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March 31, 2023

Vanessa A. Countryman
Secretary
U.S. Securities and Exchange Commission
100 F Street, NE
Washington DC, 20549
rule-comments@sec.gov

Re: Disclosure of Order Execution Information / File No. S7-29-22, Regulation NMS: Minimum Pricing Increments, Access Fees, and Transparency of Better Priced Orders / File No. S7-30-22, Order Competition Rule / File No. S7-31-22, and Regulation Best Execution / File No. S7-32-22

Dear Ms. Countryman:

Decimus Capital Markets, LLC ("DCM") appreciates this opportunity to submit a very limited set of comments on the recent market structure rules proposed by the U.S. Securities and Exchange Commission (the "SEC" or the "Commission").[1] Collectively, these proposals represent the most significant overhaul of equity market structure since the adoption of Regulation NMS. Moreover, these proposals serve as the most comprehensive regulatory assessment of the business model and practices of off-exchange market makers, also known as wholesalers. This assessment and the underlying analysis by the SEC are undoubtedly controversial, as they are very likely to clash with the perspectives of numerous stakeholders, as well as other commentators, and generate additional empirical analysis,[2] which might necessitate a rule reproposal.

[1] Disclosure of Order Execution Information, Exchange Act Release No. 96,493, 88 Fed. Reg. 3786 (proposed Dec. 14, 2022) (to be codified at 17 C.F.R. pt. 242), https://www.govinfo.gov/content/pkg/FR-2023-01-20/pdf/2022-27614.pdf [https://perma.cc/QCU3-MDGA] [hereinafter Disclosure of Order Execution Information Proposal]; Regulation NMS: Minimum Pricing Increments, Access Fees, and Transparency of Better Priced Orders, Exchange Act Release No. 96,494, 87 Fed. Reg. 80,266 (proposed Dec. 14, 2022) (to be codified at 17 C.F.R. pt. 242), https://www.govinfo.gov/content/pkg/FR-2022-12-29/pdf/2022-27616.pdf [https://perma.cc/BNS5-P4CW] [hereinafter Minimum Pricing Increments, Access Fees, and Transparency of Better Priced Orders Proposal]; Order Competition Rule, Exchange Act Release No. 96,495, 88 Fed. Reg. 128 (proposed Dec. 14, 2022) (to be codified at 17 C.F.R. pts. 240 & 242), https://www.govinfo.gov/content/pkg/FR-2023-01-03/pdf/2022-27617.pdf [https://perma.cc/KJS8-N7RA] [hereinafter Order Competition Rule Proposal]; Regulation Best Execution, Exchange Act Release No. 96,496, 88 Fed. Reg. 5440 (proposed Dec. 14, 2022) (to be codified at 17 C.F.R. pts. 240 & 242), https://www.govinfo.gov/content/pkg/FR-2023-01-27/pdf/2022-27644.pdf [https://perma.cc/SJ6N-H628] [hereinafter Regulation Best Execution Proposal].
[2] One of such empirical studies taking a critical approach to the Commission's methodology and conclusions is Robert Battalio & Robert Jennings, On the Potential Cost of Mandating Qualified Auctions for Marketable Retail Orders (Mar. 28, 2023) (unpublished manuscript), https://ssrn.com/abstract=4403047.

DCM commends the Commission for its extensive empirical analysis of the model of intermediation by wholesalers, which addressed such key issues as the tradeoff between payment for order flow ("PFOF") and price improvement, the frequency of midpoint executions by wholesalers, adverse selection metrics for rerouted and internalized orders, the potential availability of midpoint liquidity, and the speed of execution of internalized orders. Likewise, DCM commends the Commission for reiterating that the duty of best execution extends to wholesalers.[3] It is worth noting that this reach of the duty of best of execution has significance for other recent regulatory initiatives, although not always explicitly acknowledged. As an illustration, the Commission described its recent Market Data Infrastructure rule as follows:

