule 605 summary reports will vary significantly from that of using an XML schema for preparing Rule 606 reports because, in each instance, the reporting entity must encode the required disclosures in machine-readable format (whether the simpler CSV format or the more complex XML format) according to a fixed set of rules and relationships (*i.e.,* a schema) created and maintained by the Commission, and post the resulting machine-readable document alongside a rendered PDF version on the entity's public website.

[1681] *See supra* section IX.D.1 for a discussion of the effects of these amendments on competition among reporting entities on the basis of execution quality.

[1682] For example, one commenter stated that the compliance costs associated with the reporting of fractional shares would represent a significant barrier to entry to the creation of fractional share programs by smaller broker-dealers. *See* SIFMA Letter at 31. However, based on the Commission's analysis, fractional share programs are more likely to be offered by larger broker-dealers who would fall within the customer account threshold, so the Commission does not expect this to represent an additional significant barrier to entry beyond those that already exist. *See supra* note 1659 and corresponding text for further discussion and response to this commenter.

[1683] For example, data on broker-dealers' median monthly revenues from FOCUS Report Form X–17A–5 Schedule II from Q4 2022 show that the estimated monthly compliance cost will represent 0.03% of the monthly revenues of broker-dealers with 100,000 customers or less, and 0.003% of the monthly revenues of broker-dealers with 100,000 customers or more.

[1684] The Commission does not believe that these compliance costs are large enough such that this is likely. *See supra* note 1683, describing how the compliance costs are likely to be a small percentage of broker-dealers' monthly revenue.

[1685] *See supra* section IX.C.4.a)(1) for a discussion of the structure of the market for brokerage services, and *supra* section IX.C.4.b)(1) for a discussion of the structure of the market for trading services.

[1686] *See supra* note 1051 (citing comments).

[1687] *See* section VII (compliance dates for the Rule 605 amendments); *supra* note 1050 (compliance dates for the Settlement Cycle Adopting Release).

Cycle Adopting Release,[1688] while the compliance period for the Rule 605 amendments for these broker-dealers culminates in the fall of 2025.[1689]

While the Commission received comments on the interaction of the MDI Rules and the final amendments to Rule 605, the commenters did not specifically address costs associated with overlapping compliance periods.[1690] The Commission outlined a phased transition plan for the implementation of the MDI Rules.[1691] Based on the times provided in the transition plan for implementation of the MDI Rules, the Commission estimated that the full implementation of the MDI Rules will be at least two years after the Commission's approval of the plan amendment(s) required by Rule 614(e).[1692]

The Operating Committees of the CTA/CQ Plan and UTP Plan filed the MDI Plan Amendments on November 5, 2021.[1693] The Commission disapproved the proposed amendments on September 21, 2022.[1694] As a result, the participants to the effective national market system plan(s) will need to develop and file new proposed amendments as required by Rule 614(e), before the implementation period prescribed by the phased transition plan can commence. The Commission therefore believes that the length of time affected market participants will have to come into compliance with both the MDI Rules and these amendments, and the likelihood of limited overlap in compliance periods, will mitigate compliance costs.

(b) Other Potential Costs

Some market participants may incur costs other than compliance costs as a result of these amendments to Rule 605. Many of these costs are difficult to quantify, especially as the practices of market participants are expected to evolve and may change due to the information on execution quality that is required to be reported under these amendments to Rules 605. Therefore, much of the following discussion is qualitative in nature.

(1) Costs To Reporting Entities of Improvements to Execution Quality

In addition to compliance costs, these amendments could result in costs to some reporting entities based on how market participants adjust their behavior in response to increased transparency and competition on the basis of execution quality.[1695]

First, increased transparency and competition on the basis of execution quality, and subsequent scrutiny by customers and other market participants, might make broker-dealers less likely to route orders based on payment relationships and/or fees and rebates. While this will likely benefit customers in the form of better execution quality, if broker-dealers were to reduce the order flow sent to wholesalers who pay for it, the broker-dealers will receive less payment for such order flow and might make up for the lost payments by, for example, by raising brokerage commissions or other fees on customers. The same outcome might occur if broker-dealers were to route orders to trading centers with lower rebates and higher fees. Broker-dealers may make up for lost payments or revenues at the expense of customers in other ways as well, for example, by reducing the quality of some bundled services or paying a lower interest rate on deposit accounts.

Second, increased competition on the basis of execution quality may result in costs to reporting entities to the extent that they need to update or improve their routing or execution systems in order to remain competitive. If the reporting entity is executing an order, an improvement in execution systems will correspond to a direct improvement in execution quality for its customers (that is, the cost is a transfer from the reporting entity to its customers). If the reporting entity is routing the order, then the cost of improved routing will also benefit the customer in terms of superior execution (the cost is, in part, a transfer). The reporting entity may pass some of the costs of improved routing on to its customers, reducing the benefit from improved execution quality relative to what it might otherwise have been. If the cost to the reporting entity from improvements to routing is sufficiently high, and if this cost cannot be passed on to customers, then on net, there may be costs from improved execution practices.

It is possible that the capital expenditure associated with upgrading their order routing and execution systems may be such that some reporting entities will no longer remain profitable.[1696] The Commission is unable to estimate the number of reporting entities that may leave the market as a result of no longer being able to compete with other reporting entities on the basis of execution quality because the Commission does not know how market participants will adjust their order flow based on the updated information in the amended 605 reports. The Commission acknowledges that if some reporting entities offering lower execution quality exit the market then their customers may incur costs to switch to other reporting entities.[1697] However, these customers' order execution quality may improve if they switch to reporting entities that offer better execution quality.

If reporting entities offering worse execution quality exit the market, the Commission does not believe that it will have an adverse effect on competition, either in the market for brokerage services or in the market for trading services. Both markets are served by a large number of competitors and if a reporting entity were to exit for this reason, these markets will be served by more efficient firms that are better able to offer execution quality to customers in line with their industry peers.

(2) Costs for Smaller Broker-Dealers

These amendments to Rule 605 may entail additional costs if smaller broker-

[1688] *See* Settlement Cycle Adopting Release, 88 FR 13872 at 13918, section VII (compliance date) (Mar. 6, 2023). The Commission estimated that broker-dealers serving institutional investors will incur initial compliance costs under Rule 15c6–1 to configure their trading systems, update reference data, and update trade confirmation/affirmation systems, documentation, cashiering and asset servicing functions, as applicable; but will have minimal ongoing direct compliance costs after the initial transition to a T+1 standard settlement cycle; and those also serving retail investors will face additional one-time compliance costs after the initial transition for client education and customer service. *See id.* at 13937–38, section VIII.C.5. Broker-dealers which adopt policies and procedures related to allocation, confirmation, and affirmation of transactions, instead of entering into or modify existing written agreements with relevant parties, will additionally incur initial costs to create policies and procedures, and ongoing costs related to monitoring, compliance, and documentation obligations under Rule 15c6–2. *See id.* at 13938–39.

[1689] The final rule has an effective date 60 days after its date of publication in the **Federal Register** and a compliance date 18 months after the effective date. *See* section VII, *supra.*

[1690] *See supra* notes 1006, 1638; *infra* note 1725 (citing comments).

[1691] *See* MDI Adopting Release, 86 FR 18596 at 18699–18701 (Apr. 9, 2021).

[1692] *See supra* note 1022.

[1693] *See supra* note 1023.

[1694] *See supra* note 1024.

[1695] The costs to reporting entities associated with increased transparency and competition on the basis of execution quality will likely represent a transfer from these reporting entities to other market participants.

[1696] *See, e.g.,* ModernIR Letter at 3, stating that expanding Rule 605 disclosures ''will drive yet more broker-dealers from the market.''

[1697] These costs will vary based on the reporting entity that exited the market and the services the individual customers received from the reporting entity and other entities. For example if a customer used multiple reporting entities that offered similar services, then the costs to the customer of one of these reporting exiting the market may be smaller than for a customer that used only one reporting entity that exited the market. The Commission is unable to quantify these costs because it is unable to estimate the entities that will exit the market.

dealers that are not subject to Rule 605 reporting requirements under the final rule face competitive pressure to provide customers with more information and execution quality, and incur initial and ongoing costs to voluntarily provide customers with execution quality reports.[1698] The costs for smaller broker-dealers to prepare execution quality reports may not be the same as the costs for larger broker-dealers. Smaller-broker dealers may lack the technical expertise and compliance experience of larger broker-dealers, which will tend to lead to higher costs; however, smaller broker-dealers may also have lower costs if their lower order volume and customer account numbers lead to less complexity when calculating the metrics required in the reports.

(3) Costs Due to Incentives From Reporting of Execution Quality

The Commission acknowledges that, to the extent that these amendments to Rule 605 fail to capture relevant dimensions of execution quality or cause market participants to focus on some dimensions of execution quality to the detriment of others, these amendments may reduce execution quality along certain dimensions that are relevant to some investors. The nature of execution quality as a multi-faceted concept has been a focus of academic papers, which have stated that execution quality is composed of multiple aspects or dimensions, including price and speed, among others.[1699] As stated by the Commission in the Rule 11Ac1–5 Adopting Release, different investors may have different concerns and priorities related to execution of their orders.[1700] If these amendments tend to favor certain dimensions of execution quality while excluding or neglecting others, there is a possibility that certain investor groups may be advantaged by these amendments to the disadvantage of other investor groups.

For example, if size improvement becomes a major driver of order flow, national securities exchanges may try to incentivize hidden liquidity and broker-dealers may route orders to venues with higher expected hidden orders, as size improvement measures mechanically benefit from a greater degree of hidden volume.[1701] It is possible that incentivizing hidden liquidity at the cost of displayed orders may negatively impact market quality by obscuring trading interest, making order books look thinner than they actually are. This scenario is unlikely for two reasons. First, exchanges are unlikely to incentivize hidden liquidity because they have economic incentives to promote displayed liquidity over hidden liquidity.[1702] Second, market centers may not specifically focus on promoting hidden liquidity to improve size improvement metrics because Rule 605 reports also require information, such as time-to-execution, that show other dimensions of execution quality that could be negatively affected by increases in hidden liquidity.

One commenter stated that, because of the expansion of Rule 605 reporting requirements to include larger broker-dealers, ''brokers could become less willing to accept difficult orders, or orders under challenging market conditions, in an attempt to maintain favorable summary statistics.'' [1703] To the extent that this occurs and results in delayed executions or a lack of fill, this could lower some market participants' execution quality. However, broker-dealers will continue to have competitive reasons to accept these orders, as customers whose orders are consistently rejected by a broker-dealer may find it advantageous to switch to another broker-dealer. Furthermore, broker-dealers' incentives to engage in this behavior will be limited by the fact that consumers of Rule 605 reports will be able to control for differences in several characteristics of broker-dealers' order flow, including stock mix, order size, and realized spreads. Therefore, market participants will be able to observe whether a broker-dealer's reported execution quality statistics are less favorable because they tend to handle more difficult orders, such as larger orders, those in less liquid stocks, or those with higher adverse selection.[1704]

Several commenters stated that execution quality could worsen for some market participants if the amendments result in changes in order flow as more difficult-to-handle order flow shifts to broker-dealers that previously had easier-to-handle orders.[1705] It is possible that the information contained in the amended Rule 605 reports could cause more difficult-to-handle order flow to shift to broker-dealers that have easier-to-handle orders, but it is uncertain what effects this would have on the execution quality of the easier-to-handle orders of the existing customers of these broker dealers. To the extent that such shifts in order flow occur, there is sufficient detail in Rule 605 reports to allow for customers to account for changes in order flow characteristics brought about by the amendments to Rule 605 when assessing execution quality. For example, assume that the customers of Firm A disproportionately submit larger orders, which are typically harder to execute than smaller orders,[1706] and

[1698] *See infra* section IX.D.1.d)(1) for a discussion of the impact of these amendments on smaller broker-dealers.

[1699] *See, e.g.,* Robert Battalio et al., *All Else Equal?: A Multidimensional Analysis of Retail, Market Order Execution Quality,* 6 J. Fin. Mkt. 143 (2003); Boehmer (2005); Emiliano S. Pagnotta & Thomas Philippon, *Competing on Speed,* 86 Econometrica 1067 (2018).

[1700] *See* Rule 11 Ac1–5 Adopting Release, 65 FR 75414 at 75432 (Dec. 1, 2000).

[1701] For example, if two exchanges have 200 shares available at the NBO but one exchange is hiding a portion of this interest, a market order to purchase 200 shares would record size improvement on the venue with hidden liquidity but would not on the other venue.

[1702] For example, exchanges earn market data revenue from the SIPs based on their trading activity and the proportion of time their displayed quotes are at the NBBO. The SIP market data revenue allocation formula is summarized at, *e.g.,* UTP Plan Participants, Summary of Market Data Revenue Allocation Formula, *available at http://www.utpplan.com/DOC/Revenue_Allocation_Formula.pdf* (last accessed Jan. 11, 2024).

[1703] *See* Virtu Letter at 13.

[1704] *See supra* note 1485 for how information about adverse selection can be inferred from measures of realized spreads in amended Rule 605 reports.

[1705] *See* SIFMA Letter II at 30, stating that ''the Commission does not account for any potential negative effects on execution quality caused by the shifting of order flow itself.'' The commenter gives an example of customers that shift their order flow from one broker-dealer (''Firm A'') to another (''Firm B'') because of ''perceived better execution quality at Firm B.'' In this case, the commenter states that ''the customers of Firm B are unlikely to receive better execution quality, and may receive worse execution quality,'' because ''Firm B would now receive all of the order flow from Firm A that received less favorable execution quality.'' Instead, the customers of Firm B ''may lose some of that execution quality in relative terms if the flow from Firm A improves its execution quality.'' The commenter also stated that ''the flow from Firm A may not receive any improvement as the reason for their lower execution quality could be that some broker-dealers simply have more adverse order selection.'' Another commenter similarly stated that ''[t]he Proposed Rule may lead to changes in the equilibrium mix of customer types at each broker, in ways that can result in positive or negative externalities for other investors at each broker,'' offering as an example that, ''[i]f the Proposed Rule induces retail investors with more costly to service orders to move to brokers that previously had less costly to service orders, it could cause execution quality to worsen at the broker with previously less costly to service orders.'' Virtu Letter at 9. *See also* Virtu Letter at 37, stating that the proposed amendments to Rule 605 ''may change the equilibrium mix of the brokers used by their customers, in ways that can result in positive or negative externalities for other investors . . . If the rule induces informed traders to move to brokers that previously had uninformed traders, it could cause execution quality to worsen at that broker.''

[1706] *See supra* note 984 for a discussion of why larger orders are typically more difficult to execute. This example also could apply to other differences in order flow characteristics that make execution

Continued

then view from Rule 605 reports that Firm B offers better execution quality for larger orders than Firm A, and then switch to using Firm B. It could be the case that, *in aggregate,* Firm B's execution quality statistics decline, because that broker-dealer is now handling more orders that are difficult to execute. However, because both the detailed Rule 605 reports and the summary reports contain disaggregated information by notional order size, market participants will be able to account for this order flow characteristic when assessing that broker-dealer's execution quality from its summary report.[1707] Furthermore, it is not necessarily the case that, just because a broker-dealer is handling more of a particular type of order flow that may be harder to execute, the broker-dealer will offer these orders worse execution quality. In fact, to the extent that broker-dealers may benefit from liquidity externalities or economics of scale because of handling more of this order flow, the opposite may happen instead.[1708]

One commenter stated that, to the extent that ''perceived differences in execution quality'' result in the consolidation of order flow among a smaller number of firms, this could result in a reduction in competition and harm overall execution quality.[1709] The Commission is unable to quantify the likelihood that a trading venue or a brokerage firm will cease operating because of the consolidation of order flow and the subsequent effect that this will have on competition and execution quality. However, based on the academic literature, it may be the case that the consolidation of order flow actually improves execution quality as a result of liquidity externalities.[1710]

(4) Costs To Update Best Execution Methodologies

As a result of these amendments to Rule 605, financial service providers that are subject to best execution obligations [1711] will likely reevaluate their best execution methodologies to take into account the availability of new statistics and other information that may be relevant to their decision making.[1712] This may impose a cost only to the extent that broker-dealers and/or investment advisers choose to build the required statistics into their best execution methodologies. These amendments do not, however, address and therefore do not change the existing legal standards that govern financial service providers' best execution obligations.[1713]

(5) Other Costs

One commenter stated that the enhanced reporting requirements under Rule 605 would result in ''giving away vast amounts of information to free riders,'' which would result in vulnerabilities.[1714] The same commenter expressed a similar concern that the more detailed order execution information would ''enhance certain constituents' ability to model the market,'' who then ''could use sophisticated algorithms to craft out order flow.'' [1715] The commenter did not further specify how the increase in information would increase vulnerabilities or how the more detailed information could be utilized for algorithmic trading. Given the low frequency of Rule 605 reports (*i.e.,* once per month), and high level of aggregation of these reports (*i.e.,* not order-by-order, but aggregated across order sizes and types), the risk of market participants using Rule 605 reports to, *e.g.,* infer information about other participants' trading strategies is likely to be low, particularly because only larger broker-dealers, who introduce or carry a large number of customer accounts and thus whose order flow is less traceable to any one customer account, will be required to report under amended Rule 605 requirements.[1716]

The amendment expanding the set of Rule 605 reporting entities to include larger broker-dealers could impose a cost on broker-dealer customers if those broker-dealers that voluntarily provided their customers with execution quality reports prior to these amendments stop providing these reports, which potentially contain more or different information than what these amendments require.[1717] This scenario is not very likely because customers could still request additional information or customized reports from their broker-dealers and broker-dealers may be incentivized to satisfy such requests, to the extent they did so prior to these amendments, to retain their customers.[1718]

As another potential cost, the amendments to Rule 605 may render the preexisting Rule 605 data less useful and reduce the ability of researchers to perform statistical analyses. Some Rule 605 metrics will lose comparability before and after the new reporting requirements are implemented, so that in some cases there will be two shorter data sets rather than one longer one, leading to reduced statistical power.[1719] This cost will apply for studies done over a limited period, as over time the new data will accumulate. The changes will also impact market participants' ability to compare certain categories in the reports before and after the amendment.[1720] The ability to examine the effect of changes in order execution

more difficult, such as higher adverse selection as measured by the realized spread.

[1707] To the extent that order flow shifts such that the aggregate order flow characteristics are similar across broker-dealers, the execution quality information contained in the final Rule 605 reports will still incentivize broker-dealers to compete to on the basis of execution quality.

[1708] *See supra* section IX.D.1.d)(4) for a discussion of how liquidity externalities can improve execution quality under certain circumstances but may not always be beneficial.

[1709] *See* SIFMA Letter at 30.

[1710] *See supra* section IX.D.1.d)(4) for a discussion of how liquidity externalities can improve execution quality under certain circumstances but may not always be beneficial.

[1711] *See supra* note 1099 and accompanying text.

[1712] This statement was supported by one commenter. *See* Decimus Letter at 2.

[1713] *See supra* note 1099.

[1714] *See* Data Boiler Letter at 5.

[1715] *See* Data Boiler Letter II at 1.

[1716] *See infra* section IX.E.1.a) for a discussion of information leakage as an indirect cost of a reasonable alternative requiring these smaller broker-dealers to publish Rule 605 reports.

[1717] These reports could include, for example, public reports prepared according to the FIF Template (*see supra* note 973), or private ad hoc reports the broker-dealers prepare for their customers (*see* discussion in section IX.C.2.c), *supra*).

[1718] *See, e.g.,* 2018 Rule 606 Amendments Release, 83 FR 58338 at 58403 (Nov. 19, 2018), which discusses a similar potential cost and further states that the willingness of broker-dealers to provide such customized reports to customers and the level of detail in such a report might depend on the business relationship between the broker-dealer and the customer, such as whether the customer does a large amount of business with the broker-dealer.

[1719] For example, time-to-execution metrics for some NMLOs will not be comparable, because preexisting Rule 605 required time-to-execution for NMLOs to be measured based on the time of order receipt, while Rule 605 as amended will require time-to-execution metrics for NMLOs to be measured based on the time the order becomes executable. For NMLOs submitted at or inside the NBBO, the time of order receipt is equivalent to the time of order executability. However, for NMLOs submitted outside the quote, there may be a difference between the time of order receipt and the time of order executability. Therefore, this change may impair the ability to compare the time-to-execution metrics of near-the-quote limits orders in prior Rule 605 reports to that of non-marketable limit orders in the amended Rule 605 reports.

[1720] For example, the amendments changing the order size categories from share-based to notional-based will affect market participants' ability to compare these categories before and after the amendments. Furthermore, while IOC orders were not broken out separately and thus were distributed across various order type categories in preexisting Rule 605, IOC orders will be categorized separately into marketable and non-marketable IOC categories under amended Rule 605. This will likely affect the comparability of order type categories that had a high percentage of IOC orders prior to these amendments. The amended Rule 605 reports will also include non-exempt short sales and some orders submitted pre-opening/post-closing, which were not included in preexisting Rule 605.

quality close in time to the implementation of the adopted amendments to Rule 605 will be limited because the Rule 605 data available to analyze the change will differ before and after the implementation of the amendments.[1721] The ability to aggregate across different order categories (*e.g.,* notional buckets) mitigates this cost in that aggregated metrics can be compared across preexisting and amended Rule 605.[1722] At the same time, there are some differences in the scope of Rule 605, even taking the ability to aggregate into account.[1723] Finally, this cost may also be mitigated by the existence of other data that provides relevant information on execution quality.[1724]

The Commission received comments stating that the round lot definition in the MDI Rules, once implemented, could reduce the benefits of the amendments to Rule 605; or that the amendments to Rule 605 could add to the cost of consolidated market data, an effect that could be compounded by the implemented MDI rules.[1725] The baseline against which the benefits and costs are measured incorporates the potential effects of the MDI Rules, however, given that the MDI Rules have not yet been implemented, data that will be required for a quantitative analysis of a baseline that includes the effects of the MDI Rules, and of the cost of the final Rule 605 amendments with new baseline assumptions, is not available.[1726] In further response to the comments, the new round lot definition is not expected to reduce the benefits of the amendments to Rule 605 because Rule 605 report metrics are at the individual stock level; since the new round lot definition will affect only stocks with prices of $250 or greater, the vast majority of stocks will not be affected by it.[1727] Likewise, the amendments to Rule 605 will not alter the contents or requirements of consolidated market data, so the final rule is not expected to affect the cost of consolidated market data.

