

Written Testimony of:

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Before the:

U.S. House Committee on Financial Services Capital Markets Subcommittee

Hearing on:

Solutions in Search of a Problem: Chair Gensler's Equity Market Structure Reforms

June 27, 2024

Chair Wagner, Ranking Member Sherman and distinguished Members of the Capital Markets Subcommittee,

Thank you for this opportunity to come before you to discuss the Securities and Exchange Commission's (SEC) proposed equity market structure reforms. It is a true honor to be afforded this opportunity to testify today. Both as a scholar as well as an American, I am deeply appreciative of this Committee's work to safeguard our financial markets and economy.

My name is Professor Jonathan Brogaard, and I am the Kendall D. Garff Chaired Professor in the Finance Department at the University of Utah's David Eccles School of Business. My area of expertise lies in market microstructure, focusing on such aspects as the operation of trading platforms, measures of market quality and the trading firms and strategies that animate the capital allocation process.

1. US Equity Markets are Among Most Liquid and Efficient the World

In this testimony, I hope to assist the subcommittee's deliberations into the SEC's proposed overhaul of equity market structure. The importance of this hearing cannot be overstated. The SEC's reform proposals seek to implement a dramatic transformation in the core infrastructure that underpins how securities are traded. It covers several key aspects, but perhaps most importantly, it seeks to reshape how everyday retail investors experience securities trading, the costs that they pay and the quality of the execution that they receive. With retail securities market participation reaching all-time highs in dollar volumes traded, emerging interest from younger generations, as well as the continuing centrality of securities markets as an economic lifeline for those readying for retirement, a potentially misaligned reform agenda carries a far-reaching cost.

In this regard, such a dramatic and transformative reform proposal for equity markets appears out-of-sync with the vibrant and internationally envied state of our securities markets. The U.S. equity markets are among the deepest, most liquid, and efficient in the world, providing a critical foundation for capital formation, risk management, and investor welfare. The liquidity in our markets is unparalleled, driven by the vast number of participants including institutional investors, retail investors, and various market makers and liquidity providers. To take just one example, in the first half of 2024, average daily trading volume in U.S. equity markets stood at 11.7 billion shares, up 4.2% from 2023. The market saw around \$90 billion in equity issued, up approximately 74% annually.¹

Importantly, the last decade in the equity markets has witnessed a dramatic rise in its diversity, welcoming a range of participants, including younger generations alongside professional investors. Institutional investors, such as mutual funds, hedge funds, and pension funds, contribute

¹ <https://www.sifma.org/resources/research/us-equity-and-related-securities-statistics/>.

significantly to market depth and liquidity. These large professional money managers engage in a wide range of trading activities that add to the market's overall volume. Retail investors, who make up between 10% and 20% of all equity volume, have also come to play a vital role, especially since the pandemic.² The rise of online trading platforms and discount brokers has helped to more fully democratize access to the markets, allowing millions of self-directed investors to participate actively. This diverse participation brings liquidity to the market throughout the day.

2. Retail Investors are Well Served by Wholesalers

Internationally, the U.S. equity markets are widely envied for their high levels of efficiency and cost effectiveness. Efficiency means that equity market prices are adept at reflecting the value of information. This facility is powerful for ensuring that publicly traded companies are held to account and that prices convey a reliable signal about future worth. And cost-effectiveness is also essential. If investors can enter the market at low cost, they will be more willing to trade. Today, trading costs are among the lowest in history.

These gains are hard-won and reflect the fruits of SEC policy projects pursued over almost two decades. The efficiency of U.S. equity markets is a result, in part, of vigorous competition among trading venues. Regulation NMS (National Market System) has played a crucial role in fostering this competition by promoting competition among trading venues. Today, there are 16 national securities exchanges and more than 30 alternative trading systems (or so called “dark pools”). The competition among, and innovation by, trading venues has brought substantial benefits to market participants and is a key driver of our market’s vibrancy.

An important aspect of the U.S. equity market structure is the segmentation of retail order flow. Segmentation refers to the practice by which a certain category of orders is identified and treated differently for execution than other categories of orders. This segmentation helps in achieving better execution quality for retail investors. Retail orders, typically smaller in size and more balanced between buys and sells, pose less risk to market makers, allowing for tighter spreads and better pricing for retail investors.

In U.S. equity markets today, retail brokers provide a package of services to retail customers that includes but is not limited to trade execution. In general, retail brokers have focused on carrying and servicing customer accounts (including custody services), extending margin credit to customers, providing access to competitive banking products, investment advisors, as well as educational materials and research. The task of executing orders has in most cases been outsourced to wholesalers. This aligns with basic economic theory that certain business functions are more efficiently performed in-house, whereas others are more efficiently outsourced.

² <https://www.sifma.org/wp-content/uploads/2020/10/SIFMA-Insights-Spotlight-Download-on-Market-Structure.pdf>.

Wholesalers reference firms that capture bulk retail order flow from brokers around the country. They have developed sophisticated order routing and liquidity provision mechanisms that result in significant price improvements and liquidity enhancements for retail investors. Studies point to the concrete gains that wholesalers have brought to the retail trading experience.³ Notably, wholesalers frequently provide executions at or better than the National Best Bid and Offer (NBBO), leveraging advanced technologies and economies of scale to offer highly efficient execution. Requiring individual broker-dealers to replicate the same kind of access into various trading venues and the strategic expertise would be costly, duplicative and wasteful, and ultimately borne by investors. That is, tasking each retail brokerage firm to invest in developing the substantial infrastructure necessarily to optimally execute trades across the national market system and to connect, monitor, and evaluate in real time the myriad trading venues to essentially recreate the existing system represents an enormous and expensive undertaking.

Rather, relying on wholesalers ensures that capital markets can leverage economies of scale and firm expertise to deliver high quality outcomes for investors. Routing to wholesalers allows retail customers to benefit from the efficiencies of outsourcing execution to firms that specialize in retail order execution. In addition, the practice of regularly monitoring execution quality and re-allocating order flow based on performance creates competition across wholesalers and aligns wholesalers' incentives with those of retail customers. The degree to which wholesalers compete with each other to offer improved execution quality should not be overlooked.

Wholesalers play a crucial role in the current market structure by offering the following advantages:

- Price Improvement: Wholesalers often provide executions at prices better than the NBBO, delivering substantial price improvement to retail investors. This results in direct financial benefits for retail investors. The efficiencies and price improvements achieved through wholesaler executions have resulted in tens of billions of dollars in direct benefits to retail investors each year.
- Transparency and Competition: The existing framework promotes competition among wholesalers, incentivizing them to provide the best possible execution quality to attract order flow from retail brokers.
- Balance Sheet: Wholesalers typically have robust balance sheets, providing an advantage in deploying capital to execute a large quantity of retail trades as a counterparty.
- Liquidity Provision: By internalizing orders, wholesalers enhance market liquidity and reduce the impact of trades on public markets. This is particularly beneficial during volatile market conditions.
- Speed and Efficiency: The technologies used by wholesalers ensure rapid and efficient execution of orders, minimizing the time between order placement and execution.

³ Dyhrberg, Anne Haubo and Shkilko, Andriy and Werner, Ingrid M., The Retail Execution Quality Landscape (2022). <https://ssrn.com/abstract=4313095>; Battalio, Robert H. and Jennings, Robert H., Wholesaler Execution Quality (2023). <https://ssrn.com/abstract=4304124>.

- Innovation and Efficiency: The competitive environment has driven continuous innovation in execution technologies and practices, leading to greater market efficiency and better outcomes for investors.
- Compliance: Wholesalers are subject to detailed compliance requirements that demand that they show that they are delivering best execution to their clients.

3. SEC's Proposals are Misguided and Have Flawed Economic Analyses

Despite these benefits, the SEC in December 2022 introduced several rule proposals aimed at reforming the U.S. equity market structure, with the primary focus on retail order execution. Two key proposals are the Regulation Best Execution (Best Ex Proposal) and the Order Competition Rule (OCR Proposal). The Best Ex Proposal intends to establish a federal best execution standard that includes detailed policies and procedures for compliance, a new regime for certain transactions, and board level engagement through mandatory annual reports from brokers on their execution quality. The OCR Proposal mandates that certain retail orders be subject to competition in a regulated auction before being executed. These proposals would disrupt, if not eliminate, the use of wholesalers in our equity markets and likely degrade retail order execution quality – the exact opposite of the SEC's stated aims.

The SEC's justification for the Best Ex Proposal and OCR Proposal rests on an economic analysis that suggests the current market structure is anti-competitive and does not provide optimal execution quality for retail orders. However, this analysis is flawed for a number of reasons. First, the SEC claims retail orders are isolated from better-priced liquidity on exchanges. This overlooks the fact that wholesalers regularly provide midpoint executions or better, leveraging their internal liquidity pools. Second, the SEC posits that wholesalers earn excessive profits, implying a lack of competition. This ignores the competitive pressures wholesalers face from retail brokers who rigorously monitor execution quality and reallocate order flow based on performance. Third, the SEC underestimates the costs associated with implementing the proposed rules. Developing in-house execution capabilities and the associated technologies would impose significant financial burdens on retail brokers, leading to increased costs for investors and driving out of the market all but the largest firms.

My detailed analysis of the flawed economic analysis of these proposals is discussed in the attached comment letter I wrote to the SEC in July 2023.

4. SEC's Rush to Adopt Rules is Ignoring Opportunities to Measure the Economic Effects

As an academic, I believe that changes to the equity market structure of the scale proposed by the SEC should be accompanied by robust economic analysis, including accurate baselines against which changes and effects can be measured and evaluated. To that end, I am encouraged by recent updates to SEC Rule 605, which mandates detailed public disclosure of order execution quality by market centers, represent a significant enhancement in the transparency and evaluability of stock trading practices. These changes are set to provide academics, investors, and regulators with more granular and comprehensive data, thereby improving their ability to analyze and understand market dynamics and execution quality.

One of the key improvements in the new SEC Rule 605 is the increased granularity of execution quality metrics. Previously, Rule 605 reports provided summary data that was often too aggregated to allow for detailed analysis. The updated rule now requires market centers, including the largest broker-dealers, to disclose execution quality metrics on a per-symbol basis. This level of detail enables a more precise assessment of how individual stocks are being traded and the quality of executions across different market centers.

The revised Rule 605 also differentiates between retail and institutional order flow more effectively. By requiring separate reporting for smaller (typically retail) and larger (typically institutional) orders, the new rule allows for a clearer understanding of how different types of orders are being handled. Academics and analysts can now study the execution quality provided to retail investors compared to institutional investors, shedding light on potential disparities and areas for improvement.

With the enhanced reporting requirements, academics can more rigorously evaluate the performance of various market centers. The new data will include metrics such as speed of execution, rate of price improvement, and fill rates, broken down by order type and size. This comprehensive data set will enable a detailed comparison of how different market centers execute orders, helping to identify which venues are most effective in providing high-quality executions.