> [T]he Commission anticipated that, as the NBBO narrows for securities in the smaller round lot tiers, it may become more difficult for the retail execution business of wholesalers to provide price improvement and other execution quality metrics at levels similar to those provided under a 100 share round lot definition. To the extent that wholesalers are held to the same price improvement standards by retail brokers in a narrower spread environment, the wholesalers' profits from execution individual investor orders might decline, and to make up for lower revenue per order filled in a narrower spread environment, wholesalers may respond by changing how they conduct their business in a way that may affect retail brokers.[4]

However, under this analysis, any material economic change in execution quality ultimately observed by a retail broker, as opposed to a mere percentage change relative to an adjusted benchmark, might be an indication of past systematic breaches of the duty of best execution. This example also illustrates the interaction between market structure changes and best execution, as this interaction is of particular importance for the set of rules proposed by the Commission. More generally, under some circumstances, market structure changes may be more efficient than imperfect enforcement of the duty of best execution.

Disclosure of Order Execution Information / File No. S7-29-22

Without commenting on any technical aspects, DCM is generally supportive of the proposal to update Rule 605 as a way of enhancing best execution practices, and it agrees with the Commission's assessment that "financial service providers that are subject to best execution obligations would likely reevaluate their best execution methodologies to take into account the availability of new statistics and other information that may be relevant to their decision making."[5]

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[3] For the analysis of the reach of the duty of best execution to wholesalers and its implications by the undersigned, see Stanislav Dolgopolov, *Off-Exchange Market Makers and Their Best Execution Obligations: An Evolving Mixture of Market Reform, Regulatory Enforcement, and Litigation*, 17 NYU J.L. & BUS. 477 (2021), https://www.nyujlb.org/_files/ugd/716e9c_cc8ee2b23fd642f1a83ad978cc1a9eba.pdf [https://perma.cc/VMG4-7LK5] [hereinafter Dolgopolov, *Off-Exchange Market Makers and Their Best Execution Obligations*]; Stanislav Dolgopolov, *Wholesaling Best Execution: How Entangled Are Off-Exchange Market Makers?*, 11 VA. L. & BUS. REV. 149 (2016), https://ssrn.com/abstract=2744904.

[4] Order Competition Rule Proposal, *supra* note 1, at 203 (footnotes omitted).

[5] Disclosure of Order Execution Information Proposal, *supra* note 1, at 3884 (footnote omitted).

Regulation NMS: Minimum Pricing Increments, Access Fees, and Transparency of Better Priced Orders / File No. S7-30-22

In an earlier comment letter, DCM had pointed to "the problematic nature of tiered fee-rebate structures,"[6] and DCM is generally supportive of the Commission's approach to making fees and rebates to be determinable at the time of execution. DCM generally agrees with the Commission's public policy arguments in favor of this proposal.[7] Likewise, DCM supports the Commission's approach to "fair competition and equal regulation between OTC market makers, exchanges, and ATSs that compete for retail liquidity by requiring that NMS stocks trade with the same minimum pricing increment regardless of venue (i.e., on or off-exchange)"[8] and views such harmonization in conjunction with a finer price grid as essential for enhancing order-by-order competition, especially between lit and dark liquidity. As pointed out by the Commission, the European regulatory regime under MiFID II recently embraced the same approach,[9] and several public policy arguments in its favor were very similar.[10] However, the Commission should also provide a clarification on potential practices that might side-step such harmonization under the proposed tick size regime. For instance, a representative of a leading wholesaler recently commented on this contemplated regulatory change and observed that a wholesaler could simply split a single retail order routed to it in and execute such fractional orders at different prices in order to achieve some desired average price.[11] Given that wholesalers exercise a great deal of discretion over order flow routed to them, it is possible to split a retail order, potentially even into one-share orders, and execute such fractional orders simultaneously. Accordingly, the Commission should make a pronouncement whether this practice would be permissible or not as a deviation from the proposed tick size regime, which, of course, would be very different from splitting an order in a limit order book on a securities exchange or an alternative trading system ("ATS").