3. Economic Effects on Efficiency, Competition, and Capital Formation

(a) Efficiency

The Commission believes that these amendments to Rule 605 will improve the efficiency of analyzing Rule 605 reports, which will result in improved price efficiency. Improved transparency is expected to result in an increase in competition, which, in turn, is expected to improve order execution quality and price efficiency. Investors are expected to benefit from improved execution quality as a result of these amendments, such that these investors will also likely benefit from lower transaction costs. Transaction costs reflect a friction in the trading process that limits the ability of prices to fully reflect a stock's underlying value.[1728] Such friction makes it more costly to trade and makes investing less efficient, and limits the ability of arbitrageurs or informed investors to push prices to their underlying values. Thus, transaction costs make prices less efficient. These amendments to Rule 605 are expected to improve order execution quality and reduce transaction costs. This, in turn, will reduce financial friction and improve price efficiency.

(b) Competition

As previously discussed in the benefits section of this economic analysis, the Commission believes that these amendments to Rule 605 will facilitate competition on the basis of execution quality in the markets for brokerage services and trading services.[1729] These amendments may also have additional effects on competition, such as increasing the extent to which Rule 605 reporting entities compete within other quality areas (such as rebates and transaction fees), and increasing competition in related markets (such as the market for TCA).

(1) Competition in Other Areas

An increase in the extent to which Rule 605 reporting entities compete on the basis of execution quality as a result of these amendments may also spill over to increase incentives to compete along other lines, *i.e.,* reduce fees or increase rebates (including PFOF), or offer new products or functionalities to attract customers.

First, national securities exchanges may be incentivized to increase rebates or lower fees as a result of these amendments. Exchanges compete on the basis of fees and rebates to incentivize broker-dealers to route more order flow to them.[1730] If an exchange offers the same execution quality as another reporting entity, an exchange may be incentivized to lower its transaction fees or raise its rebates in order to increase its competitive position in attracting more customers or order flow.[1731] To the extent that this occurs and to the extent that the resulting lower fees or higher rebates will be passed on to investors, this could be beneficial for investors.

Reporting entities may also be incentivized to innovate to offer new products in order to compete. For example, some broker-dealers may be incentivized to differentiate themselves by offering new functionalities that

[1721] This pertains to changes in execution quality resulting from, for example, regulatory changes. *See, e.g.,* Letter from Stephen John Berger, Managing Director, Global Head of Government & Regulatory Policy, Citadel Securities (Mar. 31, 2023) at 29 re Minimum Pricing Increments Proposing Release, *available* at *https://www.sec.gov/comments/s7-30-22/s73022-20164212-334052.pdf.*

[1722] For example, the effective spread for market and marketable limit orders reported for individual stocks may be comparable after aggregating across different order size categories. More specifically, the effective spread can be computed for the combination of market and marketable limit orders in an individual stock in preexisting Rule 605 data by aggregated across all pre-existing order size categories for market and marketable limit orders. This will be compared with the effective spread for aggregated market, marketable limit, and marketable IOC orders in amended Rule 605 data, which will be computed by aggregating across all order size categories that remain for these order types after excluding order notional size categories with fractional and odd-lot components and notional size categories for which the notional value of the order will be equivalent to an order share size of 10,000 shares or greater.

[1723] For example, the amendments to Rule 605 expand its scope to include non-exempt short sales and some orders submitted outside of market hours. Since these orders will not be in separate order type categories, it will not be possible to exclude them from amended Rule 605 reports for the purposes of comparison to preexisting Rule 605 reports.

[1724] *See* IEX Letter at 3 (''There are myriad sources of information that both regulators and market participants draw on to consider how orders are handled and how markets compete with and compare to each other.'')

[1725] *See* Schwab Letter II at 32, 34 (''The 605(a)(1) report's beyond-the-midpoint limit order category adds unnecessary complexity, as it is not a large category today, and will become de minimis with the Market Data Infrastructure ('MDI') round lot definitions . . . Further, when the MDI's new round lot definitions take effect, the percent of the time 'best available price' differs from the NBBO will be even smaller''); Fidelity Letter at 4: (''[W]e anticipate market data costs will increase in several areas under the Proposals. Market data is a critical element of the equity markets, but the SEC has not yet required the self-regulatory organizations ('SROs') to re-submit a proposal setting fees for the data content underlying consolidated market data offerings pursuant to the Commission's Market Data Infrastructure Rules ('MDIR') nor acted on simple governance reforms to help curtail market data costs'').

[1726] *See* section IX.C.1.c)(2), *infra,* discussing benefits and costs based on implementation assumptions.

[1727] *See id.*

[1728] *See* Hans R. Stoll, *Friction,* 55 J. Fin. 1479 (2000).

[1729] *See supra* section IX.D.1 for a detailed discussion of the effects of the amendments on competition in these markets on the basis of execution quality.

[1730] *See supra* section IX.C.4.b)(2) for a discussion of competition between national securities exchanges on the basis of fees and rebates.

[1731] Another possibility is that a reporting entity that offers inferior execution quality may try to compete on the basis of lower fees or higher rebates instead of improving its execution quality. To the extent that this occurs, this may limit the extent to which competition will lead to improved execution quality for the customers of these reporting entities. However, these customers will still benefit from the lower fees or higher rebates.

appeal to customers, such as the ability to trade on margin; to trade in additional asset classes, such as options; or to trade fractional shares.[1732]

(2) Competition in Related Markets

These amendments to Rule 605 can have an impact on markets other than brokerage and trading services, such as the market for TCA. For example, suppose that a customer chooses to no longer purchase TCA once the amended Rule 605 reports become available, because the customer decides that the information contained in the reports is sufficient. If fewer customers purchase TCA, this will have a negative impact on the market for third-party providers of TCA as well as third-party data vendors, because of a reduction in the demand for their services. Further, the quality of TCA provided by third parties may decrease because third-party providers of TCA may have fewer resources for the development and maintenance of their product offerings and because with fewer customers, third-party providers may have less data to use to build their models. At the same time, the quality of TCA reports may also improve if their publishers need to offer better products in order to compete with the publicly available data, and/or use the expanded information available under the final rule to offer new or better products.

(3) Interacting Rule Effects

In addition, as stated above, some commenters requested the Commission consider interactions between the economic effects of the proposed rule and other recent Commission rules.[1733] As discussed above, the Commission acknowledges that overlapping compliance periods may in some cases increase costs.[1734] This may be particularly true for smaller entities with more limited compliance resources.[1735] This effect can negatively impact competition because these entities may be less able to absorb or pass on these additional costs, making it more difficult for them to remain in business or compete. However, the rules highlighted by commenters have compliance dates that do not significantly overlap with the expected industry compliance dates of the amendments to Rule 605, and therefore we do not expect these effects on competition to be significant.[1736] We acknowledge that to the extent such overlap (in scope or timing) occurs, there could be costs which could affect competition, but we do not expect these costs to be significant.

(c) Capital Formation

These amendments to Rule 605 might promote capital formation by improving price efficiency. As discussed above, these amendments are expected to improve order execution quality and reduce transaction costs, which is expected to improve price efficiency, and to reduce financial friction and promote investors' ability to trade. Financial friction in the form of higher transaction costs can limit trading activity, and thereby hinder the efficient adjustment of prices and limit the ability of prices to reflect fundamental values. Less efficient prices can result in some issuers experiencing a cost of capital that is higher or lower than if their prices fully reflected underlying values, 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. Under these amendments, improved price efficiency is expected to cause firms' stock prices to reflect their underlying values more accurately, which can improve capital allocation and promote capital formation.

E. Reasonable Alternatives

1. Reasonable Alternative Modifications to Reporting Entities

(a) Different Customer Account Thresholds for Differentiating Larger Broker-Dealers

The Commission considered alternatives to the adopted amendment, which requires larger broker-dealers [1737] to prepare execution quality reports pursuant to Rule 605 and excludes broker-dealers that introduce or carry less than a threshold number of customer accounts, defining the customer account threshold as 100,000 customer accounts.[1738] Lowering this threshold would increase the total costs of the proposed amendments, as more broker-dealers would be subject to the costs of preparing Rule 605 reports; however, lowering the threshold might also be beneficial if more broker-dealer customers are able to benefit from the proposed modifications to reporting entities.[1739] On the other hand, raising the customer account threshold would lower the total costs of the proposal, but might result in fewer broker-dealer customers benefiting from the proposed modifications to reporting entities.[1740]

In order to examine the number of broker-dealers that would be subject to Rule 605 reporting requirements under the final rule at different customer account thresholds, it is first necessary to estimate the number of customers both for carrying and for introducing broker-dealers.[1741] To estimate the number of carrying broker-dealers' customers, the Commission used data from broker-dealers' 2022 FOCUS Report Form X–17A–5 Schedule I, which asks respondents whether they carry their own public customer accounts, along with the number of carrying broker-dealers' public customer accounts.[1742] To estimate the number of introducing broker-dealers' customers, the Commission used data from CAT during the calendar year 2022 on the number of unique customer accounts whose order originations are associated with broker-dealers that do not identify as carrying their own public customer accounts in FOCUS Report Form X–17A–5 Schedule I.[1743] The resulting

[1732] *See, e.g., supra* note 1140, describing how trading volume increased substantially for brokers after they introduced the use of fractional shares.

[1733] *See supra* section IX.C.1.d).

[1734] *See supra* section IX.D.2.a)(5).

[1735] *See supra* section IX.D.2.a)(4) (discussing generally the competitive effect of fixed and variable compliance costs on smaller reporting entities). This issue may be mitigated by the fact that Rule 605 reporting requirements will only apply to larger broker-dealers. In addition, the Commission has estimated that, of the firms that will be impacted by the amendments, only one exchange market maker is a ''small entity'' within the meaning of the Regulatory Flexibility Act. *See infra* section X.

[1736] *See supra* section IX.D.2.a)(5).

[1737] *See supra* note 61 defining the term ''larger broker-dealers.''

[1738] *See supra* section II.A.2.a) discussing the adopted customer account threshold.

[1739] *See supra* section IX.D.1.d)(1) for a discussion of the extent to which excluding smaller-brokers dealers (*i.e.,* those broker-dealers with customer accounts numbers below the customer account threshold) limits the benefits of the enhanced reporting requirements on competition for customer order flow.

[1740] While one commenter supported the 100,000 customer account threshold (*see* Nasdaq Letter at 43), and several commenters supported expanding reporting requirements to all broker-dealers (*see infra* section IX.E.1.b), the Commission did not receive comments supporting alternative customer account thresholds.

[1741] *See supra* note 98 and accompanying text for a definition of carrying and introducing broker-dealers.

[1742] Specifically, item 8080 asks for information on ''respondent's total number of public customer accounts,'' but only broker-dealers that are carrying firms are required to answer this question, so information on introducing broker-dealers' customers is not included.

[1743] Customer accounts are identified in CAT as accounts belonging to either the ''Institutional Customer'' account type, defined as accounts that meet the definition in FINRA Rule 4512(c), or the ''Individual Customer'' account holder type, defined as accounts that do not meet the definition in FINRA Rule 4512(c) and are also not a proprietary account. *See supra* note 1144 for more information about account types in CAT. Broker-dealers are identified according to their FDID as defined in section 1.1 of the CAT NMS Plan. Introducing broker-dealers are identified as those broker-dealers that originate orders from customer accounts in the CAT dataset and do not identify as carrying their own public customer accounts in FOCUS Report Form X–17A–5 Schedule I.

customer numbers are then used to estimate the number of both carrying and introducing broker-dealers that would be subject to the reporting requirements of Rule 605 as proposed, using various definitions of the customer account threshold. The estimated costs of these amendments from the various definitions of the customer account thresholds are then calculated using the estimated initial and ongoing costs for new Rule 605 filers.[1744]

Lowering the customer account threshold might be beneficial if more broker-dealer customer accountholders are able to benefit from the enhanced reporting requirements. To estimate the benefits of different customer account thresholds, the Commission calculated the cumulative number of customer accounts (expressed as a percentage of all identified carrying and introducing broker-dealer customer accounts) associated with broker-dealers that will be subject to the amended reporting requirements of Rule 605 according to various definitions of the customer account threshold. Additionally, using estimates of the number of orders that originate from institutional or individual accounts at broker-dealers as identified in CAT,[1745] the Commission calculated the cumulative percentage of customer order originations associated with broker-dealers that would be included under the various thresholds.[1746]

Table 13 [1747] presents the estimated number of broker-dealers (both carrying and introducing) that would be subject to Rule 605 reporting requirements according to different customer account thresholds, the resulting estimated costs, and the resulting estimated benefits in terms of the cumulative percentage of included customer accounts and orders. The table shows that increasing the customer account threshold from 100,000 to 250,000 would reduce both the initial and ongoing costs of the amendments by around 41.7%,[1748] but would also result in lower coverage. In particular, coverage of customer order originations would drop by 55.7 percentage points.

Meanwhile, reducing the customer account threshold from 100,000 to 10,000 would increase the coverage of customer order originations by an additional 21.0 percentage points. However, it would significantly increase both the initial and ongoing compliance costs, which would increase by approximately 187%.[1749] The Commission also understands that accounts of broker-dealers with fewer customers are more likely to belong to institutional traders,[1750] who are likely to have access to alternative information about the execution quality achieved by their broker-dealers and/or are likely to make use of not held orders that are excluded from Rule 605 reporting requirements, and would therefore be less likely to depend on Rule 605 reports for information about their broker-dealers' execution quality.[1751] Therefore, lowering the customer account threshold to include these customers might not be particularly beneficial, especially when compared to the substantial increase in compliance costs.

However, a customer account is only observed in this dataset if it actually originated orders during the sample period from Jan. to Dec. 2022. Therefore, to the extent that there are customer accounts that did not originate orders during this period, these accounts would be missing from our sample. In order to adjust for these missing accounts, an adjustment factor was constructed based on the assumption that, for carrying broker-dealers identified in both FOCUS and CAT, the number of customer accounts associated with the broker-dealer in CAT represents some percentage of that broker-dealer's total customer base available from FOCUS (*i.e.,* those customer accounts that actually originated orders during 2022). Dividing the number of accounts from CAT by the number of customer accounts from FOCUS reveals that, on average, around 26.6% of these broker-dealers' customer accounts traded during 2022. Observed customer numbers from CAT are then scaled up using the adjustment factor of $1/0.266$ to estimate the total number of customers for each broker-dealer (both carrying and introducing). In order to ensure that this estimate of customer account numbers is as conservative as possible, if a broker-dealer is observed in both datasets, the number of customers for that broker-dealer is taken as the higher of its customer account number reported in FOCUS and the adjusted number of customers estimated from CAT. This method may underestimate the total number of customers to the extent that carrying broker-dealers identified in FOCUS introduce customers that they do not carry (*see supra* note 1278 discussing hybrid carrying/introducing broker-dealers), and/or that introducing broker-dealers would have a higher or lower adjustment factor than carrying broker-dealers. This method may also underestimate or overestimate any particular broker-dealer's total number of customers to the extent that a larger or smaller portion of the broker-dealer's customer base originated orders during the sample period than the number implied by the adjustment factor. Lastly, this method may underestimate the number of customer accounts to the extent that some broker-dealers introduce customer accounts on an omnibus basis, which pools together the accounts of potentially multiple underlying customers but would only be recorded as a single account in CAT.

[1744] *See supra* section VIII.D for a description of these costs. This analysis assumes the same costs for both larger and smaller broker-dealers.

[1745] This is estimated as the total number of order originations associated with a broker-dealer's institutional and individual customer accounts identified in CAT during calendar year 2022. *See supra* note 1743 for more information about how these accounts are identified.

[1746] Some of these order originations are likely to be excluded from Rule 605 reporting requirements to the extent that they belong to an order type or size group that is not subject to Rule 605.

[1747] This analysis has been updated since the Proposing Release in several ways. First, to measure the scope of broker-dealer customer activity that would be included in Rule 605 reports according to different definitions of the customer account threshold, the Proposing Release used data from broker-dealers' 2021 FOCUS Report Form X–17A–5 Schedule I and CAT data from calendar year 2021. The updated analysis in Table 13 below uses more recently available data from calendar year 2022. *See supra* note 1743 for further discussion; *see also* Proposing Release, 88 FR 3786 at 3885, n.1008 (Jan. 20, 2023). The customer account thresholds have also been updated since the Proposing Release to provide additional granularity on the costs and percentage of customers that would be covered by extending the rule to cover broker-dealers with between 250,000 and 500,000 customer accounts. Finally, the Proposing Release included a statistic, labeled ''Customer Transactions Included,'' that was calculated by taking the higher of the number of broker-dealer's customer transactions as reported in FOCUS or the number of order originations from the broker-dealer's institutional and individual customer accounts observed in CAT and then summing across broker-dealers. The Proposing Release describes the methodology as using the number of transactions observed in CAT, although order data was actually used. *See* Proposing Release, 88 FR 3786 at 3886, n.1010, 3887 (tbl.13) (Jan. 20, 2023). Upon further review, the Commission believes that order originations are the appropriate way to assess changes in the scope of Rule 605 as the threshold changes. This is because Rule 605 requires the reporting of all covered orders, regardless of whether they result in a transaction; *see, e.g.,* final Rule 605(a), requiring reporting entities to prepare ''a report on the covered *orders* in NMS stocks that it received for execution . . .'' (emphasis added). In the updated Table 13, we therefore continue to use the total number of order originations associated with a broker-dealer's institutional and individual customer accounts observed in CAT. As FOCUS does not include information on order originations, we have not included it in updated Table 13. Therefore, changes to the data and methodology did not affect the Commission's conclusions from this analysis relative to the Proposing Release; namely, the updated data analysis continues to support a 100,000-customer threshold.

[1748] Increasing the customer account threshold from 100,000 to 250,000 would reduce the initial compliance costs from $3,412,750 to $2,409,000 and the ongoing compliance costs from $4,390,080 to $3,098,880.

[1749] Reducing the customer account threshold from 100,000 to 10,000 would increase the initial compliance costs from $3,412,750 to $9,796,600 and the ongoing compliance costs from $4,390,080 to $12,602,112.

[1750] For example, data from CAT order originations reveals that broker-dealers with less than 100,000 customers have a higher percentage of institutional accounts on average than broker-dealers with 100,000 or more customer accounts.

[1751] *See supra* section IX.C.2.c) for a discussion of institutional investors' access to alternative sources of execution quality other than Rule 605 reports.

Table 13: Cost-Benefit Analysis of Different Customer Account Thresholds Defining "Larger Broker-Dealers"

Customer Account Threshold	Number of Broker Dealers			Estimated Compliance Costs		CAT Order Originations Included (%)	Customer Accounts Included
	Carrying	Introducing	Total	Initial	Ongoing		
500,000	28	16	44	$1,766,600	$2,272,512	4.80%	95.80%
250,000	35	25	60	$2,409,000	$3,098,880	4.80%	97.20%
100,000	46	39	85	$3,412,750	$4,390,080	60.50%	98.30%
10,000	74	170	244	$9,796,600	$12,602,112	81.50%	99.70%
1,000	104	498	602	$24,170,300	$31,092,096	84.70%	100.00%
100	130	847	977	$39,226,550	$50,460,096	93.90%	100.00%
10	142	1025	1167	$46,855,050	$60,273,216	94.00%	100.00%
1	153	1092	1245	$49,986,750	$64,301,760	100.00%	100.00%

This table presents the estimated number of broker-dealers that would be subject to Rule 605 reporting requirements according to different definitions of the customer account threshold. The number of customer accounts are estimated from 2022 FOCUS Report Form X-17A-5 Schedule I and CAT data for the calendar year 2022, using the methodology described in supra note 1743. CAT order originations are the total number of order originations from institutional or individual accounts associated with a broker-dealer, summed across all stocks and days in the sample. See supra note 1743 for further details on methodology. Compliance costs are estimated using the per-respondent costs from section VIII.D.

An indirect cost of requiring these smaller broker-dealers to publish Rule 605 reports is an increased risk of information leakage. To the extent that a broker-dealer serves multiple institutional investors and/or these institutional investors exclusively use not held orders, it might be difficult to identify the orders of a particular customer in the amended Rule 605 reports. However, a smaller broker-dealer might have only a few institutional investor customers that represent the majority of its business and this might be known to other market participants. In this case, it might be possible to learn from Rule 605 reports some information about the customer's order flow that is handled by the specific broker-dealer. This information will only pertain to historical order flow and will only include a possibly limited subset of the customer's orders that are held orders, but could nevertheless provide information about the general characteristics of the customer's order flow, which might be useful to other market participants. Such a potential outcome could put smaller broker-dealers (that is, those with a small set of customers or handling a relatively small number of institutional orders) at a competitive disadvantage relative to larger broker-dealers, as institutional investors might avoid using smaller broker-dealers to avoid possible disclosure that could be traced back to the customer.

(b) Require All Broker-Dealers To Prepare Rule 605 Reports

Another alternative to the adopted amendment to require larger broker-dealers to prepare execution quality reports pursuant to Rule 605 is to require all broker-dealers to prepare such reports, excluding broker-dealers with de minimis order flow. Several commenters supported this alternative.[1752]

Expanding reporting requirements to all broker-dealers, subject to a de minimis threshold, would greatly increase the scope of these amendments, as there were 3,494 registered broker-dealers as of Q2 2023.[1753] However, only around a third (specifically, 1,245) of these broker-dealers introduced or carried at least one individual and/or institutional investor in the market for NMS stocks within the sample time period.[1754] The Commission is mindful of the additional costs that broad expansion of the rule to all broker-dealers would entail, relative to the likely limited benefits of expanding reporting requirements to a substantial number of broker-dealers that do not directly handle, and thus have less discretion over the execution quality of, individual and institutional investors' orders. Therefore, it is likely that the increase in cost that would accompany a requirement for all broker-dealers to prepare Rule 605 reports, subject to a de minimis threshold, would not be justified by the corresponding benefit, and that limiting reporting obligations to broker-dealers that handle customer orders will focus the associated implementation costs on those broker-dealers for which the availability of more specific execution quality statistics would provide a greater benefit. One commenter stated that only 6.7% of broker-dealers that carry or introduce at least one customer account would be required to prepare Rule 605 reports.[1755] However, as discussed above, these broker-dealers, while a relatively small percentage of broker-dealers, are responsible for the vast majority (more than 98%) of customer accounts, as well as a significant percentage (59.5%) of customer order flow.[1756]

[1752] *See, e.g.,* Robinhood Letter at 44; Angel Letter at 3.