The enhanced disclosures mandated by the updated Rule 605 will also facilitate deeper research into market structure. Academics and policy makers can leverage the more detailed data to study the impact of various market structures on execution quality. For instance, they can analyze how internalization, payment for order flow, and exchange rebates influence execution outcomes. This research can inform future regulatory decisions and contribute to the ongoing debate about the optimal market structure for ensuring fair and efficient markets.

5. Conclusion

Valued at \$44 trillion and representing approximately 41% of global equity market capitalization, the U.S. stock market is an economic crown jewel that stands ahead of its competitors in powering efficient capital formation, risk management, and investor welfare. Boasting a world-class network of 16 national exchanges and over 30 bespoke trading platforms, the U.S. equity market has, over the last two decades, radically transformed its market structure to deliver an extraordinary slate of economic gains across the board, supporting individuals in building their retirement accounts and expanding access to capital markets to a broad swath of the population.

The SEC has embarked on what would be an expensive and dramatic redesign of equity market structure without first demonstrating a viable and credible economic case for doing so. With the adoption of changes to Rule 605, it is common sense to slow the pace of regulatory reform until this new data comes online and can be used to establish key market baselines and adequately inform the SEC's economic analyses of any proposed reforms. Additionally, many of the SEC's proposals are closely interconnected, further reinforcing the need to establish baselines. Indeed, given the highly competitive nature of our equity markets, the enhanced disclosures from Rule 605 may by themselves accomplish many of the SEC's objectives.

July 12, 2023

Via Electronic Submission

Ms. Vanessa A. Countryman, Secretary
U.S. Securities and Exchange Commission
100 F Street, N.E.
Washington, DC 20549-1090

Re: File No. S7-32-22; Release Nos. 34-96496; Proposed Regulation Best Execution

Dear Ms. Countryman:

Thank you for the opportunity to submit a comment. Please see the attached white paper that evaluates the economic analysis of the Proposed Regulation Best Execution.

Sincerely,

Professor Jonathan Brogaard, University of Utah

*Economic Analysis of the SEC's Proposed Best Execution and
Order Competition Rules*

Professor Jonathan Brogaard*

July 2023

*I am the Kendall D. Garff Chaired Professor in the Finance Department at the University of Utah's David Eccles School of Business. This report was commissioned by Charles Schwab & Co., Inc.

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Executive Summary

The economic analysis presented in the Securities and Exchange Commission (“SEC”) Best Execution and Order Competition Rule proposals is flawed and inadequate. It does not present an accurate assessment of the effects of these rules on efficiency and competition, nor does it provide an accurate baseline against which to evaluate potential benefits and costs. In short, the economic analysis does not provide any reasonable support for a decision to adopt the proposed rules.

The prevailing practice among nearly all retail brokers today is to use wholesalers as executing brokers. These wholesalers internalize a significant portion of the marketable order flow, and do so at competitive prices, often at the midpoint, and are often willing to provide more liquidity than what is displayed in the market. They take on a best execution obligation with respect to the orders they receive, and they bring to the table market access and order routing logic, including the ability to find hidden liquidity in other locations. It appears that the proposed Best Execution rule would require retail brokers to perform aspects of the executing broker function in-house that have historically been outsourced to wholesalers. As discussed below, this may undermine the efficiencies and pro-competitive aspects that are key contributors to the favorable outcomes currently enjoyed by retail investors. The SEC’s economic analysis fails to consider the underlying reasons why the current market structure performs as well as it does for retail investors, and the significant likelihood that drastically altering the current structure will result in worse, not better, execution quality.

The proposed rules appear to be motivated by a misguided view that retail brokers’ use of wholesalers results in a non-competitive market, inferior execution quality for retail orders, and abnormally high profits for wholesalers. A more careful review of the current market structure and order handling practices for retail orders demonstrates that this view is not accurate. A review of practices at Schwab, the largest publicly-traded retail broker in the U.S., helps demonstrate why. The practice of routing to wholesalers allows retail customers to benefit from the efficiencies of outsourcing execution to broker-dealers who specialize in retail order execution, are willing to bring substantial capital to the table to offer liquidity to retail orders, and have access to many other liquidity sources. In addition, Schwab’s practice of regularly monitoring execution quality and re-allocating order flow based on performance creates intense competition across wholesalers, and aligns wholesalers’ incentives with those of retail customers.

The SEC's proposals include two key analyses that the SEC relies on for evaluating whether rulemaking is needed, and as a baseline against which they evaluate the impact of the proposed rules. One of these analyses investigates the availability of midpoint peg orders in the market at times when retail orders are internalized. The other compares realized spreads for retail orders executed by wholesalers with those of orders executed on exchanges. The SEC interprets these analyses as support for the proposed rules. The SEC uses these analyses to present a misleading picture of equity markets today, and the extent to which it results in a competitive outcome and good execution quality for retail investors. A deeper look at these analyses instead confirms that the current market structure serves the interests of retail investors remarkably well. Properly interpreted, the results of these analyses are not surprising or problematic. They confirm economic theory and the widespread understanding that retail order flow benefits from being segregated and handled by wholesalers. These analyses do not show that brokers are failing in their duty of best execution, nor that retail order flow is "isolated" from liquidity sources and systematically harmed.

I. Introduction

1. On December 14, 2022, the SEC released four rule proposals that collectively would have far-reaching implications for the structure of equity market trading generally, and for equity trading by retail investors in particular. These include “Regulation Best Execution” (“Best Ex Proposal”), “Order Competition Rule” (“OCR Proposal”), “Regulation NMS: Minimum Pricing Increments, Access Fees, and Transparency of Better Priced Orders,” and “Disclosure of Order Execution Information.”¹

2. This report evaluates the likely effectiveness of the SEC’s proposed framework for change to determine whether it can achieve higher efficiencies and investor gains than what is presently available—and at what cost. The focus here is primarily on the Best Ex Proposal. This proposal purports to create a new regulatory regime governing best execution obligations for brokers. The SEC’s proposed regime consists of three parts: (1) a new federal best execution standard established through SEC rulemaking (rather than via Financial Industry Regulatory Authority’s (“FINRA”) rules); (2) a detailed set of policies and procedures requirements set by the SEC by which the SEC will measure compliance with the new standard; and (3) a framework for assessing performance by way of an annual report to be provided by those subject to the proposed Rules.

3. The proposed best execution standard requires brokers to exercise a reasonable level of diligence in finding the best market for their client’s security order and to then transact in this market, with the expectation that they will thus get the best price for their customer (proposed Rule 1100). The language of this standard is virtually identical with that in the current FINRA and Municipal Securities Rulemaking Board (“MSRB”) best execution rules.² However, the application of the proposed standard looks, at least as currently drafted, much more prescriptive, leaving far less discretion in the hands of the broker seeking to service their client. The SEC sets out a detailed list of parameters by which to assess compliance with this new standard. It sets out indicators of compliance that establish the ways in which brokers must assess market conditions

¹ SEC Release No. 34-96496 (December 14, 2022), 88 FR 5440 (January 27, 2023); SEC Release No. 34-96495 (December 14, 2022), 88 FR 128 (January 3, 2023); SEC Release No. 34-96494 (December 14, 2022), 87 FR 80266 (December 29, 2022); SEC Release No. 34-96493 (December 14, 2022), 88 FR 3786 (January 20, 2023).

² FINRA Rule 5310, Best Execution and Interpositioning; MSRB Rule G-18, Best Execution.

and optimal routing for customer orders. For example, proposed Rule 1101(a)(1) creates new requirements for the process brokers must use to evaluate liquidity sources and to determine which markets should be included in their order routing logic. Proposed Rule 1101(a)(2) establishes requirements for the process brokers must use to decide (presumably in real time) where to route individual orders. Proposed Rule 1101(b) mandates that brokers seek out a broader set of potential liquidity sources, including ones that are not necessarily deemed material, if they are executing so-called “conflicted transactions.” These refer to orders that are subject to payment for order flow arrangements, executed as riskless principal trades, executed as principal trades, or routed to an affiliate for execution. Payment for order flow in this context is not limited to payments made by wholesalers for marketable order flow, but also includes rebates paid for sending orders to exchanges.³ In short, this definition encompasses the vast majority of order flow in today’s markets.

4. Proposed Rule 1101 therefore looks to be much more than a “policies and procedures” rule. Apparently, it necessitates a radical departure from current industry practice. Presently, retail order flow is executed by relying on wholesalers as executing brokers, and it is left to the wholesalers to determine the best way to execute each order. Wholesalers frequently internalize order flow to execute orders against others within their in-house order pool, or by using their own inventory of cash and securities to meet retail client demand. Wholesalers also seek out liquidity on national exchanges or off-exchange trading platforms (an alternative trading system, “ATS”) and then execute as riskless principal.⁴ Put another way, brokers generally do not route orders directly to an exchange or ATS. Instead, they rely on wholesalers (acting as executing brokers) to evaluate the quality of exchanges and ATSs as potential liquidity sources, and to incorporate them into their order routing logic. Moreover, many retail brokers are not presently acting as dealers, and do not possess the ample balance sheets or the deep pools of orders that would enable them to internalize bulk client order flow cheaply and quickly.

³ Best Ex Proposal, pp. 258, 259.

⁴ In a riskless principal trade, after having received an order to buy from a customer, a broker purchases the security from another seller to offset a contemporaneous sale to the customer at the same price, and vice versa.

5. As currently drafted, the proposal appears to require that retail brokers comply with Rule 1101 “separately” from the executing broker. It is not entirely obvious what this means. But one powerful, if worrying, interpretation is that retail brokers would not be allowed to rely on wholesalers to implement the processes required under proposed Rules 1101(a)(1) and 1101(a)(2). Retail brokers would have to comply with all aspects of proposed Rule 1101 independently, by performing a separate analysis to showcase compliance with these new rules and by developing their own routing technologies, without relying on executing brokers. To state the obvious, this would require retail brokers to take on a slew of tasks—search costs, routing, building operational infrastructure—that they rely on wholesalers to assume today. Because wholesalers have developed expertise and economies of scale in undertaking such execution functions, retail brokers would presumably have to spend enormous resources in order to either import such specialties into their own firms to prove compliance, or to develop them from scratch.⁵ A further observation is worth making. With Rule 1101 setting out a fairly prescriptive list of indicia that showcases broker compliance, the proposal also substitutes the judgment of the SEC for that of brokers themselves. By limiting broker discretion, firms can find themselves further constrained in how they handle order execution to ensure that they can prove compliance with proposed rulemaking.

6. Under this interpretation, then, the SEC is proposing to prohibit outsourcing the analysis and implementation of order execution to wholesalers. It is not clear why the SEC thinks this would be an efficient approach to best execution, nor why it should represent an improvement over the status quo. As explained in Section III, based on my review of best execution and order routing practices at Charles Schwab & Co., Inc. (“Schwab”), Schwab is demonstrably committed institutionally to the goal of securing best execution for its customers.⁶ In particular, it requires wholesalers to have access to nearly all of the material liquidity sources in the market, and to be willing and able to provide liquidity and price improvement by committing their own capital if necessary. Schwab regularly monitors and evaluates the execution quality of wholesalers using a variety of metrics and creates strong incentives for wholesalers to compete to provide the best quality of execution. The ability of wholesalers to internalize order flow plays an important role

⁵ Proposed Rule 1101(d); “Statement on Best Execution Proposal,” Chair Gary Gensler, December 14, 2022; Best Ex Proposal, pp. 8, 22, 76, 85.