In addition, DCM recommends to the Commission to make a clarification on the permissibility of price improvement splitting on ATSs under the *existing version* of Rule 612. More specifically, in the proposed rule, the Commission made the following statement:

> ATSs also offer sub penny transactions separate from midpoint or benchmark trades. Some ATSs offer order types which effectively split the distance between the NBB or NBO and the midpoint. These trades offer price improvement to the liquidity demander – though not at the same levels as a midpoint trade – while still

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[6] Haim Bodek, Managing Principal & Stanislav Dolgopolov, Regulatory Consultant, Decimus Capital Mkts., LLC, Comment Letter to the SEC on Certain Issues Considered by the Equity Market Structure Advisory Committee 3 (Apr. 25, 2016), https://www.sec.gov/comments/265-29/26529-63.pdf [https://perma.cc/3MZM-A5ZL].

[7] Minimum Pricing Increments, Access Fees, and Transparency of Better Priced Orders Proposal, *supra* note 1, at 80,293.

[8] *Id.* at 80,279.

[9] *Id.* at 80,283 n.240.

[10] For a discussion of such arguments, see Dolgopolov, *Off-Exchange Market Makers and Their Best Execution Obligations*, *supra* note 3, at 488–90.

[11] *SIFMA Equity Market Structure Roundtable*, SIFMA, at 0:55:20–:59 (Sept. 13, 2022), https://events.sifma.org/equity-market-structure-roundtable (remarks of Joseph Mecane, Citadel Securities LLC).

> enabling the liquidity provider to earn at least some spread on the transaction. They are a form of pre-set price-improvement trades.[12]

While the Commission did not explicitly specify whether this practice would be permissible or not under Rule 612, an earlier enforcement action against UBS Securities LLC had addressed a hardly distinguishable form of spread splitting, also described as price improvement, on an ATS.[13] More specifically, the Commission described the impermissible practice of subpenny pricing in question as follows:

> Because the second component of the formula determining the price of a PPP order – a subscriber-determined percentage of the spread – nearly always yielded a sub-penny amount, PPP orders were nearly always priced in illegal, sub-penny increments. . . . When a resting PPP order executed in UBS ATS, the order that executed against it – such as one from a retail broker-dealer – received a slightly better execution price than if the trade had occurred at the bid or offer. Referred to as "price improvement," the magnitude of that improvement was dictated by the percent of spread component of the PPP order.[14]

Yet another enforcement action against an ATS operator described a similar practice of spread splitting as impermissible under Rule 612:

> Crossfinder accepted and ranked tens of millions of orders priced in sub-penny increments. Those sub-penny orders were generated through the use of three tags applied to orders destined for the ATS. Two of the tags permitted the subscriber to enter an order with a price specified as an adjustment to the national best bid or national best offer, either in increments of 0.01 cent or in increments of ten percent of the spread between the national best bid and national best offer ("NBBO"). With these order tags, subscribers could direct to Crossfinder an order, for an NMS stock with a one-cent spread, priced at the national best bid (or national best offer) plus (or minus) ten percent of the spread. Crossfinder accepted and ranked such orders at the resulting sub-penny price.[15]

Accordingly, the Commission should provide additional guidance on the permissibility of various price improvement splitting practices on ATSs and, more generally, whether there are any meaningful regulatory distinctions between ATSs and securities exchanges with respect to the application of Rule 612.

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[12] Minimum Pricing Increments, Access Fees, and Transparency of Better Priced Orders Proposal, *supra* note 1, at 80,306.

[13] UBS Sec. LLC, Securities Act Release No. 9697, Exchange Act Release No. 74,060, at 2–10 (Jan. 15, 2015) (settled proceeding), https://www.sec.gov/litigation/admin/2015/33-9697.pdf [https://perma.cc/TTF7-YP2T].