[1753] *See supra* section IX.C.4.a)(1). In addition, based on Q2 2021 data, the Commission stated in the Proposing Release that there were 3,498 registered broker-dealers with only around a third (specifically, 1,267) of these broker dealers introducing or carrying at least one individual and/or institutional investor in the market for NMS stocks within the sample time period. *See* Proposing Release, 88 FR 3786 at 3887 (Jan. 20, 2023). These numbers are comparable to the ones in this adopting release.

[1754] *See* analysis in *supra* Table 13 for estimated number of broker-dealers that introduce or carry at least one customer account.

[1755] *See* Robinhood Letter at 44.

[1756] *See* Table 13 and corresponding discussion.

(c) Defining the Threshold for Differentiating Larger Broker-Dealers Using Number of Customer Transactions Rather Than Number of Customer Accounts

The Commission also considered defining the threshold for differentiating larger broker-dealers using number of customer transactions rather than number of customer accounts. An approach requiring that broker-dealers handling above a threshold level of customer transactions publish Rule 605 reports would likely capture an overall larger number of customer orders. However, it would also be subject to a number of issues that would limit the benefits of this approach. The Commission did not receive comment on this alternative, which was also in the Proposing Release.[1757]

First, this approach would likely exclude from reporting requirements broker-dealers that have a large number of relatively inactive customer accounts, and include broker-dealers that have a small number of accounts associated with large amounts of trading volume. While the former are likely to be accounts belonging to individual investors, the latter are very likely to be institutional accounts. Institutional investors are likely to have access to alternative information about the execution quality achieved by their broker-dealers and/or are likely to make use of not held orders that are excluded from Rule 605 reporting requirements, and would therefore be less likely to depend on Rule 605 reports for information about their broker-dealers' execution quality.[1758] Meanwhile, individual investors have fewer alternatives to Rule 605 for information about the execution quality achieved by their broker-dealers.[1759] Therefore, while expanding overall coverage, defining the threshold using the number of customer transactions would be less likely to target the types of orders that might be most useful for consumers of Rule 605 reports.

Second, defining the threshold using the number of customer transactions might result in a less stable classification of broker-dealers into those that are and are not subject to Rule 605 requirements, as there is likely to be more month-to-month variation in transaction numbers resulting from changes in market conditions, as compared to number of customer accounts.[1760] This could potentially be disruptive to broker-dealers, who would have to coordinate compliance with Rule 605 during some periods but not others and interfere with customers' or market participants' ability to look at a broker-dealer's execution quality over time by analyzing historical data. Furthermore, the dependence of transaction volumes on market conditions might result in broker-dealers being newly defined as ''larger broker-dealers'' subject to reporting requirements, even though their size relative to other broker-dealers did not change. For example, a period of sustained market volatility resulting in overall increases in market activity levels might trigger the need for many or even most broker-dealers to file Rule 605 reports, even if the broker-dealer's relative portion of order flow (as a percentage of total broker-dealer customer order flow) did not change.[1761] This would increase the total compliance costs associated with the amendments to Rule 605.

Lastly, the number of customer accounts is likely less costly for broker-dealers to calculate and track compared to the number of transactions associated with customer accounts. Given that around 88.1% of customer-carrying broker-dealers reported the actual number of their customer transactions (rather than an estimated number) on their FOCUS Report Form X–17A–5 Schedule I in 2022,[1762] the extent to which broker-dealers would be able or choose to track the number of transactions associated with their customer accounts is unclear.

2. Reasonable Alternative Modifications To Scope of Covered Orders

(a) Explicitly Include ISO Orders With Limit Prices Inferior to the NBBO

Both prior to and after these amendments, marketable Intermarket Sweep Orders (''ISOs'') with a limit price inferior to the NBBO, *i.e.,* an ISO with a limit price less than the national best bid for sell orders or higher than the national best offer for buy orders, may be viewed as being subject to special handling, which will exclude them from Rule 605 reports.[1763] The Commission considered an alternative to explicitly include these orders within the scope of covered orders, either aggregated with other order types or as a separate order type category. The Commission did not receive comment on this alternative, which was also in the Proposing Release.[1764]

ISOs make up a large percentage of on-exchange trade volume; one academic working paper found that, between January 2019 and April 2021, ISOs accounted for 48% of on-exchange trade volume.[1765] In order to estimate the volume of ISOs that are excluded from Rule 605 reporting requirements as a result of the exclusion of ISOs with inferior limit prices, an analysis was performed using data on ISO marketable limit orders from the Tick Size Pilot B.II Market and Marketable Limit Order

[1757] *See* Proposing Release, 88 FR 3786 at 3888 (Jan. 20, 2023).

[1758] *See* section IX.C.2.c) for a discussion of institutional investors' access to alternative sources of execution quality information other than Rule 605 reports.

[1759] *See* section IX.C.2.b) for a discussion of individual investors' usage of Rule 605 reports.

[1760] This possibility is somewhat limited by the adopted amendment requiring a broker or dealer that equals or exceeds the customer account threshold to provide reports for at least three calendar months. *See supra* section II.A.2.

[1761] This possibility would be somewhat limited by the adopted amendment requiring broker-dealers to publish Rule 605 reports only after a three-month initial grace period. *See supra* section II.A.2.

[1762] This number was calculated by dividing the number of broker-dealers that answered ''yes'' to items I8084 (''Respondent carries its own public customer accounts'') and I8105 (''Actual number of respondent's public customer transactions'') and that reported at least one customer transaction, by the total number of broker-dealers that answered ''yes'' to item I8084 and reported at least one customer transaction. *See supra* note 1746 for a description of FOCUS Report Form X–17A–5 Schedule I. The Proposing Release included a similar analysis using 2021 FOCUS Report Form X–17A–5 Schedule I that looked that customer-carrying broker dealers that reported the actual number of respondent's public customer transactions, but did not control for whether the respondent reported at least one customer transaction (*i.e.,* it additionally includes broker-dealers that reported no transactions during the calendar year). Using 2022 FOCUS Report Form X–17A–5 Schedule I, this number is 47.7%, which is similar to the number from the Proposing Release. *See* Proposing Release, 88 FR 3786 at 3888 (Jan. 20, 2023). The Commission has adjusted its methodology to control for the number of broker-dealers that report at least one customer transaction in order to achieve a more conservative estimate of broker-dealers that will face costs from updating their systems to record transaction information. It is unlikely that broker-dealers that report actual transaction numbers of zero, to the extent that they continue to not handle any transactions, will need to update their systems in this way for the purposes of tracking customer transactions. While these methodologies produce different numbers, they both support the idea that the extent to which broker-dealers will be able or choose to track the number of transactions associated with their customer accounts is unclear.

[1763] *See supra* note 4, discussing the exclusion of orders for which the customer requests special handling from the definition of ''covered orders.'' *See also* 2013 FAQs, answer to Question 1.

[1764] *See* Proposing Release, 88 FR 3786 at 3888 (Jan. 20, 2023).

[1765] *See* Ariel Lohr, *Sweep Orders and the Costs of Market Fragmentation* (Sept. 18, 2021), *available at https://ssrn.com/abstract=3926296* (retrieved from SSRN Elsevier database).

dataset.[1766] Table 13 [1767] shows that ISO orders with limit prices inferior to the NBBO make up 4.9% of ISO buy orders (6.3% of buy share volume), and 4.7% of ISO sell orders (9.0% of ISO sell volume). Therefore, it could be the case that these orders make up a small but non-negligible percent of order flow.[1768]

Table 14: Marketable Intermarket Sweep Orders by Price Relative to NBBO, Mar. 2019

Percent of Orders	**ISO Buy Orders**	**ISO Sell Orders**
Price Equal to the NBBO	95.1%	95.2%
Price Worse Than NBBO	4.9%	4.7%
Price Better Than NBBO	0.05%	0.06%
Percent of Share Volume	**ISO Buy Orders**	**ISO Sell Orders**
Price Equal to the NBBO	93.5%	90.1%
Price Worse Than NBBO	6.3%	9.0%
Price Better Than NBBO	0.2%	0.9%

This table shows the percentage of ISO marketable limit orders with limit prices inferior to the NBBO, equal to the NBBO, and better than the NBBO, using a randomly selected sample of 100 stocks from the Tick Size Pilot B.II Market and Marketable Limit Order dataset and for the time period of Mar. 2019. Percentages are calculated as the number of shares (resp. orders) submitted with an ISO designation and within a given price type (i.e., priced equal to, worse than, or better than the NBBO), divided by the total number of shares (resp. orders) submitted with an ISO designation. Results are calculated and presented separately for buy and sell orders. See supra note 1545 for dataset description. The numbers reported here, in particular those related to the NBBO, may change once the amendments in the MDI Adopting Release are implemented. See supra note 1766 and section IX.C.1.c)(2).

However, there are questions as to whether ISOs with inferior limit prices would be comparable to other marketable limit orders. When the limit price of an ISO is inferior to the NBBO at time of order receipt, the customer is effectively instructing the trading center that it can execute the order at a price inferior to the NBBO. If the order executes, any adverse effects that this inferior limit price has on the order's execution quality metrics (*e.g.,* a negative price improvement, or a higher effective spread) would be a result of the customer's instructions, rather than the market center or broker-dealer's discretion. As a result, these orders are likely to skew execution quality metrics downwards if included with other order types, which would harm market participants' ability to use these metrics to accurately compare reporting entities.

One alternative could be to explicitly include ISOs with inferior limit prices as a separate order type category in Rule 605 reports. However, the instruction that a market center should execute an ISO order at a price inferior to the NBBO, even when other market centers are displaying liquidity at better prices, limits broker-dealers' discretion over the execution price of these orders. Thus, market participants might only benefit from this information to the extent that market centers or broker-dealers still have some discretion over some dimension of the order's execution quality such that this information would be useful in comparing metrics across reporting entities.[1769]

(b) Exclude Orders That Are Cancelled Quickly After Submission

Limit orders that are canceled within a very short amount of time after submission are likely driven by trading strategies (for example, high frequency trading[1770] and ''pinging'') that are not intended to provide liquidity, and therefore might have limited information about the execution quality of a particular market center. Excluding quickly cancelled orders from the definition of ''covered order'' might allow fill rates (*i.e.,* number of shares executed at or away from the market center, divided by number of covered shares) to better capture the execution probability of resting orders that are given a minimum opportunity to be executed, leading to a more meaningful ranking of Rule 605 reporting entities. At the same time, excluding cancelled orders also might entail losing important information if these cancellations capture information about orders that did not or could not receive a fill, rather than trading strategies. The Commission did not receive comment on this alternative, which was also in the Proposing Release.[1771]

[1766] *See supra* note 1545 for dataset description. For the analysis of ISO orders, the Commission limited this analysis to a randomly selected sample of 100 stocks and for the time period of Mar. 2019. 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. In particular, for stocks with prices over $250, quoted spreads and price improvement statistics are expected to narrow because they will be measured against a narrower NBBO. The effects on effective spread, price impact, and realized spread statistics in these stocks is uncertain, because they are measured against the NBBO midpoint, and the Commission is uncertain how this will be affected. *See supra* section IX.C.1.c)(2). However, the Commission does not anticipate that the existence of a negative relation between the retail brokers' adverse selection risk and the execution quality that they receive from wholesalers described here would be affected by the implementation of the MDI Rules.

[1767] The same table can be found in the Proposing Release. *See* Table 14 in the Proposing Release, 88 FR 3786 at 3888 (Jan. 20, 2023).

[1768] As the Tick Size Pilot covered only small-cap stocks (*i.e.,* NMS common stocks that have a market capitalization of $3 billion or less, a closing price of at least $2.00, and a consolidated average daily volume of one million shares or less), ISO volumes and properties may be different for mid- or large-cap stocks. Furthermore, as the Tick Size Pilot data are based on self-reported data by trading centers, there is the possibility that the data may be subject to certain errors or omissions.

[1769] For example, the willingness of traders to accept prices worse than the NBBO could help illuminate the premium paid by traders to quickly trade in a fragmented trading environment, which could differ across market centers.

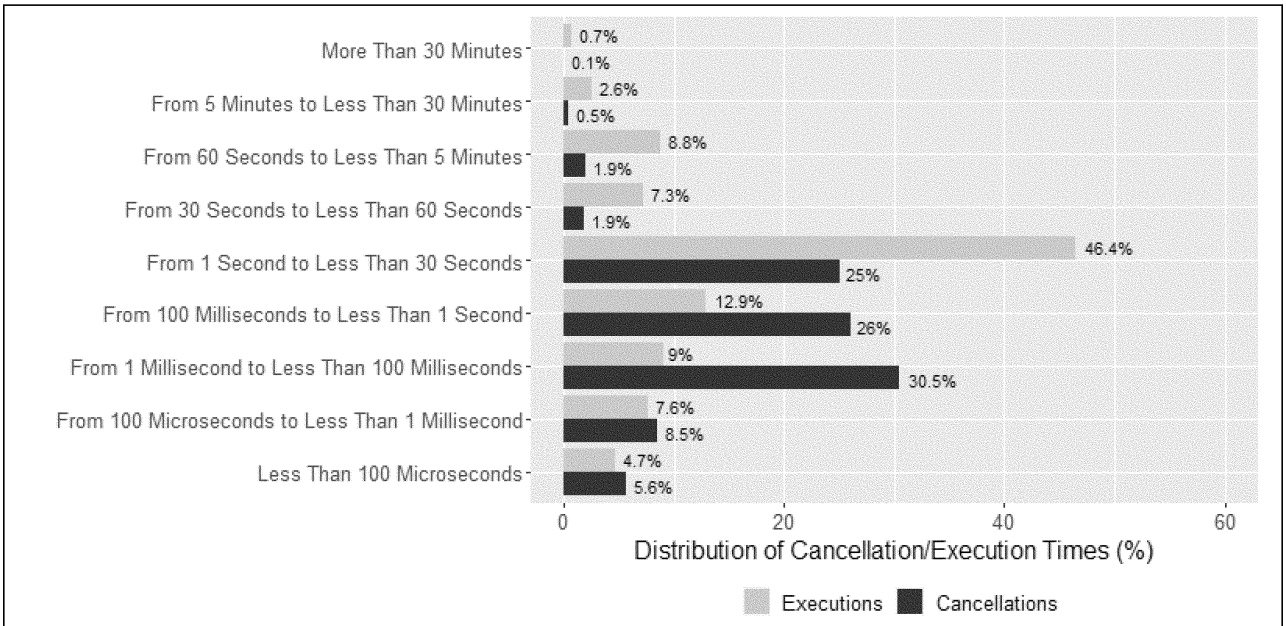
[1770] The Concept Release on Equity Market Structure states that ''the submission of numerous orders that are cancelled shortly after submission'' is a primary characteristic of high-frequency traders. *See* 75 FR 3594 at 3606 (Jan. 21, 2010).

[1771] *See* Proposing Release, 88 FR 3786 at 3888 (Jan. 20, 2023).

In order to examine how the presence of quickly cancelled orders might impact fill rates and subsequently impact the ranking of market centers, the Commission first examined data on cancellation and execution times of executable NMLOs from MIDAS during the month of March 2023.[1772] Figure 24 [1773] plots the conditional distribution of cancellation and execution times,[1774] and shows that cancellation times tend to be shorter than execution times: while the largest percentage (30.5%) of cancelled executable NMLOs are cancelled between 1 and 100 milliseconds after submission, the largest percentage (46.4%) of executable NMLOs that received execution are not executed until between 1 and 30 seconds after submission. In fact, while 70.6% of cancelled orders are cancelled in less than 1 second, only 34.2% of executions happen within the same time frame. This imbalance implies that many orders may be cancelled before they are given a reasonable opportunity to execute.

BILLING CODE 8011–01–P

Figure 24: Distribution of Execution and Cancellation Times for Executable NMLOs, Mar. 2023



This figure plots the distribution of execution and cancellation times across various time categories, using data from MIDAS. See supra note 1130 for data description. Percentages are calculated as the number of shares that executed (resp. cancelled) within a particular time horizon, summed across all stocks and days in the sample, divided by the total number of executed (resp. cancelled) shares, summed across all stocks and days. Execution times and cancellation times are calculated as the time of order receipt to the first time that one or more of the order's shares are executed, or the first time that one or more of the order's shares are cancelled, respectively.

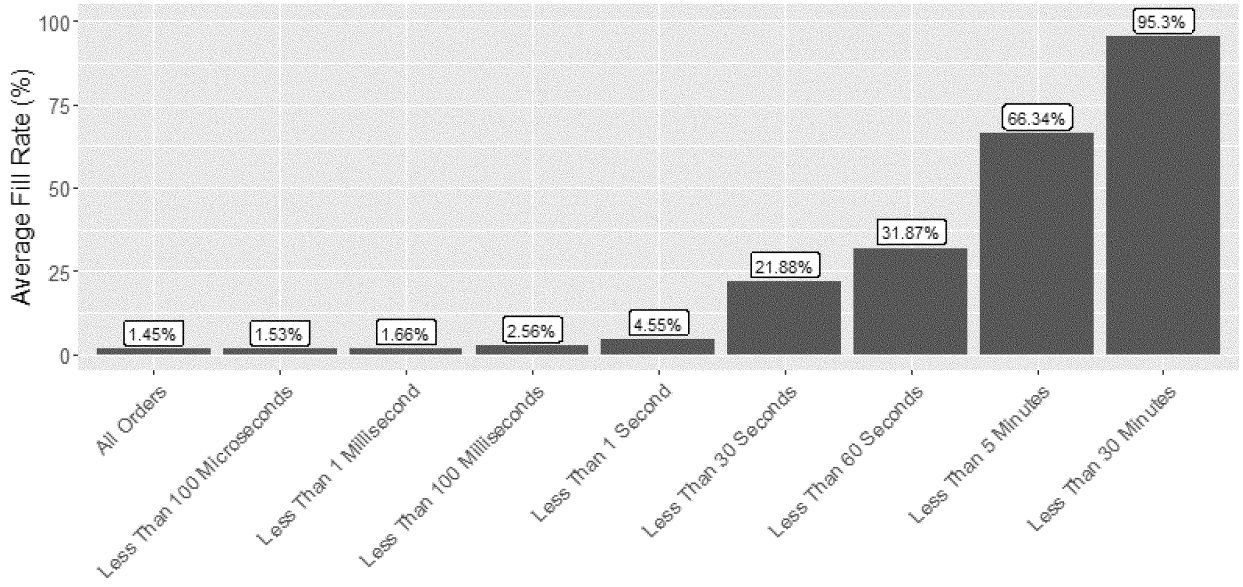
[1772] *See supra* note 1130 for data description. This analysis does not include IOC NMLOs, which are not captured in MIDAS metrics. As discussed in *supra* section IX.C.3.c)(9), these orders may have contributed to low fill rates in reports under preexisting Rule 605. Execution times and cancellations times are calculated from the time of order receipt to the first time that one or more of the order's shares are executed, or the first time that one or more of the order's shares are cancelled, respectively.

[1773] The MIDAS data used in this analysis have been updated and corrected since the Proposing Release for the reasons discussed in *supra* note 1130. *See* Proposing Release, 88 FR 3786 at 3890 (Figure 16), 3842, n.634 (Jan. 20, 2023) (for data description). The numbers in the Proposing Release are similar: while the largest percentage (29.8%) of cancelled executable NMLOs are cancelled between 1 and 100 milliseconds after submission, the largest percentage (44.8%) of executable NMLOs that received execution are not executed until between 1 and 30 seconds after submission; and that while 75% of cancelled orders are cancelled in less than 1 second, only 41.1% of executions happen within the same time frame. Therefore, changes to the MIDAS dataset did not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that many orders may be cancelled before they are given a reasonable opportunity to execute.

[1774] The conditional distribution examines the percentage of cancelled (executed) orders that are cancelled (executed) within the defined time thresholds, and not the percentage of all orders that are cancelled or executed within the defined thresholds. Therefore, the cancellation (execution) percentages plotted in the Figure should sum up to 100%.

Therefore, it might be the case that excluding orders cancelled below some minimum threshold might lead to more informative fill rates. However, one question might be how to determine this threshold. For example, if the intent is to exclude cancellations that are part of high-frequency trading strategies such as pinging, it might be useful to keep in mind that estimates of human reaction time range from between one second and several hundred milliseconds, setting an upper bound for what might be considered high-frequency trading.[1775] Meanwhile, one recent academic paper found that high frequency trading strategies operate in approximately 5 to 10 microseconds.[1776] This would imply that a useful range for determining an appropriate threshold might be between approximately a few microseconds and one second. Figure 25 [1777] plots the fill rates [1778] of executable NMLOs that result from excluding orders that are cancelled below a variety of minimum time thresholds, showing that fill rates increase and approach 100% as more and more cancelled orders are excluded from the calculation of the fill rate. Importantly, fill rates do not change much when orders cancelled in less than 100 microseconds, increasing by less than 0.1%. Fill rates increase when orders cancelled in less than 1 second are excluded, but still remain on the lower side at 4.55%. This implies that the impact of excluding quickly cancelled orders on fill rates might be limited.[1779]

Figure 25: Effect of Excluding Quickly Cancelled Orders on Fill Rates for Executable NMLOs, Mar. 2023



This figure plots the fill rates of executable NMLOs that result from excluding orders that are cancelled below a variety of minimum time thresholds using data from MIDAS. See supra note 1130 for data description. Cancellations times are calculated as the time of order receipt to the first time that one or more of the order's shares are cancelled. Fill rates are calculated as the number of shares that execute summed across all stocks and days in the sample, divided by the number of submitted shares excluding shares that are canceled within a given time frame, summed across all stocks and days.

[1775] *See, e.g.,* Neil Johnson et al., *Abrupt Rise of New Machine Ecology Beyond Human Response Time,* 3 Sci. Reps. 1 (2013); Albert Menkveld & Marius A. Zoican, *Need for Speed? Exchange Latency and Liquidity,* Rev. Fin. Stud. 1188 (2017).

[1776] *See* Aquilina et al.

[1777] The MIDAS data used in this analysis have been updated and corrected since the Proposing Release for the reasons described in *supra* note 1130. *See* Proposing Release, 88 FR 3786 at 3891 (fig. 17), 3842, n.634 (Jan. 20, 2023) (for data description). The analysis in the Proposing Release found similar results: fill rates increase and approach 100% as more and more cancelled orders are excluded from the calculation of the fill rate, and do not change much when orders cancelled in less than 100 microseconds (only increasing by 0.2%). Fill rates increase when orders cancelled in less than 1 second are excluded, but still remain on the lower side at 11.5%. Therefore, changes to the MIDAS dataset did not affect the Commission's conclusions from this analysis relative to the Proposing Release, namely that the impact of excluding quickly cancelled orders on fill rates might be limited.