⁶ “U.S. Equity Market Structure: Order Routing Practices, Considerations, and Opportunities,” Schwab Whitepaper, Q2 2022 (“Schwab Order Routing Whitepaper”).

in helping achieve best execution, especially as wholesalers are often willing to internalize orders immediately at improved prices, such as the midpoint, and at their full size.⁷

7. As a theoretical matter, a wholesaler might be tempted to internalize orders at inferior prices for the customer, or to ignore liquidity at better prices on other venues in order to trade at a more attractive price for itself. Presumably, this is why the SEC has proposed classifying such trades as “conflicted.”⁸ However, brokers such as Schwab typically can and do design processes to mitigate such conflicts. For example, falling prey to such conflicts will quickly undermine the ability of the wholesaler to earn future business from leading brokers like Schwab. Where a wholesaler internalizes orders at relatively inferior prices, its performance will be highlighted by Schwab’s execution quality metrics that are designed to systematically assess how effectively a wholesaler is performing in its delivery of execution quality to customers. As a result, if a wholesaler falls short, Schwab (and presumably other large brokers) would route less order flow to it going forward, diminishing the wholesaler’s capacity to generate liquidity and to sustain a business model dependent on large order flow volumes.

8. Wholesalers are far better positioned than retail brokers to gather and assess information about exchanges, ATSS, and dealer execution venues, to evaluate the likelihood a venue might have the best available price and sufficient liquidity, to measure and monitor execution quality on different venues, and to incorporate alternative venues into routing logic. To the extent the proposed Rules 1101(a) and 1101(b) are interpreted and implemented in a way that prevents brokers from taking advantage of the technological advantages and efficiencies of scale, retail investors will suffer in the form of inferior execution quality, higher costs, and greater uncertainty. Forcing retail brokers to develop technologies and expertise in-house that are currently outsourced (with provable gains for execution quality and efficiency) to wholesalers could impose expansive costs with the result that these additional expenses are ultimately passed on, in some form, to customers.

⁷ For example, TD Ameritrade advertises that its orders receive a 3.8x liquidity multiple relative to the quantity at the best displayed price for orders with a size greater than the available shares displayed at the NBBO at the time of the order routing. (See “Order Execution Quality,” TD Ameritrade, available at <https://www.tdameritrade.com/tools-and-platforms/order-execution.html>.)

⁸ It is unclear why the SEC considers riskless principal transactions to be conflicted and includes them in this category.

9. The SEC’s justification for proposing this package of rules is built on a view that the practice of routing retail order flow to wholesalers causes such flow to become “isolated” and systematically deprives them of opportunities to interact with liquidity providers who would be willing to provide a better price on national exchanges.⁹ The proposals’ accompanying releases claim that the market for providing liquidity to retail order flow is not fully competitive. They suggest that wholesalers are earning abnormally high economic profits.¹⁰ The “Economic Analysis” sections of the Best Ex and OCR Proposals put forward two data analyses that purport to support this view.

10. This report refers to these analyses as the “Midpoint Liquidity” analysis and the “Realized Spread” analysis. The Midpoint Liquidity analysis evaluates the amount of hidden liquidity available through midpoint peg orders at times when retail orders are internalized at prices worse than the quote midpoint. The Realized Spread analysis examines realized spreads on exchanges and at wholesalers, and purports to show wholesalers earn abnormal profits, or that other liquidity providers would be willing to provide more price improvement to retail marketable orders. The Best Ex and OCR Proposals rely on these two analyses to justify the need for new rules, and as a baseline against which they measure benefits.

11. As highlighted in Section IV, the SEC’s two analyses are fundamentally flawed in their design and do not economically justify implementing the proposed rules. Under careful scrutiny and benchmarked against real-world outcomes, the SEC’s analyses fail to credibly show that retail order flow is isolated. They also do not substantiate the claim that there is a lack of competition among liquidity suppliers to provide price improvement to retail orders. In short, these analyses fail to offer actionable evidence that the current best execution standard is failing retail investors, or that retail investors would benefit from imposing additional requirements on brokers that accept payment for order flow, execute orders as riskless principal, or route to an affiliate. Indeed, this report points to evidence that provably shows that U.S. equity market structure is flourishing on a

⁹ “Statement on Proposal to Enhance Order Competition,” Chair Gary Gensler, December 14, 2022.

¹⁰ OCR Proposal, pp. 212, 243; Best Ex Proposal, p. 233.

number of metrics, offering investors and public companies a competitive, low-cost, and predictable environment for executing orders.

II. Background

II.A. Overview of Proposed Rules of Best Ex Proposal

12. The SEC’s Best Ex Proposal proposes the following rules:

- a. Proposed Rule 1100 sets forward an overall standard for defining best execution using language that is very similar to the best execution standard currently described in FINRA Rule 5310 and MSRB Rule G-18. The major difference here lies in the legal nature of proposed rulemaking, with the SEC looking to create a federal standard promulgated under SEC rulemaking in place of the regulation imposed by FINRA—a private, industry self-regulatory organization (SRO).
- b. Proposed Rule 1101 is presented as a “policies and procedures” rule. It articulates new requirements for how brokers should comply with the best execution standard.
- c. Proposed Rule 1102 requires broker-dealers to review and assess their best execution policies and procedures on at least an annual basis. This report provides a basis for assessing compliance with the new standard.

13. Certain parts of proposed Rule 1101, specifically 1101(a) and 1101(b), impose additional requirements that look to be different from (and more prescriptive than) the existing FINRA and MSRB best execution rules. They are thus most likely to have economically consequential effects on broker-dealers and their customers by requiring potentially decisive shifts in the quality and composition of the service offered to retail customers.¹¹

¹¹ Proposed Rule 1101(c) requires broker-dealers to review and document the execution quality of customer orders at least quarterly, compare execution quality with other markets, and revise its best execution policies and procedures accordingly. Proposed Rule 1101(d) exempts an “introducing broker” that routes customer orders to an “executing broker” from separately complying with proposed Rules 1101(a), (b), and (c), subject to certain requirements.

14. Proposed Rule 1101(a)(1) requires broker-dealers to have policies and procedures that establish a detailed framework for how to comply with the proposed best execution standard (set forward in proposed Rule 1100). In particular, the policies and procedures must address how the broker-dealer will:

- a. Obtain and assess “reasonably accessible information” for markets trading the relevant securities.¹²
- b. Evaluate the range of liquidity sources and identify markets that may be “reasonably likely to provide the most favorable prices for customer orders” (these markets are defined as “material potential liquidity sources”).¹³
- c. Incorporate the identified “material potential liquidity sources” into its order handling practices and ensure efficient access to each of these sources.

15. Proposed Rule 1101(a)(2) requires broker-dealers to have policies and procedures to address how the “best market” is determined and how the broker-dealer will make routing decisions for customer orders. In particular, the policies and procedures must address how the broker-dealer will:

- a. Assess “reasonably accessible and timely information” that may result in the most favorable price for customer orders.¹⁴
- b. Choose “the market most likely to provide the most favorable price” for customer orders based on several prescribed factors.¹⁵
- c. Decide the number and sequence of markets to be assessed while reasonably balancing the possibility of finding a better price against the risk that delayed execution could result in a worse price for customer orders.

¹² Best Ex Proposal, p. 41. The “reasonable accessible information” can include “information about price, volume, and execution quality,” market information, and competition. *See* Best Ex Proposal, pp. 65–67.

¹³ The SEC states that material potential liquidity sources for an equity security can include a broad set of markets: exchanges, ATSS, broker-dealers (including market makers and wholesalers), and trading protocols and auction mechanisms operated by these entities, such as exchange limit order books, retail liquidity programs, midpoint liquidity, and wholesaler price improvement guarantees. *See* Best Ex Proposal, p. 72.

¹⁴ Best Ex Proposal, pp. 42, 80. The information that needs to be considered includes information with respect to the best displayed prices, opportunities for price improvement (including midpoint executions), and order exposure opportunities that may result in the most favorable price.

¹⁵ Best Ex Proposal, p. 42. The factors listed include the attributes of customer orders, trading characteristics of the security, size of the orders, likelihood of execution, accessibility of the market, and customer instructions.

Beyond these new requirements, proposed Rule 1101(b) requires brokers to implement additional policies and procedures for transactions that the SEC deems to be “conflicted.” The SEC’s categorization of conflicted transactions is broad and includes any order that is subject to payment for order flow, executed as riskless principal, executed as principal, or routed to an affiliate. This broad definition applies to virtually all retail order flow since it includes orders routed to wholesalers (which are typically subject to payment for order flow and are often internalized by the wholesaler),¹⁶ as well as orders routed to exchanges (which can receive liquidity rebates that the SEC considers as payment for order flow as well). Even if retail brokers stopped using wholesalers and developed in-house routing technologies, all non-marketable limit orders routed to traditional exchanges (or market orders routed to inverted exchanges) would still be classified as “conflicted.” For conflicted transactions, a broker-dealer must obtain and assess information *beyond* what is required by proposed Rule 1101(a)(1).¹⁷ That is, the broker-dealer must find and evaluate a broader set of markets beyond what the proposal refers to as the “material potential liquidity sources.”¹⁸ The broker-dealer is also required to document its compliance with these best execution policies and procedures for conflicted transactions.

II.B. Baseline: Best Execution for Retail Orders Today

16. In U.S. equity markets today, retail brokers provide a package of services to retail customers that obviously includes but is not limited to trade execution. Markets have evolved over time to reflect the economic reality that certain parts of this bundle are more efficiently performed in-house, while other parts are more efficiently outsourced. In particular, retail brokers have focused on carrying and servicing customer accounts (including custody services), extending margin credit to customers, providing access to competitive banking products, providing access to investment advisors, and providing customers with related services that can enhance their trading

¹⁶ Even if a retail broker does not accept payment for order flow, any order that is internalized by a wholesaler would still be classified as a conflicted transaction.

¹⁷ This includes “additional information about price, volume, and execution quality, in identifying a broader range of markets beyond those identified as material potential liquidity sources.” *See* Best Ex Proposal, pp. 110, 111.

¹⁸ Best Ex Proposal, p. 43. These additional markets “may be smaller or less accessible than those identified as material potential liquidity sources.” *See* Best Ex Proposal, p. 112.

experience (such as incidental investment advice, access to educational materials and research, and robust, user-friendly trading interfaces). The task of executing orders has meanwhile been almost entirely outsourced to wholesalers. In this role, wholesalers act as executing brokers for the orders and also as off-exchange market makers.