[14] *Id.* at 5–6.

[15] Credit Suisse Sec. (USA) LLC, Securities Act Release No. 10,013, Exchange Act Release No. 77,002, at 6–7 (Jan. 31, 2016) (settled proceeding), https://www.sec.gov/litigation/admin/2016/33-10013.pdf [https://perma.cc/63VQ-A72B] (footnote omitted).

Order Competition Rule / File No. S7-31-22

The proposed Order Competition Rule is probably the most significant (and controversial) regulatory initiative among these four reform measures. In an earlier comment letter, DCM had recommended to the Commission to consider "a rule that would require exposure of internalized order flow to competitive price improvement, for instance, through an exchange auction facility, for orders not meeting a minimum threshold price improvement requirement,"[16] but DCM certainly appreciates the complexity of the proposal and its interaction with the companion proposals. It is also instructive that the goal of order-by-order competition in the context of the business model of off-exchange market making has a very rich regulatory history that dates back to at least the 1970s, as recently analyzed by the undersigned (attached as Appendix A).[17]

Order-by-order competition also needs to be compared to the current market structure with its own competitive forces, as also recently analyzed by the undersigned (attached as Appendix B).[18] As a response to Questions 38 and 39 posed by the Commission, DCM wishes to reiterate several points from that analysis. One overarching comment is that various studies showing better execution metrics for retail customers offered by wholesalers compared to exchanges in the *current* market structure based on off-exchange segmentation should be treated with caution. Such studies do not amount to *conclusive* evidence that the current market structure is somehow optimal for retail customers relative to an all-to-all market structure or on-exchange segmentation based on order-by-by order competition, although this argument is not uncommon.[19] Of course, retail customers in the current market structure should and often do get a better deal relative to exchange executions precisely because of segmentation based on a more favorable profile of such order flow, and it is often optimal for individual retail brokers to send retail orders to wholesalers rather than exchanges. However, the very existence of segmentation does not unambiguously benefit retail customers.

As shown by a key industry study, in order to compare the current market structure to a *hypothetical* all-to-all interaction on exchanges, one needs to balance (i) the magnitude of price improvement currently offered by wholesalers and (ii) the magnitude of the NBBO compression caused by the hypothetical migration of safer order flow to exchanges, which may or may not wipe

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[16] Bodek & Dolgopolov, *supra* note 6, at 12.
[17] Stanislav Dolgopolov, *Order-by-Order Competition as a Regulatory Restraint on Off-Exchange Market Making: A Long Prelude*, MEDIUM (Dec. 9, 2022), https://medium.com/@s_v_dolgopolov/order-by-order-competition-as-a-regulatory-restraint-on-off-exchange-market-making-a-long-prelude-6d0c9427eb2e [https://perma.cc/8HY7-RPSQ].
[18] Stanislav Dolgopolov, *The Current Market Structure and the Challenge of Order-by-Order Competition: Models of Competition and Tradeoffs*, MEDIUM (Dec. 12, 2022), https://medium.com/@s_v_dolgopolov/the-current-market-structure-and-the-challenge-of-order-by-order-competition-models-of-competition-a3aad022e73a [https://perma.cc/Q88M-AUUG].
[19] *See, e.g.*, Letter from U.S. Sen. Thom Tillis et al. to Gary Gensler, Chair, U.S. Sec. & Exch. Comm'n 1–2 (Jan. 20, 2023), https://www.hagerty.senate.gov/wp-content/uploads/2023/01/1.20.23-Tillis-Hagerty-SEC-Letter-Market-Structure.pdf [https://perma.cc/VFZ6-84WQ] ("[M]ultiple independent academic analyses found zero evidence that the practice [of PFOF] leads to retail investors getting worse prices on stock trades. In fact, analysis conducted by Massachusetts Institute of Technology (MIT) researchers provided compelling evidence that retail investors received superior 'price improvement' and execution quality under [that] order routing system." (citing S.P. Kothari et al., Commission Savings and Execution Quality for Retail Trades (Dec. 2021) (unpublished manuscript), https://ssrn.com/abstract=3976300)).