[1778] As discussed in *supra* note 1199, the analysis may overestimate fill rates due to the exclusion of orders with multiple submission messages. In the alternative analysis without this exclusion described in *supra* note 1199, fill rates differ from those in Figure 25 by less than 1 percentage point. While this alternative analysis, by assigning to the total submitted volume the price at the time of submission, tended to overestimate the number of executable NMLOs, it is unclear that this would systematically overestimate fill rates for executable NMLOs as discussed in *supra* note 1442. Therefore, the Commission's conclusions from this analysis are not affected by the exclusion of orders with multiple submission messages.

[1779] This sample contains a mixture of stocks in terms of share price and market capitalization, and these numbers are likely to look different for individual stocks according to their market capitalization and liquidity characteristics.

The benefit of excluding quickly cancelled orders is also likely to be limited if excluding these orders systemically increases fill rates across all reporting entities and does not necessarily lead to a change in ranking between reporting entities. To explore this possibility, the Commission limited the sample to the five largest market centers in terms of execution volume, to examine how the rankings between these market centers changes in terms of their fill rates for executable NMLOs resulting from changes to the threshold below which to exclude cancelled orders. Then it examined changes to their fill rate rankings for executable NMLOs as the threshold below which to exclude cancelled orders increased. The Commission found that market centers' rankings did not change until cancellations below one second were excluded, when the market centers ranked first and third switched places. As for reasons described above one second represents a maximum bound on a reasonable threshold for excluding cancellations, this again implies that the benefits of excluding quickly cancelled orders on fill rates might be limited.

(c) Include NMLOs Submitted Outside of Regular Trading Hours as a Separate Order Category

These amendments to Rule 605 will require NMLOs submitted outside of regular trading hours to be included in Rule 605 reports if they become executable during regular trading hours. The Commission considered whether it would be useful to include these orders as a separate order type category in Rule 605 reports. If NMLO orders submitted outside of regular trading hours have characteristics that are fundamentally different from other types of orders and have sufficient volume, their inclusion along with other orders could skew execution quality statistics. Pre-open orders likely have characteristics that differ from orders submitted during regular hours.[1780] However, these pre-open orders make up only a very small percentage of order volume.[1781] Therefore, it is unlikely that the inclusion of these orders along with other order types would significantly skew execution quality statistics, and including them as a separate order type category would likely only increase the complexity and size of Rule 605 report files. The Commission did not receive comment on this alternative, which was also in the Proposing Release.[1782]

3. Reasonable Alternative Modifications to Required Information

(a) Reasonable Alternative Order Size Categories

(1) Defining Order Sizes Based on Number of Round Lots Rather Than Notional Categories

Instead of redefining order size categories according to notional values, the Commission considered an alternative that defined categories based on the number of round lots.[1783] This approach has several advantages. First, similar to defining categories based on notional values as in these amendments, categories based on number of round lots might make it easier to compare execution quality metrics across market centers that trade in differently priced stocks. Pre-controlling for the stock price would thus eliminate the need for users of Rule 605 to go through the extra step of collecting and controlling for stock price information before being able to meaningfully compare market centers using Rule 605 data. However, according to the MDI Rules, round lots are based on the previous month's trading price.[1784] Furthermore, as stated by several commenters, the MDI round lot categories are wide and therefore contain a wide range of stocks in terms of price, and as such, order size categories based on round lot denominations might not meet the objective of grouping orders with similar notional values.[1785] Therefore, unlike categories based on round lots, categories based on notional values include a more granular categorization of order sizes, and also incorporate information about changing stock prices in real time, thereby better grouping together similarly sized orders.

(2) Require Separate Information for Orders Larger Than One Share With a Fractional Component

The Commission considered an alternative in which, in addition to odd-lots, round lots, and fractional orders less than one share, reporting entities would also be required to report separate execution quality information for round lots with a fractional component, and odd-lots with a fractional component. This was suggested by a commenter, who stated that ''when a round lot or odd-lot order has a fractional share component, this could, in some cases, impact the time to execution and the execution price.'' [1786] The Commission agrees that, similarly to fractional orders less than a share, handling practices regarding orders greater than one share with fractional components may vary across broker-dealers and market centers [1787] and, to the extent that this is the case, this might have an impact on execution quality. However, an analysis of CAT data from 2023 for 400 stocks [1788] shows that odd-lots with fractional components and round lots with fractional components only make up a small percentage of order flow (0.003% and 0.0008%, respectively). Furthermore, in contrast to fractional orders less than a share, the Commission did not find execution quality to systematically vary significantly between odd-lots and rounds lots with fractional components and their counterparts without fractional components. Specifically, Figure 26 shows the share-weighted average time-to-execution of fractional orders less than a share, and orders greater than a share both with and without fractional components. In order to focus on order flow that is most likely to contain fractional components, this analysis focuses on orders originating from individual customer accounts at broker-dealers. The results show that, while fractional orders less than a share have much longer execution times, the execution times of odd-lot and round lot orders with fractional components do not appear to be systematically longer than those without fractional components. Therefore, the Commission does not believe that there would be a significant benefit to including separate execution quality information for these types of orders.

[1780] *See supra* section IX.C.3.b)(4) for an analysis showing that orders submitted pre-open are more likely to be more individual customer accounts as compared to orders submitted during regular opening hours.

[1781] *See supra* section IX.C.3.b)(4) for an analysis.

[1782] *See* Proposing Release, 88 FR 3786 at 3891 (Jan. 20, 2023).

[1783] One commenter supported this alternative. *See* Better Markets Letter at 6.

[1784] *See supra* note 1015 and accompanying text. A commenter stated that one issue with defining order size categories in terms of round lots would be that the definitions would not be based on real-time data. *See* Rule 605 Citadel Letter at 6.

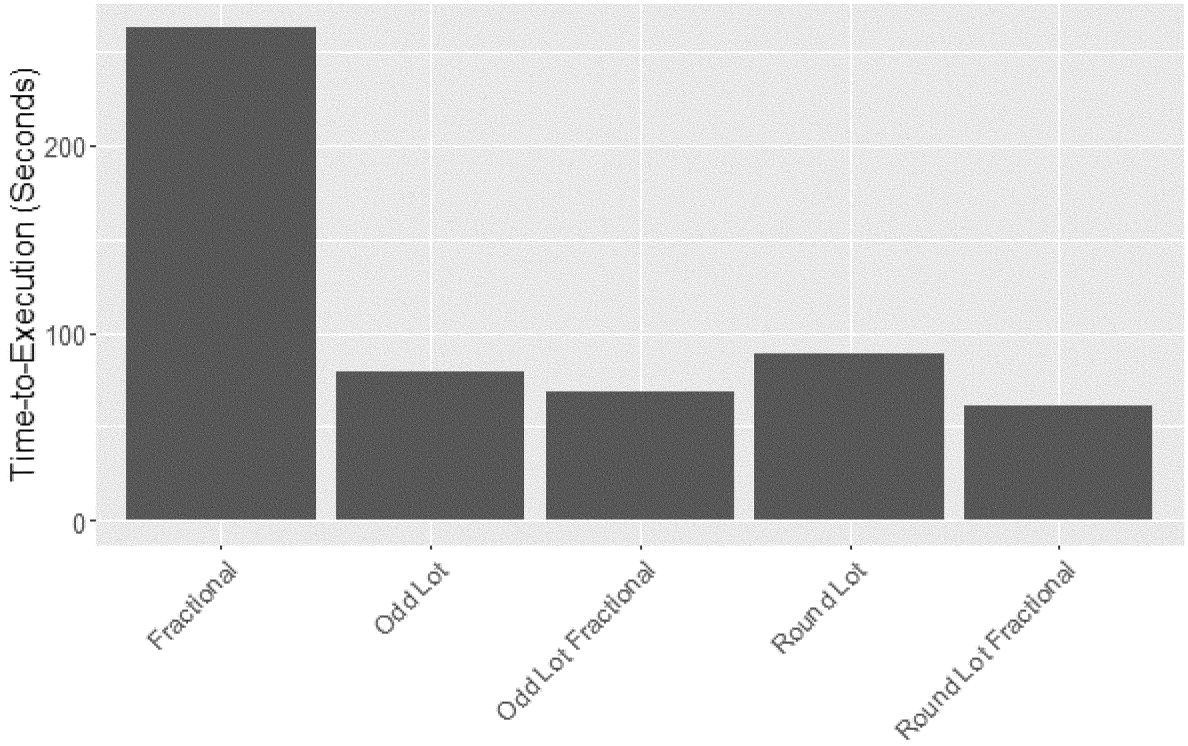
[1785] *See, e.g.,* FIF Letter at 14; SIFMA Letter at 32; Rule 605 Citadel Letter at 6; Schwab Letter at 33.

[1786] *See* FIF Letter at 15.

[1787] *See supra* section IX.C.3.b)(1)(b) for further discussion for differences in handling practices for fractional shares.

[1788] *See supra* note 1211 for dataset description.

Figure 26: Time-to-Execution of Fractional Orders, Q1 2023



This figure plots the share-weighted average time-to-execution of fractional orders less than a share, odd-lots, odd-lots with a fractional component, round lots, and round lots with a fractional component. Execution times are calculated as the time of order receipt (which, for at- and inside-the-quote NMLOs, is equivalent to the time of executability) to the first time that one or more of the order's shares are executed. Share weights are calculated as the number of executed shares in an order divided by the total number of executed shares summed across stocks and all days in the sample. This analysis uses CAT data for a sample of 400 stocks. See supra note 1211 for data description.

BILLING CODE 8011–01–C

(b) Reasonable Alternative Time-to-Execution Statistics

(1) Replace Time-to-Execution Buckets With Time-to-Execution Statistics

In the Proposing Release, the Commission proposed eliminating time-to-execution buckets and instead requiring reporting entities to report additional time-to-execution statistics,[1789] specifically, the median and 99th percentile of time-to-execution statistics.[1790]

The Commission continues to believe that requiring time-to-execution statistics as proposed would provide market participants with useful information about the distribution of time-to-execution for a given stock, order size, and order type combination (*i.e.,* a given ''row'' in a Rule 605 report). However, the Commission acknowledges that, as stated by a commenter, one issue with point estimates of distribution information, such as the median and 99th percentile, is that they would not allow for an aggregation across rows.[1791] The commenter instead suggested including two measures of the share-weighted average time-to-execution—one adjusted for outliers, and one not adjusted for outliers.[1792]

The Commission understands that consumers of Rule 605 reports benefit from the ability to aggregate information across various order types and sizes (*i.e.,* rows) of Rule 605 reports [1793] and therefore agrees that the inability to aggregate across median and 99th percentile time-to-execution measures represents a disadvantage to including these measures. However, requiring time-to-execution buckets will allow market participants to recreate average time-to-execution [1794] in a way that is

[1789] *See* Proposing Release, 88 FR 3786 at 3812–3813 (Jan. 20, 2023); *see also supra* section III.B.3.a).

[1790] *See* proposed Rule 605(a)(1)(ii)(D), (E), (H), (I), (M), and (N); proposed Rule 605(a)(1)(iii)(D) and (E). Several commenters supported the inclusion of time-to-execution statistics rather than time-to-execution buckets. *See, e.g.,* Robinhood Letter at 46; Nasdaq Letter at 45.

[1791] *See* FIF Letter at 21, stating that ''market participants and other firms analyzing Rule 605 data cannot aggregate [median and 99th percentile] across different symbols and order type categories.''

[1792] *See* FIF Letter at 22.

[1793] *See, e.g., id.*

[1794] *See, e.g.,* Healthy Markets Letter at 17, stating that ''[b]y creating buckets for timestamp, rather than average time to execution, the reports would provide much greater granularity while still allowing a user of the data to recreate average time to execution.''

more straightforward than the method suggested by the commenter.[1795]

(2) Calculate Time-to-Execution Based on Time of Order Route

The Commission also considered an alternative in which, rather than calculating order execution times from the time of order receipt, broker-dealers would calculate the execution time from the time of order route, *i.e.,* a time after the broker-dealer has performed internal risk controls and decided to accept the order. This alternative was suggested by several commenters, who stated that current order management systems may not generate a timestamp for when risk controls have been applied and it would be costly to generate such markers,[1796] and that using order receipt time could create a perverse incentive for firms to diminish time spent on necessary reviews in an effort to improve execution speed statistics.[1797] The Commission disagrees that the use of order receipt time will incentivize broker-dealers to circumvent their risk controls. Broker-dealers are subject to other regulatory requirements, including the Commission's market access rule, that will continue to apply.[1798] Furthermore, broker-dealers likely have other incentives to perform these risk controls, such as reputational and business concerns. Furthermore, to the extent that the requirement to use order receipt time requires broker-dealers to update their management systems to generate such a timestamp, such costs are included in the cost estimates for first-time Rule 605 reporters as described in section IX.D.2.a)(1). On the other hand, there are greater benefits associated with using time of order receipt rather than time of order route. This timestamp method is more relevant to customers because it will show how the broker-dealer handled the order from the time the broker-dealer received it.[1799]

(c) Reasonable Alternative Spread Measures

(1) Use Different Clock Time Horizons To Calculate Realized Spread

The adopted amendments to Rule 605 will require the realized spread to be calculated at a range of time horizons between 50 milliseconds and 5 minutes. This represents an expansion to what was proposed, that the realized spread be calculated at two time horizons (15 seconds and one minute).[1800] The Commission also considered alternative approaches, such as including a smaller set of time horizons.[1801]

In the Proposing Release, the Commission acknowledged that ''requiring an additional specification of realized spreads would entail adding another data item, which would also increase the complexity of Rule 605 reports.'' [1802] However, upon further review, the Commission agrees with a commenter that the detailed Rule 605 reports are ''intended to be machine-readable, not human-readable,'' and that ''[a]dding rows and columns to the Rule 605 report, within reason, would not materially increase the costs of processing these reports and storing the relevant data.'' [1803] Furthermore, a lower number of time horizons would reduce the benefits from including a wide range of realized spread time horizons, as discussion in section IX.D.1.b)(2)(c)(i).

One commenter suggested replacing the five-minute time horizon with ''short timeframes to include 50ms, 100ms.'' [1804] Some of the results from the Commission's analysis of realized spreads in section IX.D.1.b)(2)(c)(i) support the inclusion of very short time horizons, particularly for the largest stocks, and as discussed above the Commission is including a 50-millisecond time horizon.[1805] However, other analyses show that including longer time horizons will be beneficial for smaller stocks.[1806] Therefore, as discussed above, it will be beneficial to include a wide range of time horizons between 50 milliseconds and 5 minutes.

(2) Use Trade Time Horizons To Calculate Realized Spread

The Commission also considered whether the time horizon used to calculate realized spreads should be measured in terms of ''trade time,'' rather than ''clock time.'' The Commission did not receive comment on this alternative, which was also in the Proposing Release.[1807] An ideal measurement horizon for realized spreads would be one that aligns with the amount of time an average liquidity provider holds onto the inventory positions established from providing liquidity. This horizon varies according to characteristics that impact liquidity providers' ability to turn over their positions, including stock liquidity; [1808] however, this time horizon also varies over time, as overall market conditions change. The use of a fixed time horizon could therefore make it so that the ability of realized spread measures to capture information about adverse selection varies over time.

Instead of setting a fixed ''clock time'' horizon, volume or ''trade time'' measures changes between the ''the initial trade to the *i*th trade thereafter,'' [1809] and therefore allows for a time horizon that is flexible to different levels across stocks, and also over different time periods. In other words, while prices may update under liquid conditions in a few seconds or less, during very illiquid conditions several minutes may go by without a trade. Measuring time in terms of number of trades allows for the horizon to match these different speed ''regimes'' and might result in realized spread calculations that are more consistently relevant.[1810]

However, the Commission is mindful of the additional computational resources that would be required if trade time were required to calculate realized spreads, as this would require reporting entities to match their execution information both to information on the NBBO, as would be necessary under the proposed clock time horizons, but additionally historical trade information from the exclusive SIPs.[1811] More computationally intensive metrics

[1795] Furthermore, the commenter's suggested alternative of a time-to-execution average adjusted for outliers would result in the same issue as with median and 99th percentile—*i.e.,* it would not be possible to aggregate these measures across rows as the identified outliers in the aggregated group could be different from those identified within each individual pre-aggregate group.

[1796] *See* FIF Letter at 19.

[1797] *See* Schwab Letter II at 33; Schwab Letter III at 5; FIF Letter II at 9.

[1798] *See supra* note 185 and corresponding text.

[1799] *See supra* section II.A.2.c) for further discussion. One commenter supported the use of receipt time rather than route time for broker-dealers; *see* Healthy Markets Letter at 16.

[1800] *See* Proposing Release, 88 FR 3786 at 3814–3816 (Jan. 20, 2023); *see also supra* section III.B.4.a)(1).

[1801] Specifically, in the Proposing Release, the Commission proposed including two realized spread time horizons, 15 seconds and one minute. *See* Proposing Release, 88 FR 3786 at 3815 (Jan. 20, 2023).

[1802] *See* Proposing Release, 88 FR 3786 at 3892 (Jan. 20, 2023).

[1803] *See* FIF Letter at 16.

[1804] *See* Healthy Markets Letter at 17.

[1805] *See, e.g.,* the results in Figure 19 and surrounding discussion.

[1806] *See, e.g.,* the results in Figure 18 and Table 6 and surrounding discussion.

[1807] *See* Proposing Release, 88 FR 3786 at 3892 (Jan. 20, 2023).

[1808] *See supra* note 1239 and the results in Figure 14 and surrounding discussion.

[1809] *See* Conrad and Wahal, *supra* note 544, at 241.

[1810] For this reason, some academic studies use trade time instead of clock time when calculating metrics; *see, e.g.,* David Easley, Marcos M. Lopez De Prado & Maureen O'Hara, *Flow Toxicity and Liquidity in a High-Frequency World,* 25 Rev. Fin. Stud. 1457 (2012).

[1811] *See supra* note 1009.

would likely increase reporting entities' compliance costs. Therefore, the adopted amendment to include multiple fixed time horizons will allow for sufficient flexibility in capturing realized spread information for stocks and/or time periods with different liquidity characteristics without increasing the computational resources required to calculate this measure.

(3) Use Weighted Midpoint To Calculate Effective and Realized Spread

Under the adopted amendments, Rule 600(b)(8) defines effective spreads as, for buy orders, double the amount of difference between the execution price and the midpoint of the national best bid and national best offer at the time of order receipt and, for sell orders, as double the amount of difference between the midpoint of the national best bid and national best offer at the time of order receipt and the execution price. For midpoint-or-better limit orders, the time of executability is used rather than the time of order receipt.[1812] The Commission is further adopting a definition of the average percentage effective spread, which will be equal to the average effective spread for order executions, divided by the midpoint for order executions.[1813] However, an academic study [1814] found that measuring the effective spread relative to the midpoint overestimates effective spreads by an average of 13%-18%, and that the bias can vary across stocks, trading venues, and investor groups. The paper instead suggests measuring effective spreads relative to a weighted midpoint, which factors in the depth available at the best bid and ask price, in order to reduce this bias.[1815]

The presence of bias in effective spreads in Rule 605 reports would impact market participants' ability to use this metric to make comparisons across reporting entities, particularly if the bias leads to a systematic over- or under-estimation of spreads for a particular entity or group of entities. However, there are benefits and costs to the use of the midpoint compared to the weighted midpoint for calculating effective spreads. On the one hand, the midpoint requires only data on the best available bid and ask price. Calculating the weighted midpoint on the other hand would require that reporting entities additionally collect data on the depth available at the NBBO.[1816] Furthermore, the midpoint may be easier to compute and interpret, as it is more familiar to market participants than the weighted midpoint. The Commission did not receive comment on this alternative, which was also in the Proposing Release.[1817]

(d) Reasonable Alternative Size Improvement Measures

(1) Dollar Size Improvement Calculated Using Proprietary Full Depth-of-Book Data

The Commission considered alternative measures of size improvement, including requiring a measure of dollar size improvement that would capture the dollar savings that an investor receives from size improvement offered by a reporting entity, taking into account the depth of book quotes and odd-lot quotes available from all exchanges' proprietary depth-of-book data feeds. The measures of dollar size improvement considered include both RPI and a modified RPI measure that would account for the fact that order sizes may exceed the consolidated depth available across all order levels.

First, as suggested by a petitioner, the Commission considered requiring the reporting of RPI, which would be calculated as the signed difference between the value-weighted average price (''VWAP'') of the transaction, and a reference price calculated as the VWAP that the trader would have gotten from walking a consolidated limit order book consisting of displayed liquidity from all national securities exchanges, taking into account both odd-lots and depth available at prices outside of the NBBO.[1818] In other words, it calculates how much money a trader saved by the market center executing their trade at a particular price, rather than having their order walk the consolidated limit order book.[1819] Because prices worsen deeper in the book, this measure could contain more information than combining price improvement with the size improvement metrics described in section IX.D.1.b)(2)(c)(v). Further, because the execution price is measured relative to depth of book as opposed to midpoint, this measure could contain information beyond effective spread.

In addition to RPI, the Commission also considered a modified RPI measure that would account for the fact that order sizes may exceed the consolidated depth available across all order levels.[1820] This alternative would account for this possibility by truncating the calculation of dollar size improvement at the consolidated depth of book size, and separately requiring the reporting of the number of shares executed in excess of consolidated depth of book size. Specifically, this alternative would consist of the following three data elements: (1) The share-weighted average of, for each order, the signed difference between the value-weighted average price (''VWAP'') that the trader would have gotten from walking a consolidated limit order book consisting of the depth available from consolidated proprietary depth-of-book data, and the midpoint (''reference spread''); (2) The share-weighted average of, for each order, the signed difference between the VWAP that the trader actually received on their order and the midpoint. If the number of executed shares exceeded the depth available from consolidated proprietary depth-of-book data, the VWAP should only be calculated for those executed shares that are not in excess of this sum (''truncated effective spread''); (3) The sum of, for each order, the number of shares executed in excess of the depth available from consolidated proprietary depth-of-book data (''shares executed in excess of consolidated depth-of-book''). With this information, market participants would be able to compare the truncated effective spread to the reference spread to determine the dollar size improvement that they received for their order (capped at the consolidated depth-of-book size). Market participants would also be able to use the shares

[1812] *See* final 17 CFR 242.600(b)(8).