17. Crucially, this allocation of responsibility to wholesalers reflects an attempt by retail brokers to achieve high-quality trade execution for their customers, while navigating a market that is highly fragmented, with a large number of trading venues and potential liquidity sources. The current fragmentation of the market arose organically as a result of the SEC pursuing the core principles articulated by Congress for the development of the National Market System. The National Market is designed, by policy, to foster competition across exchanges and off-exchange venues, offering investors and traders a slate of venues on which to trade. In addition, in adopting Regulation ATS, the SEC formalized a network of less formal trading venues—ATSs or colloquially “dark pools”—that serve to offer choice and the potential for bespoke trading environments. Given these facets of the current equity market structure and what it offers to market participants, retail brokers look to experienced, well-capitalized, and highly skilled wholesalers to determine execution and routing logic for customer orders.

18. For instance, when a retail investor wants to buy or sell a security, they can place an order with their broker. The broker typically sends the customer order to a wholesaler, who can then execute the order in two primary ways. First, the wholesaler can act as a counterparty to the order, by trading out of its own inventory, often referred to as “internalization.” Most market and marketable limit orders routed to wholesalers are executed this way and receive midpoint executions or better over 44% of the time.¹⁹ Second, the wholesaler can facilitate executing the order with another counterparty. This can be done by routing an order to another trading venue on an agency basis (for example, this could be a displayed quote on an exchange or a hidden limit order on an exchange or an ATS), or more commonly by executing on a riskless principal basis (with no markup).

¹⁹ Best Ex Proposal, Table 6. Schwab receives even better execution than the industry average, with more than 50% of trades for market orders receiving the midpoint. *See* Schwab Order Routing Whitepaper, Exhibit 4.

19. Under the current regime, both the retail broker and the wholesaler handling the retail order have a best execution obligation. Retail brokers meet this obligation through rigorous and regular review of the execution quality provided by the wholesalers as executing brokers, and by conditioning their future routing decisions on this performance. This creates an incentive for wholesalers to compete with each other in a bid to provide the best possible result for the retail broker’s customers.

20. In turn, wholesalers meet their best execution obligation by routing to exchanges, ATSS, and other broker-dealers, or through internalization—which often provides price improvement and/or size improvement to marketable retail orders. Wholesalers enjoy several institutional advantages in this context:

- a. Leading wholesalers typically have robust balance sheets, providing an advantage in deploying capital to execute a large quantity of retail trades as a counterparty.²⁰
- b. Wholesalers have developed a business model that depends on ensuring access to all available liquidity pools throughout the market, which they are well-positioned to utilize owing to expertise, analytics, and experience in execution.

21. Given these highly specialized advantages, it is perhaps unsurprising that wholesalers nearly always provide a better price than the best publicly displayed price, often executing at the midpoint. For larger orders, they are often willing to fill orders for a greater quantity than the number of shares that are publicly displayed.²¹ By having access to all or nearly all of the significant liquidity sources in the market, such as exchanges, ATSS, and other broker-dealers, they are uniquely positioned to search for and efficiently access liquidity, including prices inside the bid-ask spread. Sizable balance sheets allow them to offer the best price available, even if this means that they deploy their capital by internalizing order flow. Wholesalers also develop search

²⁰ See, e.g., Citadel Securities 2022 Financial Statement.

²¹ The SEC’s own analysis shows that wholesalers execute close to 90% of shares with price improvement, more than 44% of shares at prices at or better than the NBBO midpoint and have substantially higher fill rates for marketable orders than exchanges. See Best Ex Proposal, pp. 235, 240. See also Schwab Order Routing Whitepaper, pp. 11, 14; “Measuring Real Execution Quality: Benefits to Retail Are Significantly Understated,” Presentation by Virtu Financial to SEC Investor Advisory Committee, August 27, 2021, p. 2; Battalio, Robert H. and Robert H. Jennings, “Why Do Brokers Who Do Not Charge Payment for Order Flow Route Marketable Orders to Wholesalers?” December 14, 2022.

and execution technologies, with the benefit of their expertise, analytics, and experience, to seek out the best price available in the market in situations where they cannot provide the best price. While non-marketable limit orders are price-protected and contribute to the price discovery process on exchanges, wholesalers provide enhanced liquidity and consistently increase the likelihood of an order being executed when compared to posting a non-marketable limit order on an exchange.

II.C. Implications of Best Ex Proposal

22. As described above, then, the practice of routing retail order flow to wholesalers has long been the industry norm. As wholesalers have continued to compete for order flow, they have invested in and developed the technologies and capabilities to generate high execution quality. For example, these include connectivity to a wide range of liquidity sources and sophisticated order handling technologies. Understandably, given the role of wholesalers, retail brokers have not made these same investments,²² even as their customers have reaped the benefits from the investments made by wholesalers.

23. In other words, retail brokers currently require the services of wholesalers to provide the level of execution quality that customers are enjoying and would not be able to provide this kind of high execution quality on their own. An individual broker will struggle to fully capture the efficiencies currently offered by wholesalers even after taking on the extensive capital investment necessary to acquire the technologies, connectivity, personnel, and expertise for navigating the thicket of venues and execution strategies.

24. For a start, each retail broker would essentially have to invest heavily to replicate the same kind of access into various trading venues and the strategic expertise that wholesalers currently

²² In the past, some retail brokers did develop in-house technologies to handle and execute order flow. These brokers began to offer the same services to other brokers, and then decided to spin off these units. It appears that this separation between introducing and executing brokers was an organic evolution toward a more efficient structure. For example, Schwab sold its capital markets unit to UBS AG in 2004, and E*Trade Financial Corp. sold its market-making business to Susquehanna International Group LLP in 2013. See “UBS Assembles the Ultimate Machine: Schwab Purchase and Best Execution,” *Traders Magazine*, October 31, 2004; “E*Trade Sells Market Making Unit to Susquehanna for \$75 Million,” *Traders Magazine*, October 23, 2013.

possess. This kind of duplication is obviously wasteful. Further, the extensive costs associated with these investments will most likely be passed on to customers. Smaller brokers, with fewer resources, will struggle the most. In any event, their shuttered or diminished businesses will present a cost on competition, not a gain. From the standpoint of clients, any increase in transaction costs will diminish incentives for retail investor participation and will be a step backwards for retail investors. Instead of enjoying commission-free trading, retail will most likely confront a revival of transaction costs. Facing such an expense, any gain that they look to make will have to be higher overall in order to compensate for these charges. For some investors, such costs will look prohibitive, eroding their savings, or prompting less frequent engagement with the market. For others, it might prompt greater risk-taking, to make the most of each transaction opportunity.

25. Second, without wholesalers, there would arguably be far less capital dedicated to providing immediate liquidity to retail customers. Brokers that are not already acting as dealers typically have smaller balance sheets and are unlikely to be in a position to internalize order flow on the same scale as wholesalers presently do. In addition, brokers would likely be less efficient at internalizing order flow (due to their exposure to a smaller pool of orders and a lack of expertise as compared to wholesalers) and thus less likely to provide the same level of price improvement that customers currently enjoy from wholesalers.²³ When brokers are unwilling to internalize, the order must be routed out to another venue, such as a public exchange. In these situations, it is also unlikely that customers will enjoy as much price improvement on exchanges compared to what they often receive today when internalized by wholesalers.

26. The Best Ex Proposal does not make clear which aspects of the current market design and delegation by brokers to wholesalers might continue. Retail brokers do not know whether they will be required to perform certain functions in-house that have historically been outsourced to wholesalers. Specifically, it appears that the Best Ex Proposal could well require brokers to independently: (1) identify potential liquidity sources; (2) incorporate liquidity sources into their routing logic; and (3) gather and use information about current market conditions when routing

²³ The Commission presumably hopes that the OCR Proposal will address this concern. For reasons explained below, and for reasons raised by other commenters, the OCR Proposal is poorly designed to promote good execution quality for retail orders.

orders. Apparently, this requirement would force brokers to perform tasks that they do not presently do and arguably cannot do with the same level of cost-effectiveness and expertise provided by wholesalers.

27. In sum, this proposal lacks any justifying rationale if the ultimate policy goal is to provide the best possible order execution quality for retail customer orders. Indeed, the reality is likely to be the opposite. This disconnect raises several questions for the SEC. Why should retail brokers be forced to acquire new capabilities and processes that can be more efficiently, effectively, and cheaply handled by wholesalers? Why should investors have to pay in the form of higher fees and inferior execution quality? Why should equity markets be transformed in service of a highly speculative and nebulous goal, when their present-day design appears to be offering retail customers better access, execution quality and efficiency than ever before?²⁴

III. The Current Regime Results in Vigorous Competition, Strong Best Execution Practices, and High Execution Quality for Retail Investors

28. The Best Ex Proposal implies that many retail brokers are not providing best execution to their customers. In doing so, the Commission alleges that the ecosystem for handling of retail flow is monopolistic and uncompetitive. This represents a deeply misguided and flawed mischaracterization. It is, quite simply, factually wrong for the SEC to use this assumption as a baseline against which to evaluate the benefits and costs of the proposed rules.

29. A more rigorous look at current practices shows that the status quo baseline is, in fact, much more positive for retail investors than the SEC describes. As a result, the proposed rules and the SEC's supporting analyses vastly overestimate potential benefits and fail to consider the multiplicity of risks to efficiency and execution quality.

²⁴ See, e.g., "The Impact of Zero Commissions on Retail Trading and Execution," Greenwich Associates, February 25, 2020 ("[R]etail investors, in fact, have never had it better. Not only have their commission costs come down to zero, but the services they receive have never been more advanced. ... [E]xecution quality metrics have continued to improve decade over decade. Significantly, we find that today's market makers are providing execution quality at the highest levels. ... [T]he markets have decades of history that show increasing service and improving execution to retail traders.").

30. I was able to interview and speak at length with personnel at Schwab regarding how they seek to provide best execution for their customers and the processes and practices they have in place to do so.²⁵ This section summarizes at a high level my understanding of the vigorous competition that animates retail brokerage as well as the high-quality execution outcomes available to retail customers under the current regime.

III.A. Brokers Encourage Rigorous Wholesaler Competition

31. Based on several in-depth interviews I conducted with Schwab, it is clear that Schwab seeks to provide best execution by carefully vetting wholesalers and encouraging rigorous competition among them to provide better results for Schwab's customers. Competition is encouraged at various stages and begins with Schwab's selection process for which wholesalers to choose for routing retail order flow.

32. Not all wholesalers are able to meet the rigorous demands of a large retail broker (Schwab has over 33 million customer accounts and averages more than 4.5 million customer trades a day),²⁶ and Schwab undertakes a diligent process to make sure the wholesalers have the capabilities to provide good execution quality to Schwab's customers. At a minimum, Schwab requires wholesalers to have direct connectivity to almost all of the venues in the market so that it has the capability of sourcing liquidity from whichever venues have the most favorable prices. There are numerous other considerations. Schwab has a lengthy survey that it requires from candidates. These questions include details about the structural organization of their firm, their trading technologies and systems, including redundancy and capacity to transact in an emergency, and their capacity to handle retail order flow (as measured in notional value of order flow). In particular, wholesalers being considered must meet certain capitalization requirements. This is because Schwab is not only assessing a wholesaler's ability to source liquidity, but their ability to provide price and size improvement to its customers by internalizing order flow. This is a major

²⁵ I note that Schwab recently acquired TD Ameritrade, combining two of the largest retail brokers in the U.S. The people I spoke with had experience at both brokers.