out that price improvement.[20] While one might disagree with that study's data sample, specific methodology, or its ultimate conclusion that retail customers would be better off in an all-to-all market structure, it is hard to dispute the general approach. To the best of DCM's knowledge, there is only one similar empirical study that compares the current market structure to a hypothetical all-to-all market structure, which, however, concluded that retail customers are better off now.[21] Another iteration is on-exchange segmentation, which may potentially be even better for retail customers than an all-to-all market structure, although there is a recent academic study sceptical of retail order-by-order auctions based on the "winner's curse" approach.[22]

It is also critical to evaluate the arguments defending the current market structure from the standpoint of the services provided by wholesalers. As described by a leading retail broker,

> In the current market, Schwab typically routes client equity orders to non-exchange market centers [i.e., wholesalers], which is a form of strategic outsourcing that leverages the concept of comparative advantage. This model allows brokers (e.g., Schwab) to focus on providing low-cost access to the markets, omni-channel services, financial planning, and broader wealth management services – while non-exchange market centers can focus and invest heavily in sophisticated order routing / liquidity seeking capabilities, cutting-edge and resilient technology platforms, and highly specific risk management capabilities.[23]

Related arguments in favor of order flow arrangements between brokerage firms and wholesalers under the current market structure include "access[ing] markets and pools of liquidity to which [retail brokers] do not have direct connections (both on- and off-exchange),"[24] "navigat[ing] the complex order types and fee schedules of exchanges and ATSs [alternative trading systems],"[25] "provid[ing] enhanced fill rates [by] significantly increasing the likelihood that a non-marketable order is filled in its entirety compared to routing directly to an exchange,"[26] "incur[ring] meaningful trading fees to execute orders at exchanges and ATS[s], an expense . . . expect[ed to] fall to retail brokers if they routed orders directly to these market centers,"[27] and, more generally,

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[20] HITESH MITTAL, FOUNDER & CHIEF EXEC. OFFICER, AND KATHRYN BERKOW, SENIOR RESEARCHER, THE GOOD, THE BAD & THE UGLY OF PAYMENT FOR ORDER FLOW (May 3, 2021), https://f.hubspotusercontent10.net/hubfs/4982966/BestEx%20Research%20PFOF%2020210503.pdf [https://perma.cc/56J7-9N7Y].

[21] Anne Haubo Dyhrberg et al., *The Retail Execution Quality Landscape* (Charles A. Dice Ctr. for Fin. Res., Ohio St. Univ., Working Paper No. 2022-14, 2022), https://ssrn.com/abstract=4313095.

[22] Thomas Ernst et al., Would Order-by-Order Auctions Be Competitive? (Mar. 8, 2023) (unpublished manuscript), https://ssrn.com/abstract=4300505.

[23] THE CHARLES SCHWAB CORP., U.S. EQUITY MARKET STRUCTURE: ORDER ROUTING PRACTICES, CONSIDERATIONS, AND OPPORTUNITIES 8 (2022), https://content.schwab.com/web/retail/public/about-schwab/Schwab-2022-order-routing-whitepaper.pdf [https://perma.cc/2WX9-LQVZ].

[24] *Id.* at 9.

[25] *Id.* at 9.

[26] *Id.* at 10.