[1813] *See* final 17 CFR 242.600(b)(10).

[1814] *See* Bias in the Effective Bid-Ask Spread, *supra* note 1244.

[1815] The weighted midpoint is calculated using the following formula: weighted midpoint = ((bid price × quantity at the ask price) + (ask price × quantity at the bid price))/(quantity at the ask price + quantity at the bid price). *See id.*

[1816] This may not be a significant cost, as reporting entities are required to collect information on NBBO depth for computing the size improvement measures under the adopted amendments. *See supra* section III.B.4.e)(2).

[1817] *See* Proposing Release, 88 FR 3786 at 3893 (Jan. 20, 2023).

[1818] *See supra* section III.B.4.e)(2) for further discussion of the RPI measure.

[1819] There can be variation in the information contained in different national securities exchanges' proprietary depth-of-book data feeds. For example, some exchange depth-of-book products may offer information on order messages while others may offer aggregate information on the shares available at different price levels. Additionally, it is also possible that some national securities exchanges may not offer depth-of-book data feeds. It may be difficult to compare RPI across reporting entities if different entities used different depth-of-book feeds containing different information to compute the metric.

[1820] To see why this matters for a measure of dollar size improvement, consider an example where a wholesaler internalizes a sell order for 10,000 shares at the NBB, while there are only 6,000 shares available across all bid prices in the consolidated book. The hypothetical price that the trader would have gotten for the 4,000 shares in excess of the consolidated book depth is not defined, and thus it is unclear how the RPI reference price (*i.e.,* the VWAP that the trader would have gotten from walking a consolidated limit order book consisting of displayed liquidity from all national securities exchanges) should be calculated.

executed in excess of consolidated depth-of-book for two purposes. First, market participants would be able to get a sense of the number of executed shares that are not included in the truncated effective spread and reference benchmark measures, which would help contextualize the informativeness of these measures. Second, in combination with information about total executed shares and share-weighted average effective spread in Rule 605 reports, market participants could use this measure to back out the per share effective spread paid for shares executed in excess of consolidated depth-of-book.[1821]

Dollar size improvement metrics differ from the size improvement metrics in the adopted amendments in several ways. First, in the adopted amendments, both the order size benchmark and the size improved outsized shares [1822] are reported in terms of numbers of shares, and as such do not ascribe a dollar value to the size improvement received by traders. Therefore, while market participants can use these metrics to calculate the rate of size improvement offered by a reporting entity (*e.g.,* by calculating the outsized size improvement rate [1823]), they do not allow market participants to associate this rate with a particular cost savings.[1824] Second, while the size improvement metrics included in the adopted amendments consider only displayed depth available at the NBBO, the alternative dollar size improvement metrics would incorporate information about the consolidated depth and prices available across all order book levels.

Requiring the reporting of dollar size improvement in Rule 605 reports could result in additional benefits for market participants relative to the adopted amendments. Because it incorporates information across all order book levels, a measure of dollar size improvement (such as RPI) may be more informative than measures calculated only using information about depth at the best displayed prices. In order to compare the extent to which RPI and the adopted size improvement metrics contain similar information about size improvement, the Commission used data from the Tick Size Pilot B.II Market and Marketable Limit Order dataset [1825] to calculate the average correlation [1826] between these measures. Similar to the analysis in Table 8 examining whether price improvement and size improvement measures contain different information, the Commission also calculated the average correlation between RPI, price improvement and effective spreads to confirm that RPI contains different information than the metrics that are already included in Rule 605 reporting requirements. As in Table 8, the analysis is performed separately for national securities exchanges and off-exchange market centers.

Results are presented in Table 15 and show that RPI and price improvement have a correlation of around 0.4 for both national securities exchanges and off-exchange market centers, implying that these measures contain some (but not all) of the same information about execution quality.[1827] Similarly, there is moderate negative correlation between RPI and effective spreads, implying that these measures are also somewhat overlapping in terms of their information about execution quality for both types of market centers. The analysis shows a low level of correlation between RPI and the outsized size improvement rate for exchanges (6.4%) and for off-exchange market centers (14.1%). This implies that the adopted size improvement measure may be missing some information about size improvement that would be contained in a measure of dollar size improvement, such as RPI.

[1821] To see this, consider that the average effective spread (*EffSpr*) can be calculated as the weighted average between the truncated effective spread ($EffSpr_{trunc}$) and the effective spread paid for shares in excess of consolidated depth-of-book ($EffSpr_{excess}$). By defining by s_{total} the total number of executed shares, s_{excess} the shares executed in excess of consolidated depth-of-book, one can calculate the number of shares available from the consolidated depth-of-book at $s_{trunc} = s_{total} - s_{excess}$. The effective spread paid for shares in excess of consolidated depth-of-book $EffSpr_{excess}$ could then be derived from the following relationship: $EffSpr = (s_{trunc}/s_{total}) * EffSpr_{trunc} + (s_{excess}/s_{total}) * EffSpr_{excess}$.

[1822] *See supra* section III.B.4.(e)(2) for more information about these metrics.

[1823] *See supra* note 1547 and corresponding text for information about how the outsized size improvement rate is calculated.

[1824] Rule 605 as amended will allow for market participants to calculate some information about their cost savings. First, the measures of price improvement in final Rule 605(a)(1)(ii)(F) and (O) will allow market participants to calculate their savings relative to, respectively, the NBBO and best displayed price. However, this measure will be incomplete for orders that execute with size improvement. Second, the average effective spread in final Rule 605(a)(1)(ii)(B) will allow market participants to calculate their savings relative to the midpoint. However, this measure does not take into consideration the prices or depth available at different order books levels.

[1825] *See supra* note 1545 for dataset description. This analysis uses data from prior to the implementation of the MDI Rules and the specific numbers may be different following the implementation of the MDI Rules. However, it is unclear whether or how these effects will impact the correlations between these measures documented in this analysis. *See supra* section IX.C.1.c)(2).

[1826] *See supra* note 1546 for a description of how average correlations are calculated.

[1827] This analysis has been updated from the Proposing Release for the reasons described in *supra* note 1548. *See* Proposing Release, 88 FR 3786 (tbl. 15) (Jan. 20, 2023). The Proposing Release found higher correlation between RPI and the proposed measure of size improvement (18.4% for exchanges and 22.7% for off-exchange market centers). Therefore, relative to the Proposing Release, the analysis in Table 15 is more indicative of the adopted size improvement measure missing some information about size improvement that would be contained in a measure of dollar size improvement, such as RPI.

Table 15: Average Correlation between Measures of Price and Size Improvement

Variables	National Securities Exchanges	Off-Exchange Market Centers
RPI and Price Improvement	0.421	0.372
RPI and Effective Spreads	-0.113	-0.138
RPI and Outsized Size Improvement Rate	0.064	0.141

This table presents correlations between three measures of price improvement and size improvement: price improvement, calculated as the signed difference between the execution price and the NBBO, the effective spread, calculated as twice the signed difference between the execution price and the NBBO midpoint, and the outsized size improvement rate. This analysis uses data from the Tick Size Pilot B.II Market and Marketable Limit Order dataset. See supra note 1545 for dataset description and supra note 1546 for methodology. To construct a measure of average correlation, the Pearson correlation coefficient is first calculated for each pair of execution quality metrics, for each market center-stock combination. Then value-weighted average correlation coefficient across all stocks for each market center is constructed, using dollar volume as weights. The resulting correlation coefficients are then averaged across market centers using an equal-weighted average. 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 1825 and section IX.C.1.c)(2).

Reporting RPI or the modified version of RPI would require depth-of-book information. In the Proposing Release, the Commission stated that it was not clear that the cost of requiring reporting entities to have access to the full set of consolidated depth information would justify the benefits of RPI. One commenter disagreed with this conclusion and stated that ''[t]he SEC does not however quantify these costs or benefits.'' [1828] However, the Commission observed in the Proposing Release that one market center estimated its costs related to subscribing to depth of book data feeds for 11 national securities exchanges to be between $51,480 and $226,320 per exchange per year.[1829] The Commission otherwise qualitatively analyzed the costs and benefits of this alternative.[1830] Another commenter stated that ''many brokers utilize vendors to produce Rule 605 reports and these vendors are capable of handling depth-of-book data.'' [1831] The Commission acknowledges these to be potential cost reductions to reporting RPI to the extent that multiple market centers use vendors that subscribe to depth-of-book data and vendors pass along the resultant cost savings to market participants. It is also the case that the data may be available at lower cost if not purchased in real time, though the cost may still be substantial.[1832]

To mitigate the costs of calculating dollar size improvement using full depth-of-book data, the Commission considered a second alternative that would add a field (or fields) to Rule 605 reports for a dollar size improvement measure (or measures), but allow reporting entities that subscribe to the full set of proprietary data feeds to voluntarily report this measure.[1833] This approach would standardize the disclosure for those entities that choose to report. And only those reporting entities that decide to voluntarily report would incur additional costs, which may be minimal to the extent they already subscribe to proprietary depth-of book products. However, reporting entities could voluntarily provide this same information on their websites, alongside their Rule 605 reports, without the Commission amending the Rule 605 reports to add this field, and the information benefits of reporting this information as part of the Rule 605 reports versus reporting the information separately, in the same format but a different file, is not clear. The Commission acknowledges, however, that there may be a benefit to investors and to market participants, wishing to signal execution quality, to have these statistics as part of their Rule 605 reports. The Commission may evaluate the issues raised after the implementation of the MDI Rules.

(2) Dollar Size Improvement Calculated Using MDI Depth-of-Book Data

The Commission also considered an alternative that would require all Rule 605 reporting entities to report information that is similar to the petitioner's measure of RPI described above but adapted to require this information only to be reported relative to the odd-lot, aggregate quotation size, and depth-of-book information that will be available from competing consolidators following the implementation of the MDI Rules.[1834] Since consolidated market data under MDI includes only five levels of depth-of-book data,[1835] under this alternative, the required size improvement information would be truncated at the

[1828] *See* CCMR Letter at 16.

[1829] *See* Proposing Release, 88 FR 3786 at 3818, n.414 (Jan. 20, 2023).

[1830] *See id.*

[1831] Virtu Letter II at 12–13. The commenter also states that more market centers would need to purchase depth of book data should the Commission adopt the Minimum Pricing Proposal; *see* Minimum Pricing Increments Proposing Release, 87 FR 80266 (Dec. 29, 2022). This Proposal has not been adopted and thus is not considered as either part of the baseline or a cost mitigant here. *See supra* note 981.

[1832] *See, e.g., Price List—U.S. Equities, the Nasdaq Stock Market,* NASDAQ, *available at https://www.nasdaqtrader.com/Trader.aspx?id=DPUSdata#tv* (last visited Feb. 2, 2024, 2:11 p.m.); and *Historical Proprietary Market Data Pricing,* NYSE (Jan. 2024), *available at https://www.nyse.com/publicdocs/nyse/data/NYSE_Historical_Market_Data_Pricing.pdf.*

[1833] This alternative was also discussed in the Proposing Release. *See* Proposing Release, 88 FR 3786 at 3893 (Jan. 20, 2023).

[1834] *See supra* section IX.C.1.c)(2). One commenter stated that a size improvement measure should not be included within Rule 605 until such a time when the public data feed contains more information regarding the depth of quotations. *See* Healthy Markets Letter at 18.

[1835] *See* MDI Adopting Release, 86 FR 18596 at 18625 (Apr. 9, 2021). MDI requires all national securities exchanges to make market data feeds containing their odd-lot information and depth-of-book data available to competing consolidators and self-aggregators, which would ensure that all exchanges provide the information needed to calculate this measure.

sum of displayed liquidity available of shares available from odd-lot information,[1836] aggregate quotation size,[1837] and depth-of-book data.[1838] Similarly to the measure described in section IX.E.3(d)(1), this would also have the effect of excluding from the measure shares that are executed in excess of consolidated depth of book size, for which RPI is not defined.

Specifically, this alternative would consist of the following three data elements: (1) The share-weighted average of, for each order, the signed difference between the value-weighted average price (''VWAP'') that the trader would have gotten from walking a consolidated limit order book consisting of the depth available from odd-lot information, aggregate quotation size, and depth-of-book data (''reference spread''); (2) The share-weighted average of, for each order, the signed difference between the VWAP that the trader actually received on their order and the midpoint. If the number of executed shares exceeds the depth available from odd-lot information, aggregate quotation size, and depth-of-book data, the VWAP should only be calculated for those executed shares that are not in excess of this sum (''truncated effective spread''); (3) The sum of, for each order, the number of shares executed in excess of the depth available from odd-lot information, aggregate quotation size, and depth-of-book data (''shares executed in excess of consolidated depth-of-book'').

Requiring the reporting of dollar size improvement calculated using data available from competing consolidators could result in some additional costs, as reporting entities (following the implementation of MDI rules) would be required to obtain depth-of-book data from competing consolidators in order to calculate these measures.[1839] To the extent that these reporting entities would have purchased a less expensive data product that does not include depth-of-book information absent this requirement, this would result in additional costs for market participants. However, this alternative could result in additional benefits for market participants relative to the adopted amendments. Because it would incorporate information across multiple order book levels, it may be more informative than measures calculated using information only about depth at the best displayed prices. As such, it would have some of the same benefits as the alternative in section IX.E.3(d)(1), though it would not have all of these benefits as the measure would only incorporate information from a subset of order book levels. It would be likely to come at lower cost compared to the alternative above.[1840] Though the Commission is not adopting this alternative, the Commission will continue to evaluate the issues raised to determine if any further action is appropriate following the implementation of MDI.

(3) Other Measures of Size Improvement

As an alternative to the adopted size improvement metrics, one commenter suggested including three metrics related to size improvement: ''(1) the number of orders for which the order size exceeded the available shares displayed on the relevant side of the NBBO ('outsized orders'); (2) the total number of shares executed as part of these outsized orders; and (3) the number (or percentage) of shares within the outsized orders that received size improvement (*i.e.,* were executed at or better than the NBBO price, in excess of the amount of aggregate displayed liquidity at the NBBO).'' [1841] The commenter stated that, compared to the proposed size improvement metrics, ''[t]hese metrics would be more informative as they are not affected by orders in which there was not a need to provide size improvement.'' [1842]

The Commission agrees with the commenter that ''the number (or percentage) of shares within the outsized orders that received size improvement (*i.e.,* were executed at or better than the NBBO price, in excess of the amount of aggregate displayed liquidity at the NBBO)'' would be useful for market participants, and is adopting the ''size improvement outsized shares,'' which is substantively equivalent to the commenter's third suggested metric.[1843] However, the information provided by the other two metrics suggested by the commenter would not be as informative as similar information included in the amendments.

The suggested metric, ''the number of orders for which the order size exceeded the available shares displayed on the relevant side of the NBBO ('outsized orders'),'' is similar to the outsized share count in the adopted amendments but less informative because it is based on the number of orders.[1844] As most other metrics required by Rule 605 are recorded in terms of number of shares, rather than number of orders,[1845] market participants would not have been able to compare the suggested measure to the other measures in Rule 605 reports.

The suggested metric, ''the total number of shares executed as part of these outsized orders,'' is similar to the outsized share count in the adopted amendments, but less informative because it would not control for size improvement opportunities. While the commenter did not specify why this metric would be informative to market participants regarding size improvement, one possible use would be to assess the number of shares within outsized orders that execute with size improvement, as a percentage of total executed shares within outsized orders, as a way to calculate a size improvement ''rate.'' For example, if the metrics would reveal that 200 shares executed as part of outsized orders, and 100 shares of outsized orders received size improvement, a market participant could infer that 50% of shares executed as part of outsized orders were executed with size improvement. However, this rate metric would not be able to distinguish between different size improvement opportunities in cases of different levels of available depth, and thus would lead to an inaccurate comparison across market centers.

To see this, consider Market A, which fully executes a 500-share order at the NBBO while there were only 200 shares of available NBBO depth. The metrics suggested by the commenter would reveal the following information: (1) one outsized order, (2) 500 shares executed as part of outsized orders, and (3) 300 shares of outsized orders that received size improvement. Compare this to Market Center B, which fully executes a 500-share order at the NBBO while there were 400 shares of available NBBO

[1836] *See* final 17 CFR 242.600(b)(69)(ii).

[1837] *See* 17 CFR 242.600(b)(3).

[1838] *See* final 17 CFR 242.600(b)(31).

[1839] To the extent competing consolidators make it available, reporting entities could compute the metrics using historical depth-of-data, which could have a lower price than real-time depth of book.

[1840] Also, unlike the alternative in section IX.E.3(d)(1), this alternative would not require the Commission to identify which proprietary depth-of-book data products would be needed to calculate the measure, since the measure would be calculated based on depth-of-book data as defined in core data under the MDI rule.

[1841] *See* Virtu Letter at 10.

[1842] *See id.*

[1843] *See supra* section III.B.4.e)(2) for further discussion of the ''size improvement outsized shares.''

[1844] As discussed in section IX.D.1.b)(2)(c)(v), by comparing the adopted order size benchmark to the total number of submitted shares, market participants will be able calculate the number of shares that were submitted in excess of the available shares displayed on the relevant side of the NBBO (''outsized share count''). Outsized Share Count = Number of Submitted Shares − Order Size Benchmark. *See supra* note 1543.

[1845] For example, the metrics required by final Rule 605(a)(1)(i)(C) through (N); (a)(1)(ii)(E), (H), (J), (M), (O), (P), (R), and (S); (a)(1)(iii)(B) and (C) are required to be reported in terms of number of shares. In contrast, final Rule 605(a)(1)(i)(A) and (a)(1)(iii)(A) are the only statistics required to be reported in terms of number of orders.

depth. The metrics suggested by the commenter would reveal the following information: (1) one outsized order, (2) 500 shares executed as part of outsized orders, and (3) 100 shares of outsized orders that received size improvement. While Market Center B would reveal a ''worse'' rate of only 20% of executed outsized shares receiving size improvement (compared to Market Center A's 60%), this would not take into account that Market Center B had fewer ''opportunities'' to provide size improvement (in terms of the number of shares that were eligible to receive size improvement), due to the higher available depth. In other words, comparing the number of shares executed with size improvement to the number of executed shares in outsized orders would not result in a measure that takes into account the number of shares that were eligible to receive size improvement. Instead, a more informative assessment of size improvement is to compare (1) the number of shares within outsized orders that received size improvement to (2) the number of shares that were eligible to receive size improvement. The first metric is equivalent to the size improved outsized share count, which the Commission is adopting.[1846] The second metric is equivalent to the ''outsized share count,'' which can also be calculated from metrics included in the adopted amendments, *i.e.,* by subtracting the order size benchmark from the number of submitted shares.[1847]

In sum, because a size improvement rate calculated relative to ''the total number of shares executed as part of these outsized orders'' would not control for size improvement opportunity, and because a measure of submitted volume that exceed available depth expressed in terms of number of orders would not allow market participants to compare this measure to most other Rule 605 measures, the Commission does not believe that the metrics suggested by the commenter would be more informative than those included in these amendments. Furthermore, the Commission disagrees that the metrics suggested by the commenter ''would be more informative as they are not affected by orders in which there was not a need to provide size improvement.'' [1848] While it is true that the metrics suggested by the commenter ''are not affected by orders in which there was not a need to provide size improvement,'' as discussed in section IX.D.1.b)(2)(c)(v), the adopted size improvement metrics also allow market participants to net out the effect of shares for which there were no size improvement opportunities from an analysis of size improvement, *i.e.,* by subtracting the order size benchmark from the number of submitted shares to get the outsized share count.

4. Reasonable Alternative Modifications to Accessibility

(a) Require a System for the Centralized Posting of Rule 605 Reports

Instead of or in addition to having market centers and larger broker-dealers post Rule 605 reports on their websites, the Commission considered requiring market centers to submit Rule 605 reports to a centralized electronic system, which would have then made these reports available to market participants. Multiple commenters supported the centralized posting of Rule 605 reports, stating that such centralization would ''facilitate accessibility'' [1849] and ultimately ''increase transparency'' [1850] and ''promot[e] competition'' [1851] leading to ''improvements in execution quality.'' [1852] By contrast, one commenter opposed centralized filing of Rule 605 reports because the resulting ease of access would give too much information to ''free riders'' who would ''use market modeling for mischief.'' [1853] We do not agree that increasing accessibility to Rule 605 reports would be detrimental to markets. As discussed in further detail below, centralized posting of Rule 605 reports would likely have better enabled market participants to access, evaluate, and compare the reports of multiple (or even the complete set of) reporting entities. However, because implementing such centralization would have entailed costs and uncertainties as well as potential time delays in implementation, the Commission did not adopt this alternative.[1854]

Market participants may face search costs when collecting existing Rule 605 reports in order to compare execution quality across reporting entities, in particular when collecting Rule 605 reports for multiple entities and across longer time periods.[1855] Such search costs will increase under the adopted amendments, which expand the number of reporting entities from 228 to 343, including 85 broker-dealers that introduce or carry 100,000 or more customer accounts.[1856] Compared to the adopted amendments, which maintain the requirement for market centers to post Rule 605 reports on their individual websites, creating a centralized electronic system would have lowered these search costs by making it easier for market participants to locate, collect and aggregate data from multiple Rule 605 reports in order to compare reporting entities, because all reports would have been available at a single central location. Compared to the adopted amendments, this reduction in search costs and resulting increase in accessibility would have enabled investors to use Rule 605 reports to compare execution quality across larger broker-dealers more efficiently. This might have increased the extent to which broker-dealers would need to compete on the basis of execution quality.

Likewise, compared to the adopted amendments, a centralized electronic system would have better enabled broker-dealers to use Rule 605 reports to compare execution quality across market centers, and thus might have increased competition among market centers on the basis of execution quality in order to attract order flow.[1857] Also, unlike the individual website posting requirement under the amended rule, a centralized electronic system could

[1846] *See* final 17 CFR 242.605(a)(1)(ii)(S).

[1847] *See supra* note 1844.

[1848] *See* Virtu Letter at 10.

[1849] *See* Fidelity Letter at 8; *see also* Nasdaq Letter at 46; BlackRock Letter at 4; J.T. Letter; HMA Letter at 16.

[1850] *See* BlackRock Letter at 4; *see also* J.T. Letter.

[1851] *See* BlackRock Letter at 4; *see also* Nasdaq Letter at 46.

[1852] *See* Nasdaq Letter at 46.