²⁶ Schwab 2022 Annual Report, p. 16; Schwab Recent Client Trading Activity Report, March 13, 2023 to June 9, 2023.

way in which Schwab seeks to provide best execution for its customers. The wholesalers that make it through the gauntlet of requirements are then added to the list of potential wholesalers used by the broker.

33. Once wholesalers are onboarded, Schwab regularly assesses their performance by monitoring execution quality metrics and incentivizes them to compete with one another. In particular, Schwab measures and compares a wholesaler's performance on the metrics that Schwab prioritizes, such as the ratio of Effective Spread to Quoted Spread ratio (EQ), percentage of shares with price improvement, and percentage of marketable shares filled.

34. Schwab utilizes third-party execution analytics and reporting along with in-house analytics and reporting. These reports and other analytics provided by third parties are additional information that Schwab can use to evaluate the execution quality of wholesalers and hold them accountable.

35. Schwab not only performs aggregate execution quality evaluations, but order-level evaluations as well. These processes are called "exception reporting," where the exceptions are (1) executed orders that received a price that its pre-set criteria deemed to be possibly out of line of the market, and (2) unexecuted orders that possibly should have received a fill. Exception reports provide details on orders for which there may be concerns about execution quality. This information empowers Schwab to make individual customers whole in instances when an order appears to have been mishandled.

36. This ongoing performance evaluation has direct consequences for the wholesalers, in ways that align the wholesalers' incentives with the best interests of Schwab's customers. Schwab adjusts the allocation of order flow to wholesalers periodically. Wholesalers that provided better execution quality for Schwab's customers in the previous periods (as measured by the metrics used by Schwab) will receive more order flow in the future. By conditioning routing allocations on performance, Schwab ensures that wholesalers do not have an incentive to internalize at prices inferior to what is available on external venues.

37. Schwab focuses its attention on the execution quality its retail customers receive. This allows wholesalers flexibility to optimize their order handling in a way they think will be most effective. In some situations, the wholesaler may be willing to internalize immediately at the midpoint or better. In other cases, the wholesaler may not have the capacity to offer the most competitive price and seek to find price improvement by searching alternative venues for hidden liquidity. Wholesalers can have different strategies for how and where they execute orders.²⁷ From Schwab's perspective, what matters is the superior experience for the retail customer. This allows Schwab's customers to benefit regardless of the particular strategy of a given wholesaler. If a wholesaler has an inferior strategy that adversely affects their ability to be competitive, Schwab's ongoing monitoring is designed to detect the change and respond accordingly.

38. Based on my review of practices that Schwab described, I find that brokers like Schwab diligently undertake processes and programs to provide customers with best execution and leverage the capabilities of wholesalers to achieve such outcomes. Schwab rigorously vets and monitors wholesalers to compete in providing the best price for a given order. In summary, the current best execution rules appear to have produced an environment that fosters robust competition that benefits retail investors in the form of better execution quality.

III.B. Other Best Execution Initiatives that Brokers Incorporate

39. In addition to instilling a competitive system among wholesalers to provide the best execution quality metrics, Schwab is proactive in other ways in their pursuit of best execution for their customers. Below, I describe some of these initiatives, as discussed with Schwab and studied by me further to these conversations.

²⁷ I understand that there are even some instances where wholesalers provide price improvement directly out of their pockets for an order. That is, a wholesaler might route an order to an exchange where it is filled without any price improvement. The wholesaler may then provide a price to the retail customer that is better than the price the trade was executed at. That incremental difference comes directly from the wholesaler and provides more price improvement than the order would have otherwise received.

40. Schwab seeks to regularly update how it allocates its order flow and regularly considers new and alternative routing venues beyond the ones it currently uses. This dynamic seeks to avoid institutional complacency. It also aligns with the importance of ensuring that clients benefit from the duty of best execution owed to them by Schwab. This updating can take the form of engaging new venues to assess execution quality. It can look to encourage new wholesaling entrants. While Schwab may not be able to work with all potential wholesalers (for example, wholesalers have to satisfy their eligibility requirements), Schwab tries to engage with potential new candidates. Schwab is open to sharing its requirements from candidates so that aspiring wholesalers can tailor their services to Schwab and potentially compete for order flow with other players.

41. A recent example of this practice is exemplified by Hudson River Trading LLC (HRT) which entered the wholesaling business in 2022.²⁸ Another example is Jane Street Capital, which entered the wholesaler market in 2019.²⁹ Jane Street did not immediately handle a substantial proportion of Schwab order flow and only began appearing in Schwab’s 606 reports in Q3 2021, where it accounted for close to 5% of order flow.³⁰ Since then, it has increased its share to approximately 15% based on Schwab’s Q1 2023 606 report.³¹ At the most recent SIFMA roundtable, a Jane Street representative stated that they are living proof that new trading firms can enter and compete for order flow.³²

42. Schwab also reviews and leverages public information to assess its routing practices and execution quality. Rule 605 mandates reporting of execution quality statistics by all venues that execute orders, including exchanges, ATSS, and off-exchange dealers, including wholesalers. 605 reports allow brokers like Schwab to compare the execution quality provided by the wholesalers it is using with the execution quality provided by other wholesalers it is not currently using. This is valuable information that helps Schwab assess the performance of potential executing brokers it is considering using. 605 reports also enable Schwab to observe the average execution quality

²⁸ See, e.g., “High-Frequency Trader Hudson River to Execute Retail Stock Trades,” *The Wall Street Journal*, June 30, 2021.

²⁹ See, e.g., “Debate Heats Up on SEC Market Structure Proposals,” *Traders Magazine*, May 2, 2023.

³⁰ Schwab Q3 2021 606 Report.

³¹ Schwab Q1 2023 606 Report.

³² “Equity Market Structure Roundtable: Part II,” SIFMA, April 19, 2023.

provided by other venues such as exchanges and ATSS. This has informed their decision to continue routing through wholesalers and not routing directly to exchanges. The 605 reports also allow Schwab to compare the execution quality it receives from a particular wholesaler with the average execution quality that is provided to other brokers by that wholesaler.

43. Rule 606 mandates reporting of order routing practices by brokers that route orders. These reports enable Schwab to observe where its competitors are routing their orders. It can also be useful intelligence. If Schwab observes that other similarly situated retail brokers are increasing or decreasing order flow to a particular venue, it can use these adjustments to inform its own analysis of which wholesalers and venues are providing optimal execution quality.

44. Schwab also periodically assesses its execution quality using data from the directed orders of its customers, that is, when customers request their order be routed to a particular exchange, trading venue, or market center. This provides an opportunity for Schwab to compare the execution quality of the directed order with that of a similar order (same size, same ticker) that was routed to a wholesaler. While directed orders are rare (less than 1% based on Schwab's most recent 606 Report),³³ this is another example of Schwab using all the means at its disposal to assess execution quality.

45. In summary, based on my review of practices at Schwab, Schwab appears to create strong incentives that encourage wholesalers to compete with each other vigorously to provide competitive execution quality for customer order flow, aligning the wholesalers' incentives with the interests of retail customers. Per my understanding, pushing wholesalers to compete with each other by performing rigorous analysis of execution quality is not unique to Schwab but is considered best practice in the industry. Importantly, rigorous and regular review is explicitly required under the FINRA rules.³⁴

³³ Schwab Q1 2023 606 Report.

³⁴ FINRA Rule 5310, Best Execution and Interpositioning.

46. This industry dynamic is clearly not consistent with the SEC's view that the practice of routing retail order flow results in orders being isolated from material liquidity sources and wholesalers earning monopoly profits. The SEC appears to be evaluating the rule's benefits against a benchmark based on an incorrect premise that the market is not competitive and there are many opportunities for improvement in order execution quality. Moreover, the SEC appears to be ignoring the risk that by passing a rule that discourages the use of wholesalers, it may be undermining the efficiencies achieved through outsourcing the role of the executing broker. Where retail brokers cannot afford to comply, their reduced presence within the market would undermine competition and customer choice—not enhance it.

IV. The SEC's Rule Proposals Rely on Flawed Economic Analyses that Present a Misleading View of Market Quality

47. If the Best Ex Proposal requires retail brokers to implement the policies and procedures specified in 1101(a) without relying on wholesalers, this would represent a radical shift from the status quo. It would appear to force brokers to move market quality analysis and order routing technologies in-house, functions that are efficiently outsourced to wholesalers currently. Moreover, with the OCR Proposal, the SEC is proposing that marketable retail orders become part of a mostly exchange-centric execution process, where exchanges become critical providers of the auction mechanism needed to support this new model of execution.

48. While these proposals are purportedly designed to improve order execution quality for retail investors, they reflect an experimental and empirically unsubstantiated step in the dark—the costs are likely to be substantial and the benefits (if any) are speculative and have not been justified under a reliable methodology. Moreover, these proposals appear to undermine prior SEC rulemaking (notably, Regulation NMS and Regulation ATS) that has created a network of competing platforms that offer investors choice, predictability, and low-cost, competitive execution.

49. In the Best Ex and OCR Proposals, the economic analysis is centered around two analyses, the Midpoint Liquidity analysis and the Realized Spread analysis. The SEC relies on these two

analyses to portray the current market structure as uncompetitive, where wholesalers are earning excess profits and retail customers are missing out on substantial opportunities for better execution quality. It appears that the SEC interprets these analyses as indicating a need for rulemaking, and as evidence that the rules might result in benefits to retail investors. As explained below, both of these analyses, as well as the SEC’s interpretations, are flawed and do not, therefore, support such a conclusion.

50. While I focus below on flaws in these analyses as they relate to *equity* markets, I note that the SEC’s Best Ex Proposal is much broader and covers all securities, including fixed income, options, and other securities, and potentially even crypto trading.³⁵ Neither the Midpoint Liquidity nor the Realized Spread analysis has anything to say about these other markets. There appears to be no analysis or other evidence in the Best Ex Proposal that even attempts to address the question of whether rulemaking is needed to address best execution in these other markets, or whether the proposed rules would benefit investors in non-equity asset classes.

IV.A. Midpoint Liquidity Analysis

51. The Midpoint Liquidity analysis finds that there are frequently hidden midpoint peg orders available in the market at times when retail orders are executed by wholesalers at prices worse than the midpoint. The SEC uses these results as supporting justification for both the Best Ex Proposal (Table 8) and the OCR Proposal (Table 20). In this section, I provide additional details on the analysis before discussing some of the ways the SEC has misinterpreted and misapplied the results of this analysis in seeking to justify its proposed rules.