[27] Douglas Cifu, Chief Exec. Officer, Virtu Financial, Inc., Measuring Real Execution Quality: Benefits to Retail Are Significantly Understated 5 (June 10, 2021), https://www.sec.gov/comments/265-28/26528-8901054-242178.pdf [https://perma.cc/WG5F-UK8G]. However, in addition to bearing certain fees, at least some wholesalers also collect exchange rebates in connection with certain types of orders instead of remitting such rebates to brokerage firms, which might be a common practice. *See, e.g.*, E*TRADE Sec. LLC, Held NMS Stocks and Options Order Routing Public

"navigat[ing] and extract[ing] the fragmented liquidity that spans across public and private trading venues."[28] However, this group of arguments merely reflects the division of labor between customer-facing brokers and executing brokers that does not hinge on the key features of the current market structure, such as the existence of order flow arrangements, some of which may be exclusive or otherwise captive and hence problematic. The respective roles of an executing broker and a trading venue based on order flow arrangements and segmentation should be distinguished, as the division of labor in question is likely to emerge under an alternative market structure. While the array of services provided by an executing broker, under the current market structure or otherwise, is valuable, there is no inherent reason why such services should be "free" in the sense of being subsidized by wholesalers' trading profits. An alternative customer-facing broker-executing broker relationship could be based on an explicit commission structure, whether a flat fee, cost plus, based on some price improvement / execution metric, or something else. This commission would ultimately be borne by customers, but they might be better off economically as a result of potentially better execution quality metrics.

Ultimately, the benefits of the current market structure to the marketplace at large or certain groups of market participants, such as retail investors, must stem from the principal trading function of wholesalers rather than their role as executing brokers in the context of order flow relationships. Perhaps one of the strongest arguments in defense of the current market structure with all of its major elements is that it allows wholesalers to support less liquid / less active / less profitable names at the expense of more desirable ones. For instance, an executive of a leading wholesaler remarked that retail brokers request wholesalers to support a wide range of names, with many of them "not of particular interest to the buyside [i.e., institutional investors]," and also asserted that the proposed auction approach to order-by-order competition would lead to an even further concentration of liquidity in the top one or two hundred names.[29] An academic study provided a similar description of this argument:

Report, 2d Q., 2022, at 2 (July 27, 2022), https://cdn2.etrade.net/1/22072812590.0/aempros/content/dam/etrade/retail/en_US/documents/pdf/order-routing-reports/2022/606-ETRS-2022Q2.pdf [https://perma.cc/LD8Y-LBVN] ("In addition to revenues that Citadel may collect for executing or facilitating the execution of E*TRADE customer orders, Citadel also receives remuneration from U.S. securities exchanges to which it routes or directs E*TRADE customer orders in the form of rebates. Although E*TRADE has no knowledge of any facts to suggest that such is the case, these U.S. exchange rebate payments could, in theory, incentivize Citadel to route higher percentages of E*TRADE customer orders to particular venues over others, subject to Citadel's independent order routing and best execution obligations. Exchange rebates provided to Citadel for E*TRADE customer executions are not passed through to E*TRADE or its customers. E*TRADE does not share directly in any such rebates Citadel receives for executions of E*TRADE customer orders, although Citadel's receipt of such rebates potentially increases Citadel's revenue and thereby the source of funds Citadel may use to provide price improvement to E*TRADE customers, order flow payment to E*TRADE, and/or a combination of such payments."). Interestingly, a recent empirical study asserted the existence of yet another subsidy provided by wholesalers for orders routed to other trading venues: "[W]e find that even when wholesaler(s) choose not to internalize an order, they improve the prices received from other trading venues. In our sample data, the wholesaler(s) provides sufficient supplemental price improvement at their expense to turn what would have resulted in price disimprovement for the average externalized order in May 2022 into a modest level of price improvement." Robert Battalio & Robert Jennings, Why Do Brokers Who Do Not Charge Payment for Order Flow Route Marketable Orders to Wholesalers? 35–36 (Dec. 14, 2022) (unpublished manuscript), https://ssrn.com/abstract=4304124.

[28] CHARLES SCHWAB, *supra* note 23, at 13.

[29] *SIFMA Equity Market Structure Roundtable*, *supra* note 11, at 2:18:25–20:15 (remarks of Douglas Cifu, Chief Executive Officer, Virtu Financial, Inc.).