[1853] *See* Data Boiler Letter I at 27–28; *see also supra* section IX.D.2.b)(5) for further discussion of the cost of free riding as a potential cost of the amendments to Rule 605.

[1854] *See supra* section V.B.2.a) for further discussion.

[1855] For example, in order to collect a complete or mostly complete set of Rule 605 reports to select the reporting entity offering the best execution quality in a given stock, a market participant will need to perform the following tasks, for each reporting entity: first, search the internet for the website(s) of the reporting entity; second, find the area of the reporting entity's website(s) that links to its Rule 605 report; and third, find the correct link and download the appropriate report (or multiple reports, if the information for multiple months is desired). The process of collecting Rule 605 reports may be simplified by the NMS Plan's requirement that each market center must designate a single Participant to act as the market center's Designated Participant, and by the use of third-party vendors. *See supra* section IX.C.3.d) for a discussion; *see also supra* section IX.D.1.d)(3) for a discussion of how these search costs may increase as a result of an increase in the number of Rule 605 reporting entities under the adopted amendments.

[1856] *See supra* section VIII.C for a discussion of the estimated number of reporting entities under the adopted amendments; *see also supra* section IX.D.1.d)(3) for a discussion of how the increase in reporting entities under the adopted amendments may increase search costs for some market participants.

[1857] Several commenters agreed that centralization would promote the benefits of Rule 605 for competition. *See, e.g.,* Blackrock Letter at 4; Nasdaq Letter at 46; J.T. Letter at 7.

have enabled programmatic checks for appropriate standardization, formatting, and completeness before posting, and thus could have reduced processing costs for users compared to the amendments.

While the Commission agrees with commenters that centralizing Rule 605 reports would have created these benefits, the Commission also recognizes that requiring such centralization would impose uncertainties and costs related to implementation. As discussed above, commenters did not have a consensus view on how to accomplish centralization.[1858] One commenter recommended having FINRA maintain a public database for Rule 605 reports,[1859] another recommended the Commission post all Rule 605 reports on a single page on the Commission's website,[1860] and another recommended working out the details of a central repository through the Rule 605 NMS Plan.[1861]

The entity or entities responsible for administering the Rule 605 centralized electronic system would have incurred costs to create and maintain a system (including any compliance, programmatic formatting, completeness, and/or consistency checks that the system would run on the reports before dissemination). Administering entities could have passed these costs on to reporting entities in the form of filing fees, and/or to consumers of Rule 605 reports in the form of access fees. If potential consumers of Rule 605 reports decided not to access the reports because of these access fees, this would have represented a cost in the form of reduced accessibility of Rule 605 reports.[1862] Furthermore, to the extent that the centralized electronic system would have included programmatic formatting, completeness, and/or consistency checks on Rule 605 reports before accepting them, reporting entities would also have incurred costs to resolve any issues detected by such checks.[1863]

The Commission specifically considered two options for how to implement the centralized electronic system: using the existing Rule 605 NMS Plan and the Commission's EDGAR system.

One commenter supported a requirement that procedures established pursuant to the NMS Plan provide for the creation and maintenance of a centralized electronic system to serve as a repository for Rule 605 reports.[1864] As discussed above, the creation of a centralized electronic system would generally have resulted in additional economic benefits as compared to the adopted amendments by further promoting transparency and competition, and by reducing market participants' search costs through the availability of all Rule 605 reports at a single location. However, as the NMS Plan would have been tasked with designing and implementing the centralized electronic system, the Commission would ex ante be uncertain as to the specific functionality, ease of access, and extent of user fees that such a centralized electronic system would have provided. Likewise, the accessibility and timeliness of centralized Rule 605 information would have depended on how the NMS Plan would develop the functionality for distributing or making the Rule 605 reports public. Thus, adopting this alternative would have introduced a level of uncertainty as to the access and use of Rule 605 reports.

The Commission also considered requiring reporting entities to disclose Rule 605 information directly to the Commission through the Commission's EDGAR system, with the Commission subsequently making the information publicly available on EDGAR.[1865] However, two commenters opposed this alternative, characterizing EDGAR technology as ''outdated'' and ''inadequate for the task.'' [1866] Unlike an NMS Plan requirement, an EDGAR requirement would not have involved any costs to NMS Plan participants of creating and maintaining an electronic system for Rule 605 reports, and, as EDGAR does not charge any reporting or access fees, would not have involved the cost to reporting entities of paying reporting fees or the cost to consumers of Rule 605 reports of paying access fees. However, an EDGAR alternative would have increased certain reporting entities' compliance costs relative to the adopted amendments, as any reporting entities that do not already submit documents to the Commission via EDGAR would have incurred a one-time burden of submitting a notarized Form ID application to obtain EDGAR access codes, a burden that does not apply under the adopted amendments.[1867] EDGAR functionality would also have allowed for programmatic checks for appropriate standardization, formatting, and completeness of Rule 605 reports before dissemination, and while such checks would have improved the quality of Rule 605 data and thus benefited users of Rule 605 data, they would also have imposed upon reporting entities the additional burden of resolving any detected issues and submitting a corrected report before dissemination.

Because the centralization of Rule 605 disclosures, whether through an NMS Plan, EDGAR, or some other means, would have introduced implementation costs and uncertainties as well as implementation time delays compared to the adopted amendments, the Commission did not adopt a requirement for centralized posting of Rule 605 reports.

(b) Modify Format Requirements for Rule 605 Reports

Rule 605 requires reports to be made available to the public in a uniform, readily accessible, and usable electronic format through procedures established by the NMS plan participants,[1868] and the governing NMS Plan specifies that Rule 605 reports must be provided in pipe-delimited ASCII, which is a machine-readable electronic format.[1869] This has not changed under the adopted amendments. The Commission considered an alternative that would have required the detailed Rule 605 reports to be provided using an expanded version of the existing XML schema for Rule 606 reports.[1870] This

[1858] *See supra* section V.B.2.a.

[1859] *See* Healthy Markets Letter at 16.

[1860] *See* Fidelity Letter at 8.

[1861] *See* Angel Letter at 3.

[1862] However, maintaining the current requirement for reporting entities to post a free version of the report on their websites would have mitigated this cost by requiring that Rule 605 reports would continue to be freely available.

[1863] Reporting entities would likely have been most efficiently situated to remedy any identified issues in their own reports before posting (as opposed to having system administrators or report users remedy such issues).

[1864] *See* Angel Letter at 3.

[1865] EDGAR functionality would allow consumers of Rule 605 to search for specific reports or all reports for a given month. However, consumers wishing to combine reports for analysis would need to pull each report separately.

[1866] *See* FIF Letter at 33; Healthy Markets Letter at 16.

[1867] *See* 17 CFR 232.10; Section 3 of the EDGAR Filer Manual (Volume I) version 41 (Dec. 2022). Any market centers, brokers, and dealers that already submit documents on EDGAR would not incur this burden. For example, some broker-dealers choose to file the annual audit reports required by Form X–17A–5 Part III on EDGAR rather than via paper, and would thus already have the required access and procedures in place to submit Rule 605 Reports to EDGAR. *See* section 8.2.19 of the EDGAR Filer Manual (Volume II) version 68 (Dec. 2023).

[1868] *See* prior 17 CFR 242.605(a)(2); final 17 CFR 242.605(a)(3).

[1869] *See* Rule 605 NMS Plan at 2 (''Section V . . . provides that market center files must be in standard, pipe-delimited ASCII format''); *see also supra* note 135 and accompanying text. Even in the absence of an effective NMS plan, reports must be prepared ''in a consistent, usable, and machine-readable electronic format.'' Prior 17 CFR 242.605(a)(2); final 17 CFR 242.605(a)(4).

[1870] *See* 17 CFR 242.606(b)(3), requiring reports to be made available ''using the most recent versions

Continued

alternative would have allowed the data on detailed Rule 605 reports to be used interchangeably with the data in Rule 606 reports, thus facilitating the usage of Rule 605 data together with Rule 606 data, in line with the Commission's original intent for the rules.[1871] In addition, the use of XML rather than pipe-delimited ASCII would have facilitated the use of more complex data error checks (such as checks on elements in nested structures).

On the other hand, this alternative would have required reporting entities to establish technical systems to format the reports using the expanded XML schema and render them using the PDF renderer, thus imposing additional compliance costs relative to the adopted amendments. Furthermore, because Rule 605 reports consist solely of a series of discrete numeric values, and do not contain elements in nested structures, the sophisticated validations that XML enables would not have provided significant benefits for Rule 605 reports. In addition, because the nature of the Rule 606 data (which include narrative discussions) differs from the nature of the Rule 605 data (which are limited to a discrete set of numerical statistics), and because the population of entities that report Rule 606 data (broker-dealers) does not coincide with the population of entities that will report Rule 605 data (market centers and larger broker-dealers), the benefits to be realized from interchangeable usage of Rule 605 and Rule 606 data would not have been significant.

In a change from the proposal, the adopted amendments require market centers to publish summary reports in CSV and PDF formats. One commenter recommended this approach, stating CSV (or another format that can be copied into a spreadsheet program) ''would allow investors to compare summary data across firms more readily.'' [1872] We could alternatively have adopted the proposed requirement for market centers to publish summary reports in XML and PDF formats. Compared to CSV, XML can accommodate a wider variety of content structures, such as a series of multiple differently laid out tables or tables accompanied by textual footnotes. XML also enables more sophisticated validations than CSV does, such as validations on multiple nested elements. However, summary reports do not contain multiple differently laid out tables, textual footnotes, or nested elements, so these capabilities of XML are not relevant to summary reports. Instead, the Commission agrees with the commenter that using CSV rather than XML for the summary reports will allow investors to analyze summary report data more readily, and that this increased usability is more relevant to summary report data than the broader technical coverage that XML provides. The amended rules therefore replace the proposed XML requirement for summary reports with a CSV requirement.

5. Other Reasonable Alternatives

(a) Releasing Aggregated CAT Data

As an alternative to the adopted amendments, the Commission considered using CAT data to have either the Commission or the CAT Plan Processor [1873] provide execution quality information to the public at monthly intervals—or more frequently. This alternative would effectively eliminate the need for Rule 605 reports.

This approach would have lower compliance costs for reporting entities than the adopted amendments, as it would not require reporting entities to prepare Rule 605 reports. Another benefit of this alternative with regard to the adopted amendments is that the data in this alternative could be more comprehensive in terms of the breadth of broker-dealers whose execution quality information could be aggregated and published, because the Commission could publish aggregated data on execution quality from all broker-dealers instead of just those that meet the customer account threshold. As a result, the data would be more comprehensive, resulting in even greater benefits from transparency.[1874]

Numerous commenters supported this alternative, stating that requiring CAT to produce Rule 605 reports would increase efficiency and reduce the burdens and costs associated with preparing Rule 605 reports,[1875] and would result in more consistent and standardized reporting.[1876]

However, there are several drawbacks to this alternative relative to the adopted amendments. First, it would take some time before CAT data could be used to produce execution quality reports. The Commission continues to believe that it would be a major undertaking for the Plan Processor to build out and adapt systems to collect, process, and publish this information. This might result in a delay in market participants' access to information about execution quality, which would delay the benefits of the adopted rule. Second, costs associated with the Plan Processor would also increase because of increased requirements for processing power for the aggregation of CAT data if such computations could not be performed with existing resources (without reducing other functionality). Any costs incurred by the Plan Processor would be passed along to Plan Participants and Industry Members, which could result in larger costs to some reporting entities.[1877] Lastly, another drawback to this alternative is that releasing CAT data to the public could increase security risks. CAT contains highly sensitive information and creating a process that would release portions of the data, even if aggregated, could present risks.

(b) Expand Rule 606 Reporting Requirements

The Commission also considered an alternative suggested by a commenter in which, rather than requiring larger broker-dealers to prepare Rule 605 reports, broker-dealers would be required to submit expanded Rule 606 reports [1878] with additional information about the execution quality of their orders.[1879] While this might result in some lower compliance costs as a result of broker-dealers' existing experience with preparing and filing Rule 606 reports, many of the costs associated

of the XML schema and the associated PDF renderer as published on the Commission's website.'' *See also Order Routing and Handling Data Technical Specification,* SEC (Feb. 25, 2022), *available at https://www.sec.gov/files/order_handling_data_technical_specification-2022-02-25.pdf.*

[1871] *See* Rule 11Ac1–5 Adopting Release, 65 FR 75414 at 75414 (Dec. 1, 2000).

[1872] *See* FIF Letter at 6.

[1873] As set forth in the CAT NMS Plan, the Plan Processor is required to develop and, with the prior approval of the Operating Committee, implement policies, procedures, and control structures related to the CAT System that are consistent with 17 CFR 242.613(e)(4), and Appendix C and Appendix D of the CAT NMS Plan. *See* Joint Industry Plan; Order Approving the National Market System Plan Governing the Consolidated Audit Trail, SEC (Nov. 15, 2016), n.136, *available at https://www.sec.gov/rules/sro/nms/2016/34-79318.pdf.*

[1874] *See supra* section IX.E.1.b) for a discussion of increased transparency from expanding reporting requirements to include all broker-dealers.

[1875] *See, e.g.,* SIFMA Letter II at 25; Blackrock Letter at 3–4; State Street Letter at 2; Angel Letter at 3.

[1876] *See, e.g.,* FIF Letter at 32; SIFMA Letter II at 25; State Street Letter at 2; Angel Letter at 3; Tastytrade Letter at 4 and 6.

[1877] Some reporting entities, on the other hand, may incur lower costs if they pay a smaller proportion of CAT costs.

[1878] *See supra* section IX.C.1.b) for a discussion of broker-dealer reporting requirements under Rule 606.

[1879] *See* Robinhood Letter at 42, stating that ''. . . the SEC should require broker-dealers that already publish Rule 606 reports (which we expect would include all of the broker-dealers that would be subject to Proposed Rule 605, among others) to add execution quality statistics to their Rule 606 reports.''

with the initial reporting of execution quality information, such as building out systems to collect data and calculate metrics, would still be incurred by broker-dealers regardless of whether those metrics are reported via Rule 606 or Rule 605 reports.[1880] Furthermore, since Rule 606 reports are both more aggregated and less frequent than Rule 605 reports, the benefits of this alternative in terms of increased transparency would be substantially lower than those of the adopted amendments.[1881]

X. Regulatory Flexibility Act Certification

The RFA [1882] requires Federal agencies, in promulgating rules, to consider the impact of those rules on small entities. Section 603(a) [1883] of the Administrative Procedure Act,[1884] as amended by the RFA, generally requires the Commission to undertake a regulatory flexibility analysis of all proposed rules, or proposed rule amendments, to determine the impact of such rulemaking on ''small entities.'' [1885] 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 economic impact on a substantial number of small entities.[1886]

In the Proposing Release, the Commission certified that the proposed amendments to Rules 600 and 605 would not have a significant economic impact on a substantial number of small entities for purposes of the RFA.[1887] The Commission solicited comments about whether the proposed rules would have a significant economic impact on a substantial number of small entities, and, if so, what would be the nature of any impact on small entities.[1888] No commenters responded to these requests with feedback on the economic impact of the proposed rules on small entities.[1889]

As adopted, the amendments to Rules 600 and 605 apply to market centers—which includes any exchange market maker, OTC market maker, ATS, national securities exchange registered with the Commission under section 6 of the Exchange Act, or national securities association registered with the Commission under section 15A of the Exchange Act—and certain brokers or dealers that are not a market center.[1890]

None of the exchanges registered under section 6 that will be subject to the proposed amendments are ''small entities'' for purposes of the RFA.[1891] There is only one national securities association, and it is not a small entity as defined by 13 CFR 121.201.[1892]

A broker-dealer is considered a small entity for purposes of Regulatory Flexibility Act if: (1) it had total capital of less than $500,000 on the date in the prior fiscal year as of which its audited financial statements were prepared, or, if not required to prepare such statements, it had total capital of less than $500,000 on the last business day of the preceding fiscal year; and (2) it is not affiliated with any person (other than a natural person) that is not a small entity. Applying this standard, the Commission estimates that, of the firms that will be impacted by the amendments, only one exchange market maker, no OTC market makers, no larger broker-dealers, and no ATSs are small entities.[1893] Because the Commission estimates that not more than one small entity will be required to comply with the rule changes, the Commission certifies that the amendments to Rule 605 will not have a significant economic impact on a substantial number of small entities for purposes of the RFA.

XI. Other Matters

If any of the provisions of these rules, or the application thereof to any person or circumstance, is held to be invalid, such invalidity shall not affect other provisions or application of such provisions to other persons or circumstances that can be given effect without the invalid provision or application.

Pursuant to the Congressional Review Act,[1894] the Office of Information and Regulatory Affairs has designated these rules as a ''major rule'', as defined by 5 U.S.C. 804(2).

Statutory Authority

Pursuant to the Exchange Act and particularly sections 3(b), 5, 6, 11A, 15, 17, 19, 23(a), 24, and 36 thereof, 15 U.S.C. 78c, 78e, 78f, 78k–1, 78*o,* 78q, 78s, 78w(a), 78x, and 78mm, the Commission is amending parts 240 and 242 of chapter II of title 17 of the Code of Federal Regulations.

List of Subjects in 17 CFR Parts 240 and 242

Brokers, Confidential business information, Fraud, Reporting and recordkeeping requirements, Securities.

For the reasons stated in the preamble, the Commission is amending 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, 78j–4, 78k, 78k–1, 78*l,* 78m, 78n, 78n–1, 78*o,* 78*o*–4, 78*o*–10, 78p,

---

[1880] *See supra* section IX.D.2.a)(1) for further discussion of these costs.

[1881] Rule 605 reports would be more transparent because they are published each month and provide execution quality for individual stocks. In contrast, Rule 606 reports under this alternative would be published quarterly and would report aggregated execution quality metrics for S&P 500 and non-S&P 500 stocks for each market center included in the broker-dealer's Rule 606 report.

[1882] 5 U.S.C. 601 *et seq.*

[1883] 5 U.S.C. 603(a).

[1884] 5 U.S.C. 551 *et seq.*

[1885] Although section 601(b) of the RFA defines the term ''small entity,'' the statute permits agencies to formulate their own definitions. The Commission adopted definitions for the term ''small entity'' for purposes of Commission rulemaking in accordance with the RFA. Those definitions, as relevant to this proposed rulemaking, are set forth in 17 CFR 240.0–10.

[1886] *See* 5 U.S.C. 605(b).

[1887] *See* Proposing Release, 88 FR 3786 at 3901 (Jan. 20, 2023).

[1888] *See id.*

[1889] One commenter stated, in connection with the Proposing Release and multiple other Commission proposals, that the Commission should provide ''a reasonable, workable, and staggered schedule for public comment on the adoption and implementation of the proposals, considering their overlapping nature, significant compliance and operational burdens, and if they may be insurmountable for smaller or emerging firms.'' McHenry et al. letter at 2. The Commission has considered the potential effects of the Rule on smaller broker-dealers and the interactions of the final rule with certain other Commission rules. *See supra* section IX.D.1.d)(1) for a discussion of the potential effects of the amendments on smaller broker-dealers. See supra sections IX.C.1.d) and IX.D.2.a)(5) for a discussion of the interactions of the final rule with certain other Commission rules.

[1890] A broker or dealer that is not a market center will not be subject to the requirements unless it reaches or exceeds the customer account threshold. *See supra* section II.A.2.a).

[1891] *See* 17 CFR 240.0–10(e). The regulation at 17 CFR 240.0–10(e) states that the term ''small business,'' when referring to an exchange, means any exchange that has been exempted from the reporting requirements of 17 CFR 242.601 (''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 as defined in 17 CFR 240.0–10. The exchanges subject to this proposed rulemaking do not satisfy this standard. *See also* Securities Exchange Act Release Nos. 82873 (Mar. 14, 2018), 83 FR 13008, 13074 (Mar. 26, 2018) (File No. S7–05–18) (Transaction Fee Pilot for NMS Stocks Proposed Rule); 55341 (May 8, 2001), 72 FR 9412, 9419 (May 16, 2007) (File No. S7–06–07) (Proposed Rule Changes of Self-Regulatory Organizations Proposing Release).

[1892] *See, e.g.,* Securities Exchange Act Release No. 90610 (Dec. 9, 2020), 86 FR 18596 at 18808 & n.2549 (Apr. 9, 2021).

[1893] These estimates are based on the FYE 2022 FOCUS Reports received by the Commission from exchange market makers, OTC market makers, larger broker-dealers, and ATSs that would be subject to the changes proposed to 17 CFR 242.600 and 242.605.

[1894] 5 U.S.C. 801 *et seq.*

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, 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; and 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.

* * * * *

§ 240.3a51–1 [Amended]

■ 2. Amend § 240.3a51–1 by, in paragraph (a) introductory text, removing the text ''§ 242.600(b)(55)'' and adding in its place ''§ 242.600(b)(65)''.

§ 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)(64)''.

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, 78c–4, 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, 80a–37, and 8343.

§ 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)(35))''; and
■ b. In paragraph (b)(1)(ii), removing the text ''§ 242.600(b)(77)'' and adding in its place ''§ 242.600(b)(88)''.

§ 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)(65)'';
■ b. In paragraph (a)(2), removing the text ''§ 242.600(b)(30)'' and adding in its place ''§ 242.600(b)(35)'';
■ c. In paragraph (a)(3), removing the text ''§ 242.600(b)(68)'' and adding in its place ''§ 242.600(b)(79)'';
■ d. In paragraph (a)(4), removing the text ''§ 242.600(b)(50)'' and adding in its place ''§ 242.600(b)(60)'';
■ e. In paragraph (a)(5), removing the text ''§ 242.600(b)(58)'' and adding in its place ''§ 242.600(b)(68)'';
■ f. In paragraph (a)(6), removing the text ''§ 242.600(b)(67)'' and adding in its place ''§ 242.600(b)(78)'';
■ g. In paragraph (a)(7), removing the text ''§ 242.600(b)(77)'' and adding in its place ''§ 242.600(b)(88)''; and
■ h. In paragraph (a)(9), removing the text ''§ 242.600(b)(95)'' and adding in its place ''§ 242.600(b)(106)''.

§ 242.204 [Amended]

■ 7. Amend § 242.204 by, 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)(88) (Rule 600(b)(88) of Regulation NMS)''.

■ 8. Amend § 242.600 by revising and republishing paragraph (b) to read as follows:

§ 242.600 NMS security designation and definitions.