52. The Midpoint Liquidity analysis is constructed using the SEC’s Consolidated Audit Trail (“CAT”) data for March 2022. Because the CAT data covers the entire market and includes information that is not publicly available, the SEC is able to analyze the availability of *hidden* liquidity available at the national best bid and offer (NBBO) midpoint (on exchanges as well as ATs). The analysis identifies instances when a wholesaler internalizes a retail investor’s

³⁵ SEC Proposes Regulation Best Execution, Press Release, December 14, 2022.

marketable order at a price worse than the NBBO midpoint. The SEC presents several different versions of this analysis, broken up by stock type, price group, and liquidity buckets.³⁶ The analysis reports the following measures:

- a. The percentage of shares internalized by wholesalers that were at prices less favorable than the NBBO midpoint (measured at the time the wholesaler received the order).
 - b. Of the shares internalized at prices less favorable than the NBBO midpoint, the percentage (hypothetically) that could have executed against hidden liquidity available at the NBBO midpoint.
 - c. The additional dollars of price improvement had the order traded against the hidden liquidity at the NBBO midpoint (expressed as a percentage of all price improvement provided by wholesalers).
53. The analysis appears to find that across all stocks during the month of March 2022:
- a. About 51% of marketable retail orders were executed at prices worse than the NBBO midpoint—implying that about 49% were executed at prices at or better than the midpoint.
 - b. For the 51% executed at prices worse than the midpoint, roughly 75% of the shares hypothetically could have been executed against hidden midpoint liquidity.
 - c. If all 75% of these shares had executed at the midpoint, it would have resulted in an additional 51% of aggregate price improvement relative to the price improvement already received from wholesalers.

³⁶ The stock types are: all stocks, S&P 500 stocks, non-S&P 500 stocks, and ETFs. The price groups are: all stocks, stocks with prices under \$30, stocks with prices between \$30 and \$100, and stocks with prices above \$100. The liquidity buckets are terciles (a low, medium, high category) and only applicable to the non-S&P 500 stocks and ETFs. *See Best Ex Proposal*, p. 247.

IV.A.1. Best Ex Proposal

54. For the Best Ex Proposal in particular (but also the OCR Proposal), the SEC uses the statistics from this analysis to justify a need for rulemaking, and as a basis for believing that the rule might result in benefits in the form of improved execution quality for retail investors. In particular, the Commission claims that retail customers “would benefit from robust considerations by retail broker-dealers regarding, for example, the possibility of available liquidity priced at the midpoint of the NBBO at other markets.”³⁷

55. An alternative view of the SEC’s analysis is that a remarkably high percentage of internalized retail orders, nearly half, are getting executed at the midpoint, thus providing support for a conclusion that wholesalers are already incentivized to provide good execution quality to retail orders. This also demonstrates that the capital provided by wholesalers for servicing retail broker order flow appears to be a crucial component of why the current market is well-functioning and results in such good outcomes for retail orders.

56. The SEC focuses on the 38% of orders where it appears to think there is room for improvement. However, its analysis with respect to this 38% is flawed for at least the following reasons that I elaborate on in greater detail below.

- a. First, the analysis appears to assume, counterfactually, that all the midpoint liquidity reported in CAT would be accessible and could provide liquidity to retail orders.
- b. Second, the SEC’s analysis appears to overstate the number of shares that receive prices worse than the midpoint by ignoring that the weighted average price for an order may incorporate midpoint pricing for a portion of the trade.
- c. Third, the SEC appears to incorrectly interpret untapped midpoint liquidity as evidence of a failure of best execution, especially in circumstances when customers have explicitly expressed a preference for speed and certainty of execution.

³⁷ Best Ex Proposal, p. 24.

- d. Fourth, the Midpoint Liquidity analysis measures potential benefits of the rule relative to an impossibly high benchmark that assumes brokers should *always* be able to find and execute against any midpoint liquidity reported in CAT. This benchmark is not only impossible for brokers to meet, but seeking to do so (by performing an exhaustive search for liquidity on every venue) would likely be inconsistent with best execution.
- e. Fifth, the SEC appears to ignore one of the most significant findings of the analysis—that roughly half of retail marketable order flow currently gets executed at the midpoint or better. In doing so, the SEC arbitrarily focuses its attention on the hypothetical benefits that may come if the proposed Best Ex rules induce brokers to search for midpoint liquidity in more venues, while ignoring the potentially larger costs of losing the current price improvement provided by wholesalers. This is a real possibility if the proposed rules, including the aggressive treatment of so-called “conflicted” transactions, lead retail brokers to no longer rely on wholesalers to handle order flow.

IV.A.1.a. Inaccessible Midpoint Liquidity

57. First, it appears that the Midpoint Liquidity analysis fails to consider real-world restrictions that would prevent a retail order from interacting with the midpoint liquidity identified by the SEC. There are a variety of reasons for this.

58. Exchanges operate under strict rules governing transparency and fair access to their platform. But ATS venues may be selective about who they allow access to and may only accept orders from subscribers. For example, some ATSS, such as BIDS and Purestream, cater to institutional investors only and do not accept retail orders.³⁸

³⁸ See, e.g., “About Us,” BIDS Trading, available at <https://www.bidstrading.com/about/company/> (“The BIDS ATS is open to all qualifying broker-dealers and their institutional clients, subject to basic credit and regulatory requirements.”); Purestream, available at <https://www.purestream.tech/> (“Designed by and exclusively for institutional traders.”).

59. Even if there is no venue-wide restriction, many ATS venues allow traders to set counterparty restrictions. Such capabilities can vary greatly by ATS and range from blocking specific subscribers, to blocking certain types of subscribers, to blocking subscribers based on their trading profile.³⁹ Depending on the ATS, liquidity providers may be able to submit order instructions that specifically preclude the order from executing against retail order flow,⁴⁰ or that preclude the order from providing liquidity to a particular broker, such as Citadel or Virtu. In other words, just because an ATS reports to CAT that it has midpoint liquidity in the book does not mean that this liquidity is available to be accessed by retail orders.

60. Orders submitted on some exchanges and ATSS can also specify “all or none” (“AON”) or “minimum acceptable quantity” (“MAC”) instructions.⁴¹ MAC orders allow the party submitting the order to specify a minimum number of shares that may be executed. By design, incoming orders smaller than the specified quantity cannot be executed against the order. Market participants use these orders if they do not want to trade with orders below a certain quantity threshold. This could be particularly relevant for institutional investors that want to conceal their order. To reduce the chance of information leakage, such investors may set the minimum quantity so that their order only executes against orders that fill a certain percentage of their overall order.

61. If retail order flow tends to be for smaller quantities, this increases the likelihood that internalized orders may not be able to meet the minimum acceptable quantity and would be blocked from executing against midpoint liquidity. Even a minimum size of 100 shares would exclude a substantial portion of retail order flow. According to a study by Cboe, 54.8% of all trades in the U.S. financial markets in 2021 were odd lots.⁴²

³⁹ See, e.g., “FAQs: Barclays ATS – LX,” Barclays, September 2022, pp. 5–6.

⁴⁰ See, e.g., Crossfinder Form ATS-N/UA, filed June 21, 2022, Part III: Manner of Operations, Item 11: Trading Services, Facilities, and Rules (“A Participant has the option to request the following configurations for its order flow generally... Opt-out of interacting with retail-originated flow...”).

⁴¹ See, e.g., “Order Types and Modifiers,” Nasdaq North American Markets, 2022. I note that all orders submitted on Purestream are required to have a minimum quantity of 1,000 shares. See Purestream Form ATS-N/UA, filed June 5, 2023, Part III: Manner of Operations, Item 8: Order Sizes (“All Order Types for both firm and conditional orders have a 1,000-share minimum size requirement.”).

⁴² See “An In-Depth View Into Odd Lots,” Chicago Board Options Exchange, October 27, 2021 (“Odd lots currently represent 54.8% of all trades in the U.S. financial markets, up from 43% at the beginning of 2020.”).

62. Beyond the restrictions described above, there may be other conditions and circumstances that would explain why a given order cannot be executed at the midpoint even if midpoint liquidity is available somewhere in the market (*e.g.*, some ATSS may not allow matching when the market is locked).⁴³ To properly account for all these considerations, the Midpoint Liquidity analysis needs to understand both the restrictions on the order offering liquidity and the characteristics of the order seeking liquidity to determine whether the orders could be matched with one another. To the extent the SEC has failed to consider such constraints on accessibility (and there is no clear mention of these issues when describing its methodology in the Midpoint Liquidity analysis), the Midpoint Liquidity analysis may grossly overstate the amount of available midpoint liquidity.⁴⁴

IV.A.1.b. The SEC Fails to Recognize that Prices Worse than the Midpoint May Incorporate Midpoint Pricing for A Portion of Shares

63. Second, it appears that the SEC's analysis is flawed and inflates the number of shares that were executed at prices worse than the midpoint. This is because the SEC appears to evaluate on an order-by-order basis whether the order *as a whole* received the midpoint or worse. This fails to recognize that the broker could have executed the order at a price that effectively gave the customer a midpoint execution for *a portion of the shares*. I understand from Schwab that wholesalers internalize orders at a single weighted average price. If wholesalers are aware of midpoint liquidity available on a particular venue, they may choose to internalize the order at a weighted average price that gives the customer the benefit of a midpoint execution for a portion of the order. If the order quantity is greater than the number of shares available at the midpoint, it is possible that the wholesaler would provide an average price that reflects the best prices currently available. Even if that average price is lower than the midpoint, it is incorrect to assume that the customer did not receive the benefit of executing at the midpoint for a portion of the shares.⁴⁵

⁴³ "DBSI SuperX ATS: Frequently Asked Questions," Deutsche Bank July 2020 ("Q Does SuperX match orders during a locked market? A By default, SuperX does not allow matching during a locked market.").

⁴⁴ It appears that the CAT data should have sufficient information for the SEC to have accounted for minimum quantity restrictions in their analysis, assuming that market centers are reporting this information properly. *See* "CAT Reporting Technical Specifications for Industry Members," Consolidated Audit Trail, June 30, 2020. I note that the Midpoint Liquidity analysis does not clearly mention whether there are any adjustments for minimum quantity.

⁴⁵ To illustrate, suppose a retail market order to buy 1000 shares arrives in the market when the best prices being offered across all venues are 500 shares offered at the quote midpoint of \$10, and another 500 shares offered at \$10.04.

IV.A.1.c. Midpoint Liquidity Does Not Imply a Failure of Best Execution

64. Third, even if a portion of the midpoint liquidity reported in CAT were accessible and available to provide liquidity to retail orders, this would not imply a failure of best execution. The SEC appears to misinterpret the statistics in the Midpoint Liquidity analysis as evidence of missed opportunities to receive the quote midpoint, and as evidence of a failure of best execution. This is incorrect. While price is an important factor in best execution, it is not the only consideration. To provide best execution, brokers must consider what is in the best interests of the customer. Midpoint liquidity could be available somewhere, but it does not mean that a broker acting in the best interest of a customer and fully meeting its duty of best execution is required to find it. As the Best Ex proposal itself points out, when brokers are searching for liquidity they should consider the dynamic between the opportunity to receive a better price and the delay in execution that could result in a worse price.⁴⁶

65. In particular, if a customer submits a *marketable* order, it reflects their explicit preference to prioritize speed and certainty of execution over price. For such customers, it may be optimal, and consistent with best execution, for the broker to execute orders immediately, or after searching for liquidity in only a small number of liquidity sources, rather than conducting an exhaustive search at every possible liquidity source, or even at every “material” liquidity source. As Table 1 of the Best Ex Proposal summarizes, there were 48 different venues (16 exchanges and 32 ATs) as of Q1 2022 where a wholesaler could potentially execute a customer order. Midpoint liquidity at just one of these venues would show up in the SEC’s Midpoint Liquidity analysis as a missed opportunity. As the SEC release concedes, because these midpoint peg orders are hidden, market participants cannot detect this hidden liquidity except by pinging venues one by one (by sending

The best price available for this order would be a weighted average price of \$10.02. Assume that a wholesaler internalizes the entire order at \$10.01, giving the order a better all-in price than it could have received anywhere in the market. In this situation, the SEC’s midpoint liquidity analysis would fail to recognize that using the wholesaler resulted in a better execution price, by \$10.00 (1000 shares times .01), and incorrectly assume 500 shares were executed at prices less favorable than the NBBO midpoint even though the weighted average price of \$10.01 reflects the midpoint price for 500 shares.