> Under broker's routing, a broker can evaluate a wholesaler on the performance across all orders, including different sizes, or stocks of different liquidity. This enables cross-subsidization, where wholesalers may make losses trading small stocks, compensated by profits trading large stocks. Switching to order-by-order auctions can substantially decrease market maker incentives to trade small stocks. As a result, the drop in small-stock liquidity, as well as retail investor welfare, can be particularly precipitous in smaller, less liquid stocks.[30]

Yet another commentator, as a criticism of the proposed auction approach, made the observation that "the broader the securities universe[,] the greater the likelihood that the wholesaler is accommodating orders in securities with increasingly limited liquidity (particularly, non-optionable stocks)" and pointed to "legitimate reasons why market makers need incentives to warehouse the risk of certain securities," while speculating that covering a broader set of names may involve order flow volume guarantees from a retail broker to a wholesaler to compensate for additional risk.[31] In other words, the phenomenon being described is a form of cross-subsidization between more desirable and less desirable names in a bundled set, which essentially constitutes a balance between trading obligations and privileges. This cross-subsidization effectively precludes order-by-order competition and requires the existence of excess profits for certain names in the bundle in question. In fact, the concept of cross-subsidization in market making, particularly in the context of the historical NYSE specialist system, is well known, and it should be connected to the existence of externalities in providing liquidity as an argument in favor of such an arrangement, under certain parameters, in order to benefit the marketplace as a whole.[32] In any instance, any relevant change to the current market structure might raise the issue of additional incentives for market makers in less liquid securities in a different form.[33]

The Commission did consider the possibility that "an additional cost for some orders may arise to the extent that lower execution quality for some orders currently subsidizes better execution quality for others,"[34] and this analysis was specifically extended to less liquid stocks in one of the proposed

[30] Ernst et al., *supra* note 22, at 4.
[31] Paul Rowady, *SEC Proposing Auctions?! Let's Understand Liquidity Economics First*, ALPHACUTION (Aug. 31, 2022), https://alphacution.com/sec-proposing-auctions-lets-understand-liquidity-economics-first/ (registration required).
[32] For a discussion by the author of the concept of cross-subsidization between groups of securities with different characteristics and the concept of externalities in providing liquidity in conjunction with some balance of trading obligations and privileges of market makers, see Stanislav Dolgopolov, *Linking the Securities Market Structure and Capital Formation: Incentives for Market Makers?*, 16 U. PA. J. BUS. L. 1, 4–5, 28–30 (2013), https://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1459&context=jbl [https://perma.cc/9MX3-BEYG] [hereinafter Dolgopolov, *Linking the Securities Market Structure and Capital Formation*]; Stanislav Dolgopolov, *Regulating Merchants of Liquidity: Market Making from Crowded Floors to High-Frequency Trading*, 18 U. PA. J. BUS. L. 651, 662–77 (2016), https://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1514&context=jbl [https://perma.cc/ZWZ7-6BGC].
[33] For a discussion by the author of various incentives for market makers in the context of such securities, see Dolgopolov, *Linking the Securities Market Structure and Capital Formation*, *supra* note 32.
[34] Order Competition Rule Proposal, *supra* note 1, at 215.

rules.[35] Accordingly, this scenario of cross-subsidization needs to be further analyzed, especially in terms of identifying any potential evidence proving or disproving that wholesalers effectively lose money on a certain subset of less liquid stocks on a consistent basis. Importantly, the Commission found empirical evidence that "the isolation of individual investor orders due to wholesaler internalizations may result in larger losses in potential price improvement for individual investors on their orders in less liquid stocks,"[36] which provides a critical perspective on the existence of such cross-subsidization.

Regulation Best Execution / File No. S7-32-22

DCM is generally supportive of a codified version of the best execution standard at the SEC level and agrees with the Commission's goal of seeking consistency between the proposed rule on best execution and the rules on best execution adopted by the relevant self-regulatory organizations.