* * * * *

(b) * * *

(1) *Actionable indication of interest* means any indication of interest that explicitly or implicitly conveys all of the following information with respect to any order available at the venue sending the indication of interest:

(i) Symbol;

(ii) Side (buy or sell);

(iii) A price that is equal to or better than the national best bid for buy orders and the national best offer for sell orders; and

(iv) A size that is at least equal to one round lot.

(2) *Administrative data* means administrative, control, and other technical messages made available by national securities exchanges and national securities associations pursuant to the effective national market system plan or plans required under § 242.603(b) or the technical specifications thereto as of April 9, 2021.

(3) *Aggregate quotation size* means the sum of the quotation sizes of all responsible brokers or dealers who have communicated on any national securities exchange bids or offers for an NMS security at the same price.

(4) *Alternative trading system* has the meaning provided in § 242.300(a).

(5) *Auction information* means all information specified by national securities exchange rules or effective national market system plans that is generated by a national securities exchange leading up to and during auctions, including opening, reopening, and closing auctions, and publicly disseminated during the time periods and at the time intervals provided in such rules and plans.

(6) *Automated quotation* means a quotation displayed by a trading center that:

(i) Permits an incoming order to be marked as immediate-or-cancel;

(ii) Immediately and automatically executes an order marked as immediate-or-cancel against the displayed quotation up to its full size;

(iii) Immediately and automatically cancels any unexecuted portion of an order marked as immediate-or-cancel without routing the order elsewhere;

(iv) Immediately and automatically transmits a response to the sender of an order marked as immediate-or-cancel indicating the action taken with respect to such order; and

(v) Immediately and automatically displays information that updates the displayed quotation to reflect any change to its material terms.

(7) *Automated trading center* means a trading center that:

(i) Has implemented such systems, procedures, and rules as are necessary to render it capable of displaying quotations that meet the requirements for an automated quotation set forth in paragraph (b)(6) of this section;

(ii) Identifies all quotations other than automated quotations as manual quotations;

(iii) Immediately identifies its quotations as manual quotations whenever it has reason to believe that it is not capable of displaying automated quotations; and

(iv) Has adopted reasonable standards limiting when its quotations change from automated quotations to manual quotations, and vice versa, to specifically defined circumstances that promote fair and efficient access to its automated quotations and are consistent with the maintenance of fair and orderly markets.

(8) *Average effective spread* means the share-weighted average of effective spreads for order executions calculated, for buy orders, as double the amount of difference between the execution price and the midpoint of the national best bid and national best offer at the time of order receipt and, for sell orders, as double the amount of difference between the midpoint of the national best bid and national best offer at the time of order receipt and the execution price. For order executions of midpoint-or-better limit orders, average effective spread shall be calculated from the time such orders first become executable rather than the time of order receipt.

(9) *Average midpoint* means the share-weighted average of the midpoint of the national best bid and national best offer at the time of order receipt or, for non-marketable limit orders, midpoint-or-better limit orders, and orders submitted with stop prices, at the time such orders first become executable.

(10) *Average percentage effective spread* means the average effective spread for order executions divided by the average midpoint for order executions.

(11) *Average percentage realized spread* means the average realized

spread for order executions divided by the average midpoint for order executions.

(12) *Average quoted spread* means the share-weighted average of the difference between the national best offer and the national best bid at the time of order receipt or, for order executions of midpoint-or-better limit orders, the difference between the national best offer and the national best bid at the time such orders first become executable.

(13) *Average realized spread* means 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 national best bid and national best offer at a specified interval after the time of order execution and, for sell orders, as double the amount of difference between the midpoint and the national best bid and national best offer at a specified interval after the time of order execution and the execution price; provided, however, that the midpoint of the final national best bid and national best offer disseminated for regular trading hours shall be used to calculate a realized spread if it is disseminated less than that specified interval after the time of order execution.

(14) *Best available displayed price* means, with respect to an order to buy, the lower of: the national best offer at the time of order receipt or the price of the best odd-lot order to sell at the time of order receipt as disseminated pursuant to an effective transaction reporting plan or effective national market system plan; and, with respect to an order to sell, the higher of: the national best bid at the time of order receipt or the price of the best odd-lot order to buy at the time of order receipt as disseminated pursuant to an effective transaction reporting plan or effective national market system plan. With respect to a midpoint-or-better limit order, the best available displayed price shall be determined at the time such order becomes executable rather than the time of order receipt.

(15) *Best bid and best offer* mean the highest priced bid and the lowest priced offer.

(16) *Bid or offer* means the bid price or the offer price communicated by a member of a national securities exchange or member of a national securities association to any broker or dealer, or to any customer, at which it is willing to buy or sell one or more round lots of an NMS security, as either principal or agent, but shall not include indications of interest.

(17) *Block size with respect to* an order means it is:

(i) Of at least 10,000 shares; or

(ii) For a quantity of stock having a market value of at least $200,000.

(18) *Categorized by order size* means dividing orders into separate categories for the following sizes:

(i) Less than $250 and less than a share;

(ii) Less than $250 and odd-lot;

(iii) Less than $250 and at least a round lot;

(iv) $250 to less than $1,000 and less than a share;

(v) $250 to less than $1,000 and odd-lot;

(vi) $250 to less than $1,000 and at least a round lot;

(vii) $1,000 to less than $5,000 and less than a share;

(viii) $1,000 to less than $5,000 and odd-lot;

(ix) $1,000 to less than $5,000 and at least a round lot;

(x) $5,000 to less than $10,000 and less than a share;

(xi) $5,000 to less than $10,000 and odd-lot;

(xii) $5,000 to less than $10,000 and at least a round lot;

(xiii) $10,000 to less than $20,000 and less than a share;

(xiv) $10,000 to less than $20,000 and odd-lot;

(xv) $10,000 to less than $20,000 and at least a round lot;

(xvi) $20,000 to less than $50,000 and less than a share;

(xvii) $20,000 to less than $50,000 and odd-lot;

(xviii) $20,000 to less than $50,000 and at least a round lot;

(xix) $50,000 to less than $200,000 and less than a share;

(xx) $50,000 to less than $200,000 and odd-lot;

(xxi) $50,000 to less than $200,000 and at least a round lot;

(xxii) $200,000 or more and less than a share;

(xxiii) $200,000 or more and odd-lot; and

(xxiv) $200,000 or more and at least a round lot.

(19) *Categorized by order type* means dividing orders into separate categories for market orders, marketable limit orders (excluding immediate-or-cancel orders), marketable immediate-or-cancel orders, midpoint-or-better limit orders (excluding immediate-or-cancel orders), midpoint-or-better limit orders that are immediate-or-cancel, executable non-marketable limit orders (excluding orders submitted with stop prices, midpoint-or-better limit orders, and immediate-or-cancel orders), executable non-marketable orders that are immediate-or-cancel, executable market orders submitted with stop prices, executable stop marketable limit orders, and executable stop non-marketable limit orders.

(20) *Categorized by security* means dividing orders into separate categories for each NMS stock that is included in a report.

(21) *Competing consolidator* means a securities information processor required to be registered pursuant to § 242.614 (Rule 614) or a national securities exchange or national securities association that receives information with respect to quotations for and transactions in NMS stocks and generates a consolidated market data product for dissemination to any person.

(22) *Consolidated display* means:

(i) The prices, sizes, and market identifications of the national best bid and national best offer for a security; and

(ii) Consolidated last sale information for a security.

(23) *Consolidated last sale information* means the price, volume, and market identification of the most recent transaction report for a security that is disseminated pursuant to an effective national market system plan.

(24) *Consolidated market data* means the following data, consolidated across all national securities exchanges and national securities associations:

(i) Core data;

(ii) Regulatory data;

(iii) Administrative data;

(iv) Self-regulatory organization-specific program data; and

(v) Additional regulatory, administrative, or self-regulatory organization-specific program data elements defined as such pursuant to the effective national market system plan or plans required under § 242.603(b).

(25) *Consolidated market data product* means any data product developed by a competing consolidator that contains consolidated market data or data components of consolidated market data. For purposes of this paragraph (b)(25), data components of consolidated market data include the enumerated elements, and any subcomponent of the enumerated elements, of consolidated market data in paragraph (b)(24) of this section. All consolidated market data products must reflect data consolidated across all national securities exchanges and national securities associations.

(26) *Core data* means:

(i) The following information with respect to quotations for, and transactions in, NMS stocks:

(A) Quotation sizes;
(B) Aggregate quotation sizes;
(C) Best bid and best offer;
(D) National best bid and national best offer;
(E) Protected bid and protected offer;
(F) Transaction reports;
(G) Last sale data;
(H) Odd-lot information;
(I) Depth of book data; and
(J) Auction information.

(ii) For purposes of the calculation and dissemination of core data by competing consolidators, as defined in paragraph (b)(21) of this section, and the calculation of core data by self-aggregators, as defined in paragraph (b)(94) of this section, the best bid and best offer, national best bid and national best offer, protected bid and protected offer, and depth of book data shall include odd-lots that when aggregated are equal to or greater than a round lot; such aggregation shall occur across multiple prices and shall be disseminated at the least aggressive price of all such aggregated odd-lots.

(iii) Competing consolidators shall represent the quotation sizes of the following data elements, if disseminated in a consolidated market data product as defined in paragraph (b)(25) of this section, as the number of shares rounded down to the nearest multiple of a round lot: The best bid and best offer, national best bid and national best offer, protected bid and protected offer, depth of book data, and auction information.

(iv) Competing consolidators shall attribute the following data elements, if disseminated in a consolidated market data product as defined in paragraph (b)(25) of this section, to the national securities exchange or national securities association that is the source of each such data element: Best bid and best offer, national best bid and national best offer, protected bid and protected offer, transaction reports, last sale data, odd-lot information, depth of book data, and auction information.

(27) *Covered order* means any market order or any limit order (including immediate-or-cancel orders) received by a market center, broker, or dealer during regular trading hours at a time when a national best bid and national best offer is being disseminated and after the primary listing market has disseminated its first firm, uncrossed quotations in the security, and, if executed, is executed during regular trading hours; or any non-marketable limit order (including an order submitted with a stop price) received by a market center, broker, or dealer outside of regular trading hours, or at a time before the primary listing market has disseminated its first firm, uncrossed quotations in the security, or at a time when a national best bid and national best offer is not being disseminated and, if executed, is executed during regular trading hours. Covered order shall exclude any order for which the customer requests special handling for execution, including, but not limited to, orders to be executed at a market opening price or a market closing price, orders to be executed only at their full size, orders to be executed on a particular type of tick or bid, orders submitted on a ''not held'' basis, orders for other than regular settlement, and orders to be executed at prices unrelated to the market price of the security at the time of execution.

(28) *Customer* means any person that is not a broker or dealer.

(29) *Customer limit order* means an order to buy or sell an NMS stock at a specified price that is not for the account of either a broker or dealer; *provided, however,* that the term *customer limit order* shall include an order transmitted by a broker or dealer on behalf of a customer.

(30) *Customer order* means an order to buy or sell an NMS security that is not for the account of a broker or dealer, but shall not include any order for a quantity of a security having a market value of at least $50,000 for an NMS security that is an option contract and a market value of at least $200,000 for any other NMS security.

(31) *Depth of book data* means all quotation sizes at each national securities exchange and on a facility of a national securities association at each of the next five prices at which there is a bid that is lower than the national best bid and offer that is higher than the national best offer. For these five prices, the aggregate size available at each price, if any, at each national securities exchange and national securities association shall be attributed to such exchange or association.

(32) *Directed order* means an order from a customer that the customer specifically instructed the broker or dealer to route to a particular venue for execution.

(33) *Dynamic market monitoring device* means any service provided by a vendor on an interrogation device or other display that:

(i) Permits real-time monitoring, on a dynamic basis, of transaction reports, last sale data, or quotations with respect to a particular security; and

(ii) Displays the most recent transaction report, last sale data, or quotation with respect to that security until such report, data, or quotation has been superseded or supplemented by the display of a new transaction report, last sale data, or quotation reflecting the next reported transaction or quotation in that security.

(34) *Effective national market system plan* means any national market system plan approved by the Commission (either temporarily or on a permanent basis) pursuant to § 242.608.

(35) *Effective transaction reporting plan* means any transaction reporting plan approved by the Commission pursuant to § 242.601.

(36) *Electronic communications network* means, for the purposes of § 242.602(b)(5), any electronic system that widely disseminates to third parties orders entered therein by an exchange market maker or OTC market maker, and permits such orders to be executed against in whole or in part; except that the term *electronic communications network* shall not include:

(i) Any system that crosses multiple orders at one or more specified times at a single price set by the system (by algorithm or by any derivative pricing mechanism) and does not allow orders to be crossed or executed against directly by participants outside of such times; or

(ii) Any system operated by, or on behalf of, an OTC market maker or exchange market maker that executes customer orders primarily against the account of such market maker as principal, other than riskless principal.

(37) *Exchange market maker* means any member of a national securities exchange that is registered as a specialist or market maker pursuant to the rules of such exchange.

(38) *Exchange-traded security* means any NMS security or class of NMS securities listed and registered, or admitted to unlisted trading privileges, on a national securities exchange; *provided, however,* that securities not listed on any national securities exchange that are traded pursuant to unlisted trading privileges are excluded.

(39) *Executable* means, for any non-marketable buy order (excluding orders submitted with stop prices), that the limit price is equal to or greater than the national best bid during regular trading hours and after the primary listing market has disseminated its first firm, uncrossed quotations in the security, and, for any non-marketable sell order (excluding orders submitted with stop prices), that the limit price is equal to or less than the national best offer during regular trading hours and after the primary listing market has disseminated its first firm, uncrossed quotations in the security. Executable means, for any order submitted with a stop price, that the stop price has been triggered during regular trading hours

and after the primary listing market has disseminated its first firm, uncrossed quotations in the security. The time an order becomes executable shall be measured in increments of a millisecond or finer.

(40) *Executable stop marketable limit order* means, for buy orders, orders submitted with stop prices that have limit prices that are equal to or greater than the national best offer at the time such orders become executable, and, for sell orders, orders submitted with stop prices that have limit prices that are equal to or less than the national best bid at the time such orders become executable.

(41) *Executable stop non-marketable limit order* means, for buy orders, orders submitted with stop prices that have limit prices that are less than the national best offer at the time such orders become executable, and, for sell orders, orders submitted with stop prices that have limit prices that are greater than the national best bid at the time such orders become executable.

(42) *Executed at the quote* means, for buy orders, execution at a price equal to the national best offer at the time of order receipt and, for sell orders, execution at a price equal to the national best bid at the time of order receipt.

(43) *Executed outside the best available displayed price* means, for buy orders, execution at a price higher than the best available displayed price; and, for sell orders, execution at a price lower than the best available displayed price.

(44) *Executed outside the quote* means, for buy orders, execution at a price higher than the national best offer at the time of order receipt and, for sell orders, execution at a price lower than the national best bid at the time of order receipt.

(45) *Executed with price improvement* means, for buy orders, execution at a price lower than the national best offer at the time of order receipt and, for sell orders, execution at a price higher than the national best bid at the time of order receipt.

(46) *Executed with price improvement relative to the best available displayed price* means, for buy orders, execution at a price lower the best available displayed price and, for sell orders, execution at a price higher than the best available displayed price.

(47) *Intermarket sweep order* means a limit order for an NMS stock that meets the following requirements:

(i) When routed to a trading center, the limit order is identified as an intermarket sweep order; and

(ii) Simultaneously with the routing of the limit order identified as an intermarket sweep order, one or more additional limit orders, as necessary, are routed to execute against the full displayed size of any protected bid, in the case of a limit order to sell, or the full displayed size of any protected offer, in the case of a limit order to buy, for the NMS stock with a price that is superior to the limit price of the limit order identified as an intermarket sweep order. These additional routed orders also must be marked as intermarket sweep orders.

(48) *Interrogation device* means any securities information retrieval system capable of displaying transaction reports, last sale data, or quotations upon inquiry, on a current basis on a terminal or other device.

(49) *Joint self-regulatory organization plan* means a plan as to which two or more self-regulatory organizations, acting jointly, are sponsors.

(50) *Last sale data* means any price or volume data associated with a transaction.

(51) *Listed equity security* means any equity security listed and registered, or admitted to unlisted trading privileges, on a national securities exchange.

(52) *Listed option* means any option traded on a registered national securities exchange or automated facility of a national securities association.

(53) *Make publicly available* means posting on an internet website that is free and readily accessible to the public, furnishing a written copy to customers on request without charge, and notifying customers at least annually in writing that a written copy will be furnished on request.

(54) *Manual quotation* means any quotation other than an automated quotation.

(55) *Market center* means any exchange market maker, OTC market maker, alternative trading system, national securities exchange, or national securities association.

(56) *Marketable limit order* means, with respect to an order received at a time when a national best bid and national best offer is being disseminated and after the primary listing market has disseminated its first firm, uncrossed quotations in the security, any buy order with a limit price equal to or greater than the national best offer at the time of order receipt, or any sell order with a limit price equal to or less than the national best bid at the time of order receipt, and, with respect to an order received at a time when a national best bid and national best offer is not being disseminated, any buy order with a limit price equal to or greater than the national best offer at the time that the national best offer is first disseminated during regular trading hours after the time of order receipt, or any sell order with a limit price equal to or less than the national best bid time at the time that the national best bid is first disseminated during regular trading hours after the time of order receipt. For orders received at a time when the national best bid and national best offer is being disseminated but the primary listing market has not disseminated its first firm, uncrossed quotations in the security, whether an order is a marketable limit order shall be determined from the time that the primary listing market disseminates its first firm, uncrossed quotations in the security.

(57) *Midpoint-or-better limit order* means, with respect to an order received at a time when a national best bid and national best offer is being disseminated and the primary listing market has disseminated its first firm, uncrossed quotations in the security, any non-marketable buy order with a limit price that is equal to or higher than the midpoint of the national best bid and national best offer at the time of order receipt and any non-marketable sell order with a limit price that is equal to or lower than the midpoint of the national best bid and national best offer at the time of order receipt, and, with respect to an order received at a time when a national best bid and national best offer is not being disseminated, any non-marketable buy order with a limit price that is equal to or higher than the midpoint of the national best bid and national best offer at the time that the national best bid and national best offer is first disseminated after the time of order receipt, or any non-marketable sell order with a limit price that is equal to or lower than the midpoint of the national best bid and national best offer at the time that the national best bid and national best offer is first disseminated after the time of order receipt. For orders received at a time when the national best bid and national best offer is being disseminated but the primary listing market has not disseminated its first firm, uncrossed quotations in the security, whether an order is a midpoint-or-better limit order shall be determined from the time that the primary listing market disseminates its first firm, uncrossed quotations in the security.

(58) *Moving ticker* means any continuous real-time moving display of transaction reports or last sale data (other than a dynamic market monitoring device) provided on an interrogation or other display device.

(59) *Nasdaq security* means any registered security listed on The Nasdaq Stock Market, Inc.

(60) *National best bid and national best offer* means, with respect to quotations for an NMS stock, the best bid and best offer for such stock that are calculated and disseminated on a current and continuing basis by a competing consolidator or calculated by a self-aggregator and, for NMS securities other than NMS stocks, the best bid and best offer for such security that are calculated and disseminated on a current and continuing basis by a plan processor pursuant to an effective national market system plan; provided, that in the event two or more market centers transmit to the plan processor, a competing consolidator or a self-aggregator identical bids or offers for an NMS security, the best bid or best offer (as the case may be) shall be determined by ranking all such identical bids or offers (as the case may be) first by size (giving the highest ranking to the bid or offer associated with the largest size), and then by time (giving the highest ranking to the bid or offer received first in time).

(61) *National market system plan* means any joint self-regulatory organization plan in connection with:

(i) The planning, development, operation or regulation of a national market system (or a subsystem thereof) or one or more facilities thereof; or

(ii) The development and implementation of procedures and/or facilities designed to achieve compliance by self-regulatory organizations and their members with any section of this Regulation NMS and part 240, subpart A, of this chapter promulgated pursuant to section 11A of the Act (15 U.S.C. 78k–1).

(62) *National securities association* means any association of brokers and dealers registered pursuant to section 15A of the Act (15 U.S.C. 78o–3).

(63) *National securities exchange* means any exchange registered pursuant to section 6 of the Act (15 U.S.C. 78f).

(64) *NMS security* means 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 national market system plan for reporting transactions in listed options.

(65) *NMS stock* means any NMS security other than an option.

(66) *Non-directed order* means any order from a customer other than a directed order.

(67) *Non-marketable limit order* means any limit order other than a marketable limit order.

(68) *Odd-lot* means an order for the purchase or sale of an NMS stock in an amount less than a round lot.

(69) *Odd-lot information* means:

(i) Odd-lot transaction data disseminated pursuant to the effective national market system plan or plans required under § 242.603(b) as of April 9, 2021; and

(ii) Odd-lots at a price greater than or equal to the national best bid and less than or equal to the national best offer, aggregated at each price level at each national securities exchange and national securities association.

(70) *Options class* means all of the put option or call option series overlying a security, as defined in section 3(a)(10) of the Act (15 U.S.C. 78c(a)(10)).

(71) *Options series* means the contracts in an options class that have the same unit of trade, expiration date, and exercise price, and other terms or conditions.

(72) *Order size benchmark* means the number of shares of the full displayed size of all protected bids at the same price as the national best bid at the time of order receipt, in the case of a market or limit order to sell, or the full displayed size of all protected offers at the same price as the national best offer at the time of order receipt, in the case of a market or limit order to buy. For midpoint-or-better limit orders, the full displayed size should be measured at the time the order becomes executable rather than the time of order receipt. For each order, the share count shall be capped at the order size.

(73) *Orders providing liquidity* means orders that were executed against after resting at a trading center.

(74) *Orders removing liquidity* means orders that executed against resting trading interest at a trading center.

(75) *OTC market maker* means 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.

(76) *Participants,* when used in connection with a national market system plan, means any self-regulatory organization which has agreed to act in accordance with the terms of the plan but which is not a signatory of such plan.

(77) *Payment for order flow* has the meaning provided in § 240.10b–10 of this chapter.

(78) *Plan processor* means any self-regulatory organization or securities information processor acting as an exclusive processor in connection with the development, implementation and/or operation of any facility contemplated by an effective national market system plan.

(79) *Primary listing exchange* means, for each NMS stock, the national securities exchange identified as the primary listing exchange in the effective national market system plan or plans required under § 242.603(b).

(80) *Profit-sharing relationship* means any ownership or other type of affiliation under which the broker or dealer, directly or indirectly, may share in any profits that may be derived from the execution of non-directed orders.