⁴⁶ Best Ex Proposal, p. 385.

an order).⁴⁷ The fact that the SEC can observe the midpoint peg orders in the CAT data does not mean it would have been consistent with best execution for the broker to risk a delay by searching for that liquidity.

66. More generally, retail brokers choose to use wholesalers because they help provide best execution along a variety of dimensions, not only seeking the best price. In addition to providing substantial price improvement, wholesalers can provide high quality execution along other dimensions, including size improvement, certainty of execution, speed of execution, and the ability to resolve trading errors. The Midpoint Liquidity analysis is conceptually flawed in its emphasis on only price and its failure to measure any other dimension of execution quality. A pursuit of midpoint executions, at the expense of other dimensions of execution quality, does not necessarily provide best execution to customers.

IV.A.1.d. The SEC Uses an Impossibly High Benchmark to Evaluate Potential Benefits

67. Fourth, the SEC does not provide any context for evaluating the percentage of supposedly available midpoint liquidity when trades are internalized. Nothing in the SEC's analysis evaluates whether the amount of unexecuted midpoint liquidity is higher or lower than one would expect with all brokers routing optimally. Implicitly, it appears as if the SEC is using an impossibly high benchmark (*i.e.*, brokers should *always* find and execute against any available midpoint liquidity) to evaluate and measure the potential benefits of the rule.

68. However, this is a flawed assumption as nothing in the SEC's analysis has shown that brokers or wholesalers failed to exercise an appropriate amount of diligence, handled any customer order inappropriately, or had their order routing decisions inappropriately influenced by a conflict of interest. There is also no evidence that the policies and procedures required under the Best Ex Proposal would lead to a higher percentage of shares executed at the midpoint. To the contrary, if brokers tried to look across all venues in the market to hunt for midpoint liquidity, it likely would result in worse execution for customers—pinging venues would be time-consuming, and the price

⁴⁷ Best Ex Proposal, p. 246.

could move unfavorably during that time. I note that for more liquid stocks in particular, the potential price improvement offered by the quote midpoint (a gain of only half a cent at most for stocks with a one tick spread)⁴⁸ could be outweighed by the potential risk of any unfavorable price movement (a loss of at least a cent or a non-execution). Sending the order to a large number of venues can also result in information leakage, especially for larger orders, because it runs the risk of receiving partial executions that can alert other market participants to the presence of the order before it is fully executed.

IV.A.1.e. The SEC Appears to Ignore or Take for Granted the Current Benefits that Retail Investors Enjoy from Wholesalers

69. Fifth, the SEC focuses on the midpoint liquidity that is hypothetically available for 38% of shares that were internalized by wholesalers,⁴⁹ but appears to ignore or take for granted that 49% of internalized shares already receive an execution at the midpoint or better. The SEC's analysis elsewhere shows that 84.7% of marketable shares are already receiving a price that is better than the best displayed price in the market (and this may even be for a greater quantity than the volume for the best displayed price).⁵⁰ Absent concrete evidence that shows that even more price improvement can tangibly be obtained—the Midpoint Liquidity analysis does not do this—the SEC's analysis suggests that the markets are actually well-functioning, with consistent benefits received by retail customers. As discussed above, it seems likely that the midpoint liquidity the SEC identifies includes many instances that are actually inaccessible to retail orders due to restrictions such as minimum quantity requirements.

70. The current price improvement received by retail customers is a real and tangible benefit that they enjoy as opposed to the hypothetical price improvement the SEC focuses on. What is more, the SEC provides no analysis of whether the price improvement that retail customers

⁴⁸ The gain would be less than half a cent if the order was already receiving some amount of price improvement that was worse than the midpoint.

⁴⁹ The Midpoint Liquidity analysis finds that 51% of shares internalized were executed at prices worse than the midpoint and roughly 75% of those shares could have been hypothetically executed against hidden midpoint liquidity (51% * 75% = 38.25%). See Best Ex Proposal, p. 247.

⁵⁰ OCR Proposal, Table 6.

currently enjoy might be adversely impacted by the proposed rules meant to chase after theoretical benefits. In particular, proposed Rule 1101(b) would place additional requirements for retail order flow routed to wholesalers beyond what is already required by proposed Rule 1101(a). If these requirements are too burdensome, brokers may choose to stop sending retail flow to wholesalers, which would likely result in substantially less price improvement for customers.

71. For the above reasons, the Midpoint Liquidity analysis fails to justify the Best Ex Proposal and cannot be interpreted as evidence that the proposed rule would improve execution quality for retail customers.

IV.A.2. OCR Proposal

72. While this paper focuses on the Best Ex Proposal, I note that the Midpoint Liquidity analysis is also used by the SEC as support for the OCR Proposal. In particular, the SEC appears to use the availability of midpoint liquidity to suggest that orders sent to qualified exchanges might be able to execute at the midpoint under the new auctions contemplated by the OCR Proposal. The SEC claims that the “auction message would act as a coordination mechanism” and that “broker-dealers could cancel their midpoint orders resting on exchanges and NMS Stock ATSs and instead submit them as an auction response priced at the midpoint.”⁵¹ This is a critical assumption and one that the SEC provides no evidence for, empirical or otherwise. To the contrary, there are conceptual reasons for why the opposite is likely to be true.

73. First, the midpoint liquidity identified by the SEC’s analysis is likely to be from institutional investors. Institutional investors tend to trade larger quantities and are more likely to be concerned about information leakage. The benefit of trading a few shares at the midpoint could be vastly outweighed by the potential impact of alerting the market to their intent to trade a large position. This would be especially true in auctions for less liquid tickers that wholesalers are unlikely to participate in. As a result, institutional traders would have a more difficult time concealing their presence if they bid in such auctions.

⁵¹ OCR Proposal, p. 274.

74. Second, there are already several retail liquidity programs (RLPs) that are currently active.⁵² These programs allow certain market participants to post hidden orders on exchanges that improve on the NBBO that can only be filled by incoming retail orders. However, the total trading volume on these venues remain small (less than 0.2% of total executed volume in 2021).⁵³ The limited success of these programs suggest that institutional investors are not eager to provide liquidity to retail investors. The SEC has not provided any empirical analysis to show why the OCR proposal would result in a different outcome than the current RLPs and why the auctions would serve as a more effective “coordinating mechanism.”

75. In summary, just because market participants are submitting hidden midpoint orders on ATs or exchanges does not mean those same traders would be willing to provide liquidity in a retail auction. In fact, the proposed auctions might lead to fewer retail trades that execute at the midpoint. Retail orders currently benefit from the service wholesalers provide in helping find liquidity at different venues. If the proposed rules discourage retail brokers from routing to wholesalers, then many retail orders may miss out on midpoint liquidity that is available on venues that do not cancel and resubmit to auctions.

IV.B. Realized Spread Analysis

76. Another key economic analysis the SEC relies on is the Realized Spread analysis. The SEC relies on a version of this analysis for both the Best Ex Proposal (Table 5 and Table 6) and the OCR Proposal (Table 5, Table 6, and Table 7). This analysis calculates and compares the realized spreads for marketable orders executed on exchanges versus those internalized by wholesalers. The SEC claims that realized spreads are lower on average for orders executed on exchanges. In

⁵² For example, IEX Exchange has a retail program that is “designed to bring high-quality trading at the midpoint to the retail community.” Retail liquidity providers (RLPs) are able to submit RLP orders that are non-displayed midpoint peg orders that will only execute against eligible incoming retail orders. Whenever there is at least one round lot of RLP interest at the midpoint price that improves upon the NBBO by at least 10 mils, a retail liquidity indicator is disseminated via IEX’s market feeds and the SIP. Both eligible retail orders and RLP orders trade for free. *See* “IEX Exchange Retail Program,” IEX Exchange.

⁵³ OCR Proposal, p. 208.

this section, I provide some additional details on the analysis before discussing some of the ways the SEC has misinterpreted the results of this analysis in trying to justify its proposed rules.

77. The SEC begins by comparing the realized spreads based on Rule 605 execution quality reports for marketable orders in the first quarter of 2022. It then supplements that comparison by calculating similar statistics with a bit more granularity (all stocks, S&P 500 stocks, non-S&P 500 stocks, and ETFs) over a larger sample using CAT data.

78. The key metric the SEC focuses on is the realized spread, which is calculated by comparing the execution price of an order to the NBBO midpoint a short period after the fill (five minutes in the case of the analysis based on 605 reports and one minute in the CAT analysis). The SEC's analysis finds that realized spreads are higher for internalized retail orders than for orders executed on exchanges and that the difference is driven by lower price impact for internalized orders.⁵⁴

79. The SEC interprets these realized spreads as the “potential profitability of trading for liquidity providers after accounting for the adverse selection risk.” The difference in realized spreads leads the SEC to suggest that wholesalers are currently earning higher economic profits than they would in a world of “order-by-order” competition (*i.e.*, the auctions outlined in the OCR proposal). In other words, the SEC appears to view these profits as abnormal profits that would somehow be competed away in the new market structure they envision and passed back to retail customers in the form of more price improvement, the amount of which they describe as the “competitive shortfall.” More generally, the Commission appears to characterize retail investors as receiving less than best execution if wholesalers are earning abnormal profits due to a lack of competition. I disagree with the SEC's views for several reasons.

- a. First, the Realized Spread analysis does not show evidence of a failure of best execution. On the contrary, the SEC's own analysis shows that retail orders sent to wholesalers receive better execution than orders sent to exchanges. The SEC provides no evidence that the proposed rules would lead to retail orders receiving

⁵⁴ Best Ex Proposal, p. 240; OCR Proposal, p. 268. The realized spread is a combination of the effective spread and the price impact.

better execution than they currently receive and overlooks the potentially larger cost of losing the current price improvement provided by wholesalers.

- b. Second, the Realized Spread analysis does not support a conclusion that wholesalers are earning abnormal (non-competitive) market maker profits, as the SEC insinuates, or that the amount of price improvement achieved by wholesalers is less than a fully competitive outcome.
- c. Third, the SEC appears to assume that in a competitive equilibrium, the realized spreads observed on exchanges should be equal to the realized spreads for retail investors and uses this assumption as the basis for their calculation of a “competitive shortfall.” The SEC’s assumption has no basis and is contrary to basic economic theory, as it implies that market makers should be willing to provide liquidity at a loss.