(81) *Protected bid or protected offer* means a quotation in an NMS stock that:

(i) Is displayed by an automated trading center;

(ii) Is disseminated pursuant to an effective national market system 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.

(82) *Protected quotation* means a protected bid or a protected offer.

(83) *Published aggregate quotation size* means the aggregate quotation size calculated by a national securities exchange and displayed by a vendor on a terminal or other display device at the time an order is presented for execution to a responsible broker or dealer.

(84) *Published bid and published offer* means the bid or offer of a responsible broker or dealer for an NMS security communicated by it to its national securities exchange or association pursuant to § 242.602 and displayed by a vendor on a terminal or other display device at the time an order is presented for execution to such responsible broker or dealer.

(85) *Published quotation size* means the quotation size of a responsible broker or dealer communicated by it to its national securities exchange or association pursuant to § 242.602 and displayed by a vendor on a terminal or other display device at the time an order is presented for execution to such responsible broker or dealer.

(86) *Quotation* means a bid or an offer.

(87) *Quotation size,* when used with respect to a responsible broker's or dealer's bid or offer for an NMS security, means:

(i) The number of shares (or units of trading) of that security which such responsible broker or dealer has specified, for purposes of dissemination to vendors, that it is willing to buy at the bid price or sell at the offer price

comprising its bid or offer, as either principal or agent; or

(ii) In the event such responsible broker or dealer has not so specified, a normal unit of trading for that NMS security.

(88) *Regular trading hours* means the time between 9:30 a.m. and 4 p.m. Eastern Time, or such other time as is set forth in the procedures established pursuant to § 242.605(a)(3).

(89) *Regulatory data* means:

(i) Information required to be collected or calculated by the primary listing exchange for an NMS stock and provided to competing consolidators and self-aggregators pursuant to the effective national market system plan or plans required under § 242.603(b), including, at a minimum:

(A) Information regarding Short Sale Circuit Breakers pursuant to § 242.201;

(B) Information regarding Price Bands required pursuant to the Plan to Address Extraordinary Market Volatility (LULD Plan);

(C) Information relating to regulatory halts or trading pauses (news dissemination/pending, LULD, Market-Wide Circuit Breakers) and reopenings or resumptions;

(D) The official opening and closing prices of the primary listing exchange; and

(E) An indicator of the applicable round lot size.

(ii) Information required to be collected or calculated by the national securities exchange or national securities association on which an NMS stock is traded and provided to competing consolidators and self-aggregators pursuant to the effective national market system plan or plans required under § 242.603(b), including, at a minimum:

(A) Whenever such national securities exchange or national securities association receives a bid (offer) below (above) an NMS stock's lower (upper) LULD price band, an appropriate regulatory data flag identifying the bid (offer) as non-executable; and

(B) Other regulatory messages including subpenny execution and trade-though exempt indicators.

(iii) For purposes of paragraph (b)(89)(i)(C) of this section, the primary listing exchange that has the largest proportion of companies included in the S&P 500 Index shall monitor the S&P 500 Index throughout the trading day, determine whether a Level 1, Level 2, or Level 3 decline, as defined in self-regulatory organization rules related to Market-Wide Circuit Breakers, has occurred, and immediately inform the other primary listing exchanges of all such declines.

(90) *Responsible broker or dealer* means:

(i) When used with respect to bids or offers communicated on a national securities exchange, any member of such national securities exchange who communicates to another member on such national securities exchange, at the location (or locations) or through the facility or facilities designated by such national securities exchange for trading in an NMS security a bid or offer for such NMS security, as either principal or agent; *provided, however,* that, in the event two or more members of a national securities exchange have communicated on or through such national securities exchange bids or offers for an NMS security at the same price, each such member shall be considered a *responsible broker or dealer* for that bid or offer, subject to the rules of priority and precedence then in effect on that national securities exchange; and further provided, that for a bid or offer which is transmitted from one member of a national securities exchange to another member who undertakes to represent such bid or offer on such national securities exchange as agent, only the last member who undertakes to represent such bid or offer as agent shall be considered the *responsible broker or dealer for that bid or offer;* and

(ii) When used with respect to bids and offers communicated by a member of an association to a broker or dealer or a customer, the member communicating the bid or offer (regardless of whether such bid or offer is for its own account or on behalf of another person).

(91) *Revised bid or offer* means a market maker's bid or offer which supersedes its published bid or published offer.

(92) *Revised quotation size* means a market maker's quotation size which supersedes its published quotation size.

(93) *Round lot* means:

(i) For any NMS stock for which the prior calendar month's average closing price on the primary listing exchange was $250.00 or less per share, an order for the purchase or sale of an NMS stock of 100 shares;

(ii) For any NMS stock for which the prior calendar month's average closing price on the primary listing exchange was $250.01 to $1,000.00 per share, an order for the purchase or sale of an NMS stock of 40 shares;

(iii) For any NMS stock for which the prior calendar month's average closing price on the primary listing exchange was $1,000.01 to $10,000.00 per share, an order for the purchase or sale of an NMS stock of 10 shares;

(iv) For any NMS stock for which the prior calendar month's average closing price on the primary listing exchange was $10,000.01 or more per share, an order for the purchase or sale of an NMS stock of 1 share; and

(v) For any NMS stock for which the prior calendar month's average closing price is not available, an order for the purchase or sale of an NMS stock of 100 shares.

(94) *Self-aggregator* means a broker, dealer, national securities exchange, national securities association, or investment adviser registered with the Commission that receives information with respect to quotations for and transactions in NMS stocks, including all data necessary to generate consolidated market data, and generates consolidated market data solely for internal use. A self-aggregator may make consolidated market data available to its affiliates that are registered with the Commission for their internal use. Except as provided in the preceding sentence, a self-aggregator may not disseminate or otherwise make available consolidated market data, or components of consolidated market data, as provided in paragraph (b)(25) of this section, to any person.

(95) *Self-regulatory organization* means any national securities exchange or national securities association.

(96) *Self-regulatory organization-specific program data* means:

(i) Information related to retail liquidity programs specified by the rules of national securities exchanges and disseminated pursuant to the effective national market system plan or plans required under § 242.603(b) as of April 9, 2021; and

(ii) Other self-regulatory organization-specific information with respect to quotations for or transactions in NMS stocks as specified by the effective national market system plan or plans required under § 242.603(b).

(97) *Specified persons,* when used in connection with any notification required to be provided pursuant to § 242.602(a)(3) and any election (or withdrawal thereof) permitted under § 242.602(a)(5), means:

(i) Each vendor;

(ii) Each plan processor; and

(iii) The processor for the Options Price Reporting Authority (in the case of a notification for a subject security which is a class of securities underlying options admitted to trading on any national securities exchange).

(98) *Sponsor,* when used in connection with a national market system plan, means any self-regulatory organization which is a signatory to

such plan and has agreed to act in accordance with the terms of the plan.

(99) *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.

(100) *SRO trading facility* means 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.

(101) *Subject security* means:

(i) With respect to a national securities exchange:

(A) Any exchange-traded security other than a security for which the executed volume of such exchange, during the most recent calendar quarter, comprised one percent or less of the aggregate trading volume for such security as reported pursuant to an effective transaction reporting plan or effective national market system plan; and

(B) Any other NMS security for which such exchange has in effect an election, pursuant to § 242.602(a)(5)(i), to collect, process, and make available to a vendor bids, offers, quotation sizes, and aggregate quotation sizes communicated on such exchange; and

(ii) With respect to a member of a national securities association:

(A) Any exchange-traded security for which such member acts in the capacity of an OTC market maker unless the executed volume of such member, during the most recent calendar quarter, comprised one percent or less of the aggregate trading volume for such security as reported pursuant to an effective transaction reporting plan or effective national market system plan; and

(B) Any other NMS security for which such member acts in the capacity of an OTC market maker and has in effect an election, pursuant to § 242.602(a)(5)(ii), to communicate to its association bids, offers, and quotation sizes for the purpose of making such bids, offers, and quotation sizes available to a vendor.

(102) *Time of order execution* means the time (at a minimum to the millisecond) that an order was executed at any venue.

(103) *Time of order receipt* means the time (at a minimum to the millisecond) that an order was received by a market center for execution, or in the case of a broker or dealer that is not acting as a market center, the time (at a minimum to the millisecond) that an order was received by the broker or dealer for execution.

(104) *Time of the transaction* has the meaning provided in § 240.10b–10 of this chapter.

(105) *Trade-through* means the purchase or sale of an NMS stock during regular trading hours, either as principal or agent, at a price that is lower than a protected bid or higher than a protected offer.

(106) *Trading center* means a national securities exchange or national securities association that operates an 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.

(107) *Trading rotation* means, with respect to an options class, the time period on a national securities exchange during which:

(i) Opening, re-opening, or closing transactions in options series in such options class are not yet completed; and

(ii) Continuous trading has not yet commenced or has not yet ended for the day in options series in such options class.

(108) *Transaction report* means a report containing the price and volume associated with a transaction involving the purchase or sale of one or more round lots of a security.

(109) *Transaction reporting association* means any person authorized to implement or administer any transaction reporting plan on behalf of persons acting jointly under § 242.601(a).

(110) *Transaction reporting plan* means any plan for collecting, processing, making available or disseminating transaction reports with respect to transactions in securities filed with the Commission pursuant to, and meeting the requirements of, § 242.601.

(111) *Vendor* means any securities information processor engaged in the business of disseminating transaction reports, last sale data, or quotations with respect to NMS securities to brokers, dealers, or investors on a real-time or other current and continuing basis, whether through an electronic communications network, moving ticker, or interrogation device.

§ 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)(101)''.

■ 10. Amend § 242.605 by revising the introductory text and paragraph (a) to read as follows:

§ 242.605 Disclosure of order execution information.

This section requires market centers, brokers, and dealers to make available standardized, monthly reports of statistical information concerning their order executions. This information is presented in accordance with uniform standards that are based on broad assumptions about order execution and routing practices. The information will provide a starting point to promote visibility and competition on the part of market centers and broker-dealers, particularly on the factors of execution price and speed. The disclosures required by this section do not encompass all of the factors that may be important to investors in evaluating the order routing services of a broker-dealer. In addition, any particular market center, broker, or dealer's statistics will encompass varying types of orders routed by different broker-dealers on behalf of customers with a wide range of objectives. Accordingly, the statistical information required by this section alone does not create a reliable basis to address whether any particular broker-dealer failed to obtain the most favorable terms reasonably available under the circumstances for customer orders.

(a) *Monthly electronic reports by market centers, brokers, and dealers.* (1) Every market center, broker, or dealer shall make available for each calendar month, in accordance with the procedures established pursuant to paragraph (a)(3) of this section, a report on the covered orders in NMS stocks that it received for execution from any person or that it received for execution in a prior calendar month but which remained open. Any OTC market maker that provides a trading system for only a single dealer to solely buy and sell securities against all other persons entering orders in that system shall produce a separate report pertaining only to covered orders entered in such trading system. Alternative trading systems (as defined in § 242.300(a)) shall prepare reports separately from their broker-dealer operators to the extent such entities are required to prepare reports. Each report shall be in electronic form; shall be categorized by security, order type, and order size; and shall include the following columns of information:

(i) For market orders, marketable limit orders, marketable immediate-or-cancel orders, midpoint-or-better limit orders, midpoint-or-better limit orders that are immediate-or-cancel, executable non-marketable limit orders, executable non-marketable limit orders that are immediate-or-cancel, executable market

orders submitted with stop prices, executable stop marketable limit orders, and executable stop non-marketable limit orders:

(A) The number of covered orders;

(B) The cumulative notional value of covered orders;

(C) The cumulative number of shares of covered orders;

(D) The cumulative number of shares of covered orders cancelled prior to execution;

(E) The cumulative number of shares of covered orders executed at the receiving market center, broker, or dealer (excluding shares that the market center, broker, or dealer executes on a riskless principal basis);

(F) The cumulative number of shares of covered orders executed at any other venue;

(G) The cumulative number of shares of covered orders executed less than 100 microseconds after the time of order receipt; or, for non-marketable limit orders or orders submitted with stop prices, after the time the order becomes executable;

(H) The cumulative number of shares of covered orders executed from 100 microseconds to less than 1 millisecond after the time of order receipt; or, for non-marketable limit orders or orders submitted with stop prices, after the time the order becomes executable ;

(I) The cumulative number of shares of covered orders executed from 1 millisecond to less than 10 milliseconds after the time of order receipt; or, for non-marketable limit orders or orders submitted with stop prices, after the time the order becomes executable;

(J) The cumulative number of shares of covered orders executed from 10 milliseconds to less than 1 second after the time of order receipt; or, for non-marketable limit orders or orders submitted with stop prices, after the time the order becomes executable;

(K) The cumulative number of shares of covered orders executed from 1 second to less than 10 seconds after the time of order receipt; or, for non-marketable limit orders or orders submitted with stop prices, after the time the order becomes executable;

(L) The cumulative number of shares of covered orders executed from 10 seconds to less than 30 seconds after the time of order receipt; or, for non-marketable limit orders or orders submitted with stop prices, after the time the order becomes executable;

(M) The cumulative number of shares of covered orders executed from 30 seconds to less than 5 minutes after the time of order receipt; or, for non-marketable limit orders or orders submitted with stop prices, after the time the order becomes executable;

(N) The cumulative number of shares of covered orders executed 5 minutes or more after the time of order receipt; or, for non-marketable limit orders or orders submitted with stop prices, after the time the order becomes executable;

(O) For executions of covered orders, the average realized spread as calculated 50 milliseconds after the time of execution;

(P) For executions of covered orders, the average percentage realized spread as calculated 50 milliseconds after the time of execution;

(Q) For executions of covered orders, the average realized spread as calculated 1 second after the time of execution;

(R) For executions of covered orders, the average percentage realized spread as calculated 1 second after the time of execution;

(S) For executions of covered orders, the average realized spread as calculated 15 seconds after the time of execution;

(T) For executions of covered orders, the average percentage realized spread as calculated 15 seconds after the time of execution;

(U) For executions of covered orders, the average realized spread as calculated 1 minute after the time of execution;

(V) For executions of covered orders, the average percentage realized spread as calculated 1 minute after the time of execution;

(W) For executions of covered orders, the average realized spread as calculated 5 minutes after the time of execution;

(X) For executions of covered orders, the average percentage realized spread as calculated 5 minutes after the time of execution;

(Y) For executions of covered orders, the average midpoint; and

(ii) For market orders, marketable limit orders, marketable immediate-or-cancel orders, midpoint-or-better limit orders, midpoint-or-better limit orders that are immediate-or-cancel, executable market orders submitted with stop prices, and executable stop marketable limit orders:

(A) For executions of covered orders, the average quoted spread;

(B) For executions of covered orders, the average effective spread;

(C) For executions of covered orders, the average percentage effective spread;

(D) For executions of covered orders, the average effective divided by the average quoted spread, expressed as a percentage;

(E) The cumulative number of shares of covered orders executed with price improvement;

(F) For shares executed with price improvement, the share-weighted average amount per share that prices were improved;

(G) For shares executed with price improvement, the share-weighted average period from the time of order receipt to the time of order execution, expressed in increments of a millisecond or finer, or, in the case of midpoint-or-better limit orders, midpoint-or-better limit orders that are immediate-or-cancel, executable market orders submitted with stop prices, and executable stop marketable limit orders, from the time such orders first become executable to the time of order execution, expressed in increments of a millisecond or finer;

(H) The cumulative number of shares of covered orders executed at the quote;

(I) For shares executed at the quote, the share-weighted average period from the time of order receipt to the time of order execution, expressed in increments of a millisecond or finer, or, in the case of midpoint-or-better limit orders, midpoint-or-better limit orders that are immediate-or-cancel, executable market orders submitted with stop prices, and executable stop marketable limit orders, from the time such orders first become executable to the time of order execution, expressed in increments of a millisecond or finer;

(J) The cumulative number of shares of covered orders executed outside the quote;

(K) For shares executed outside the quote, the share-weighted average amount per share that prices were outside the quote;

(L) For shares executed outside the quote, the share-weighted average period from the time of order receipt, expressed in increments of a millisecond or finer, or, in the case of midpoint-or-better limit orders, midpoint-or-better limit orders that are immediate-or-cancel, executable market orders submitted with stop prices, and executable stop marketable limit orders, from the time such orders first become executable to the time of order execution, expressed in increments of a millisecond or finer;

(M) The cumulative number of shares of covered orders executed with price improvement relative to the best available displayed price;

(N) For shares executed with price improvement relative to the best available displayed price, the share-weighted average amount per share that prices were improved as compared to the best available displayed price;

(O) The cumulative number of shares of covered orders executed at the best available displayed price;

(P) The cumulative number of shares of covered orders executed outside the best available displayed price;

(Q) For shares executed outside the best available displayed price, the share-weighted average amount per share that prices were outside the best available displayed price;

(R) For executions of covered orders, the cumulative number of shares of the order size benchmark;

(S) The sum of, for each execution of a covered order, the greater of: the total number of shares executed with price improvement plus the total number of shares executed at the quote minus the order size benchmark, or zero; and

(iii) For midpoint-or-better limit orders, midpoint-or-better limit orders that are immediate-or-cancel, executable non-marketable limit orders, executable non-marketable limit orders that are immediate-or-cancel, and executable stop non-marketable limit orders:

(A) The number of covered orders that received either a complete or partial fill;

(B) The cumulative number of shares executed regular way at prices that could have filled the order while the order was in force, as reported pursuant to an effective transaction reporting plan or effective national market system plan. For each order, the share count shall be capped at the order size;

(C) The cumulative number of shares executed regular way on any national securities exchange at prices that could have filled the order while the order was in force, as reported pursuant to an effective transaction reporting plan or effective national market system plan. For each order, the share count shall be capped at the order size; and

(D) For shares executed, the share-weighted average period from the time the order becomes executable to the time of order execution expressed in increments of a millisecond or finer.

(2) Every market center, broker, or dealer shall make publicly available for each calendar month a report providing summary statistics on all covered orders that are market and marketable limit orders that it received for execution from any person. Such report shall be made available as an electronic file using the most recent version of the schema for comma separated values format (CSV) and the associated PDF renderer as published on the Commission's website for all reports required by this paragraph (a)(2). Such report shall include a section for NMS stocks that are included in the S&P 500 Index as of the first day of that month and a section for other NMS stocks. Each section shall be categorized by order type (market orders or marketable limit orders) and order size (less than $250, $250 to less than $1,000, $1,000 to less than $5,000, $5,000 to less than $10,000, $10,000 to less than $20,000, $20,000 to less than $50,000, $50,000 to less than $200,000, $200,000 or more, and all order sizes combined, excluding orders with a notional value of $200,000 or more), and shall include the following columns of information:

(i) The average order size in shares;

(ii) The average notional order size;

(iii) For executions of covered orders, the average midpoint;

(iv) For executions of covered orders, the percentage of shares executed at the quote or better;

(v) For executions of covered orders, the percentage of shares that received price improvement;

(vi) For executions of covered orders, the share-weighted average percentage price improvement, calculated as the cumulative amount that prices were improved less the cumulative amount that prices were executed outside the quote divided by sum of the average midpoint times the number of shares executed;

(vii) For executions of covered orders, the average percentage effective spread;

(viii) For executions of covered orders, the average percentage quoted spread, calculated as the average quoted spread divided by the average midpoint for such orders;

(ix) For executions of covered orders, the average effective spread divided by the average quoted spread, expressed as a percentage;

(x) For executions of covered orders, the average percentage realized spread as calculated 15 seconds after the time of execution;

(xi) For executions of covered orders, the average percentage realized spread as calculated 1 minute after the time of execution; and

(xii) For executions of covered orders, the share-weighted average execution speed, in milliseconds.

(3) Every national securities exchange on which NMS stocks are traded and each national securities association shall act jointly in establishing procedures for market centers, brokers, and dealers to follow in making available to the public the reports required by this section in a uniform, readily accessible, and usable electronic form.

(4) In the event there is no effective national market system plan establishing such procedures, market centers, brokers, and dealers shall prepare their reports in a consistent, usable, and machine-readable electronic format, in accordance with the requirements in paragraph (a)(1) of this section, and make such reports available for downloading from an internet website that is free and readily accessible to the public.

(5) Every market center, broker, or dealer shall keep the reports required by paragraphs (a)(1) and (2) of this section posted on an internet website that is free and readily accessible to the public for a period of three years from the initial date of posting on the internet website.

(6) A market center, broker, or dealer shall make available the reports required by paragraphs (a)(1) and (2) of this section within one month after the end of the month addressed in the reports.

(7) A broker or dealer that is not a market center shall not be subject to the requirements of this section unless that broker or dealer introduces or carries 100,000 or more customer accounts through which transactions are effected for the purchase or sale of NMS stocks (the ''customer account threshold'' for purposes of this paragraph). For purposes of this section, a broker or dealer that utilizes an omnibus clearing arrangement with respect to any of its underlying customer accounts shall be considered to carry such underlying customer accounts when calculating the number of customer accounts that it introduces or carries. Any broker or dealer that meets or exceeds this customer account threshold and is also a market center shall produce separate reports pertaining to each function. A broker or dealer that meets or exceeds the customer account threshold shall be required to produce reports pursuant to this section for at least three calendar months (''Reporting Period''). The Reporting Period shall begin the first calendar day of the next calendar month after the broker or dealer met or exceeded the customer account threshold, unless it is the first time the broker or dealer has met or exceeded the customer account threshold, in which case the Reporting Period shall begin the first calendar day four calendar months later. If, at any time after a broker or dealer has been required to produce reports pursuant to this section for at least a Reporting Period, a broker or dealer falls below the customer account threshold, the broker or dealer shall not be required to produce a report pursuant to this paragraph (a)(7) for the next calendar month.

* * * * *

§ 242.611 [Amended]

■ 11. Amend § 242.611 by, in paragraph (c), removing the text ''§ 242.600(b)(38)'' and adding in its place ''§ 242.600(b)(47)''.

§ 242.614 [Amended]

■ 12. Amend § 242.614 by, in paragraphs (d)(1) through (3), removing the text ''§ 242.600(b)(20)'' and adding in its place ''§ 242.600(b)(25)''.

§ 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)(78)''.

By the Commission.

Dated: March 6, 2024.

Sherry R. Haywood,

Assistant Secretary.

[FR Doc. 2024–05556 Filed 4–12–24; 8:45 am]

BILLING CODE 8011–01–P