80. First, contrary to the SEC’s characterization of poor execution quality for retail customers, the statistics in the Realized Spread analysis are consistent with brokers seeking to provide best execution for their customers by routing retail order flow to wholesalers. The main takeaways from the SEC’s realized spread analysis are that compared to orders executed on exchanges, retail order flow handled by wholesalers (1) receives better execution quality and (2) has higher realized spreads. These results are consistent with the widely known fact that order flow routed to exchanges is fundamentally different in nature than retail order flow routed to wholesalers. It is well understood that by separating retail order flow from institutional order flow and revealing the identity of the broker, liquidity providers are able to reduce their adverse selection risk and execute retail orders at better prices as compared to a consolidated market. In sum, the evidence in the SEC’s realized spread analysis supports the view that retail order flow fares better when routing to wholesalers rather than to exchanges. Given these results, the SEC should take comfort that nearly all retail order flow is routed to wholesalers.

81. While the SEC appears to focus on the difference in realized spread as potentially forgone price improvement, they fail to provide any evidence that such price improvement is achievable. It is one thing to point to the difference in realized spreads, but there is no evidence that the

additional policies and procedures required by the proposed rule would result in liquidity providers having the same realized spread that liquidity providers have on exchanges currently. To the contrary, these proposed rules might disrupt the current benefits enjoyed by retail order flow. Thus, rather than improving execution quality, if the stated benefits of the proposed rules cannot be achieved and there are reductions in the existing benefits, retail customers may be worse off than they are currently.⁵⁵

82. Second, the SEC's interpretation of realized spreads is incorrect. As mentioned above, realized spreads capture the difference between the execution price and the NBBO midpoint over some length of time after the trade. It is not clear whether the Realized Spread is even a good proxy for a wholesaler's trading revenues, and it certainly does not measure profits. Nothing in the Realized Spread analysis evaluates the extent to which these purported revenues exceed the wholesalers' costs. There is no accounting for the fixed costs of maintaining connectivity with venues in the market, developing and operating a sophisticated routing system, and paying its employees, among other costs. It also fails to take into consideration the costs associated with payment for order flow. These costs can be used by the retail brokers to reduce fees and commissions, or to help pay for other services provided to customers without fees. Since realized spreads are not a measure of wholesaler profits, it cannot provide evidence of abnormal (non-competitive) market maker profits.

83. Third, the SEC concludes incorrectly that the realized spreads of liquidity providers on exchanges would be the equilibrium outcome in a competitive market. That is, the SEC appears to claim that with "order-by-order" competition under the OCR Proposal, market participants would bid so aggressively in auctions that the realized spreads for these orders would fall to the same level currently observed on exchanges. Notably, their analysis finds that level to be negative, meaning that market participants are suffering losses (after a minute) when they provide liquidity on exchanges.

⁵⁵ The risk of unintended changes may be especially heightened for more illiquid securities.

84. Market makers rely on liquidity provision to generate revenue and cover their costs. On average, they cannot be loss-making. If market makers regularly experience losses, they will either exit the market or they will provide less aggressive quotes. This is basic economics. It is flawed and incorrect to conclude there are liquidity providers willing to provide an unlimited amount of liquidity to retail investors at prices so aggressive that they would expect to be suffering losses on average.

85. Furthermore, many of the current liquidity providers on exchanges are not market makers, but institutional investors providing liquidity as part of trading algorithms to implement their long-term trading strategies. The SEC's analysis assumes that these institutional investors would be willing to pay more to trade in a retail auction than to trade against another institution. As mentioned above, it is unclear whether or not institutional investors would be willing to participate in auctions. For example, institutional investors may choose to be less active or less aggressive liquidity providers in auctions if there is a higher chance of informational leakage.

86. In summary, both the Best Ex and OCR proposals include the Midpoint Liquidity and the Realized Spread in their economic analysis. Using these analyses, the SEC attempts to portray the current market structure as one where retail orders are not receiving best execution due to the missed opportunities for price improvement (whether through untapped midpoint liquidity or abnormal wholesaler profits). The interpretations of these analyses then serve as the SEC's justification for rulemaking and as evidence that the rules might result in benefits to retail investors. However, as explained above, the SEC's interpretations of these analyses are flawed, and do not support such a conclusion. Instead, the analyses reveal a market that is well-functioning, but with liquidity fragmented across many venues, where many liquidity providers voluntarily choose to use venues or order types inaccessible to retail order flow, and retail brokers are doing a very good job obtaining high-quality executions for customers by relying on wholesalers.

V. Concluding Thoughts

87. Valued at \$44 trillion and representing approximately 41% of global equity market capitalization, the U.S. stock market is an economic crown jewel that stands ahead of its competitors in powering efficient capital formation, risk management, and investor welfare. Boasting a world-class network of 16 national exchanges and over thirty bespoke trading platforms, the U.S. equity market has, over the last two decades, radically transformed its market structure to deliver an extraordinary slate of economic gains across the board, supporting individuals in building their nest egg and expanding access to capital markets for underrepresented communities.

88. But more can always be done. The SEC is to be strongly commended for focusing on equity market structure as an arena for careful study, evaluation, and regulatory ambition. Recognizing the preeminent position of our capital markets, the SEC is working hard to avoid a temptation toward complacency and to always ensure that our markets can work even more safely and productively for retail investors. In showcasing a set of far-reaching proposals to structurally overhaul equity markets, the SEC is driving an essential conversation on equity market design, to aid stakeholders and policymakers in reflecting on the current performance of the marketplace and what needs to be done to further promote its efficiencies and capacity to deliver investor welfare.

89. While the SEC's goals in forwarding reform are laudable, the substance and assumptions underlying the proposals themselves are flawed. This report focuses its analysis on the SEC's Best Ex and OCR Proposals. These proposals seek to completely overhaul the manner in which mom-and-pop investors transact in the equity market. In these proposed changes, the SEC is outlining what would be an extraordinarily expensive and radical redesign of equity market structure without first demonstrating a viable and credible economic case for doing so. Rather, the logic revealed in the SEC's proposals is deeply flawed. It assumes that retail investors are being systematically short-changed and that their orders are executed within an anti-competitive environment. As a result, according to the SEC, the mom-and-pop investor would be better off under these SEC's proposals that, together, seek to decisively break with the existing system. As shown in this report, however, this logic is not only wholly misguided in its core assumptions—but if realized, threatens

to do enormous damage to the popular, cheap, and access-boosting mechanisms that have resulted in retail investors enjoying deep and predictable liquidity for their trades, as well as a highly cost-effective model to pay for it. In proposing to undo decades of progress and investment—both public and private—the SEC is putting forward a reform agenda that places investor protection as well as market stability in serious jeopardy.

90. Concretely, the Best Ex and OCR Proposals appear to do away with the current models used by brokers across the U.S. to execute retail order flow. Presently, brokers—including Schwab—rely heavily on wholesalers to execute orders of retail investors at competitive prices. Wholesalers specialize in offering execution services for bulk retail orders, often by using their (generally deep) balance sheets to provide liquidity for retail orders. The SEC is contending that this broker-wholesaler execution pathway is harmful and not competitive—and that investors would benefit from brokers subjecting retail orders to an auction process hosted by national exchanges.

91. But the SEC does not offer credible empirical evidence to make even a weak case that: (a) retail interests are being harmed on account of how their orders are currently being handled and executed; or (b) this new auction-based model would provide a more efficient and cost-effective system. Rather, the SEC’s economic analysis reveals a highly stylized and flimsy evidentiary basis on which its proposals are premised.

92. As shown above, there are substantial benefits to retail investors when brokers rely on wholesalers for execution of retail orders. First, wholesalers benefit from economies of scale by receiving order flow from multiple brokers and internalizing orders. Empirical finance studies show that retail investors gain from such intervention by wholesalers. Wholesalers provide execution at competitive prices—often at the prevailing midpoint which is better than the best displayed price—and often offering more liquidity than what is displayed on national exchanges. Liquidity needs can be met quickly and predictably—in other words, investors rarely have to wait for their orders to execute.

93. Second, wholesalers usually possess deep balance sheets, and have expertise and experience in accessing liquidity pools across the national market. This enables them to scour the market for the most optimal execution opportunities. Third, by virtue of their expertise and balance sheets, wholesalers offer gains that brokers individually could never provide their clients. In order to even attempt to recreate the same kind of access and expertise that wholesalers currently possess, brokers would face significant expenses that would, at least in part, have to be passed on to retail customers.

94. Today, due to a highly effective execution process, brokers can afford to offer zero commission trading as a matter of course to retail traders. This move has proven extraordinarily popular, encouraging new communities of investors to enter the market for the first time. To comply with their best execution obligations, brokers like Schwab rigorously monitor wholesalers to ensure that wholesalers are delivering high-quality execution outcomes for investors. Where wholesalers fall short, brokers can simply reallocate future retail order flow to a competing wholesaler. In short, far from being an anti-competitive space, brokers can push wholesalers to compete with one another to improve how well they meet the execution needs of retail investors.

95. By contrast, the SEC's case for introducing an auction-based model for retail execution is highly speculative and entails switching costs from a successful and well-studied execution model. Its introduction makes little sense, particularly in the context of a marketplace where retail execution is performing extraordinarily well. Even on their own terms, the SEC's empirical analyses lacks credibility.

96. For one, the SEC assumes a factually inaccurate worldview of the marketplace that leads it to vastly overstate the gains of proposed changes while underestimating the prospective harm to investors and market quality. To illustrate, the SEC assumes that wholesalers-brokers operate with limited competition, that wholesalers do not jostle for business, and that retail brokers are at the mercy of major wholesalers with limited influence over execution quality. None of these assumptions hold true when examined against current market practice.

97. As detailed in my report above, wholesalers compete to secure business from retail brokers. Brokers systematically hold wholesalers accountable by measuring execution quality and reallocating order flow from wholesalers that fall short. Regulatory reports also attest to retail brokers using a slate of changing wholesalers, highlighting a more dynamic relationship than what the SEC assumes. Moreover, allegations of limited competition are simply not borne out by the empirical data. Wholesale brokers generally provide very competitive prices to retail investors, often at the midpoint, and generally more liquidity than what is available on public exchanges and other trading venues.

98. Additionally, the SEC's proposals include two key analyses that the SEC relies on for evaluating whether rulemaking is needed, and as a baseline against which they evaluate the impact of the proposed rules. The SEC interprets these analyses as support for the proposed rules and uses them to present a misleading picture of equity markets today, and the extent to which it results in a competitive outcome and good execution quality for retail investors. A deeper look at these analyses instead confirms that the current market structure serves the interests of retail investors remarkably well. As shown in this report, properly interpreted, the results of these analyses are not surprising or problematic. They confirm economic theory and the widespread understanding that retail order flow benefits from being segregated and handled by wholesalers. These analyses do not show that brokers are failing in their duty of best execution, nor that retail order flow is "isolated" from liquidity sources and systematically harmed.