As a response to Question 13 posed by the Commission, DCM is critical of the proposed exemption when "[a]n institutional customer, exercising independent judgment, executes its order against the broker or dealer's quotation."[37] At best, this exemption is redundant with the principle of following customer instructions to execute in a particular way in a particular market, which is also duplicated in clause (c) among the list of exemptions in the proposed rule. At worst, this exemption may mutate into a practice of de facto best execution waivers with inferior execution quality potentially in exchange for lower fees, depending on the nature of the market and the security in question. More generally, the existing regulatory regime does not treat favorably best execution waivers, provided that a relation giving rise to the best execution standard does exist.[38] While the Commission stated that the exemption in question would not apply in the scenario of "facilitating the handling and execution of those orders,"[39] such boundaries might end up being blurry and, once again, involve de facto waivers.

As a response to Questions 78 and 79 posed by the Commission, DCM is critical of the proposed requirement of "identifying a broader range of markets beyond the material potential liquidity sources" for conflicted transactions.[40] The materiality threshold probably indicates an inherently low value of such analysis, and, moreover, it is of importance how different *material* liquidity sources are being *prioritized* by the brokerage firm in question. More generally, the proposed

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[35] *See* Regulation Best Execution Proposal, *supra* note 1, at 5534 ("In equities, the Commission preliminarily believes that firms that internalize retail order flow provide liquidity to a wide range of securities, including those that are very thinly traded. In fact, fulfillment of these more difficult to fill orders may be part of a service bundle that internalizers provide to broker-dealers that route them their order flow.").

[36] Order Competition Rule Proposal, *supra* note 1, at 194. Another relevant piece of empirical evidence identified by the Commission is as follows: "[W]hile about 57% of the shares in individual investor marketable orders in non-S&P500 stocks internalized by wholesalers received executions at less favorable prices than the NBBO midpoint, there was nevertheless hidden liquidity available at the NBBO midpoint for about 68% of these non-S&P500 shares." *Id.* at 210.

[37] Regulation Best Execution Proposal, *supra* note 1, at 5555.

[38] Dolgopolov, *Off-Exchange Market Makers and Their Best Execution Obligations*, *supra* note 3, at 499–501.

[39] Regulation Best Execution Proposal, *supra* note 1, at 5452.

[40] *Id.* at 5467.

requirement could probably be replaced an enhanced analysis of conflicts of interest as a more meaningful measure.

As a response to Question 100, DCM is strongly supportive of the inclusion of "factors similar to those identified in FINRA rules and guidance, such as price improvement opportunities, differences in price disimprovement, likelihood of execution of customer limit orders, speed of execution, size of execution, transaction costs, customer needs and expectations, and the existence of internalization or payment for order flow arrangements."[41] A formalistic adherence to price as the overriding factor is likely to interfere with a variety of trading strategies and other preferences of certain customers. For instance, a trading strategy based on a *sequence* of transactions might depend on such factors as anonymity, speed of execution, and price impact, and an attempt to maximize price for every single transaction in isolation might interfere with the nature of the strategy itself. Furthermore, the factors provided by FINRA largely capture the multifaceted nature of the duty of best execution, as it is hard to craft an exhaustive list. However, "customer needs and expectations" is a key wide-ranging provision, which should definitely be included.

As a response to Questions 112 and 114, DCM is critical of the definition of an introducing broker that implies the existence of a *sole* executing broker that "execute[s] on an agency basis all of the introducing broker's customer orders."[42] It is common (and probably optimal) for some types of brokerage firms, such as major retail brokers, to rely on multiple wholesalers, which function as de facto executing brokers, and periodically reallocate order flow among them.[43] While such entities often offer PFOF and hence would not currently comply with the proposed definition of an executing broker, allowing for multiple executing brokers in the proposed rule would be preferrable, as long as all order flow is routed to such executing brokers.

* * *

Once again, we thank you for this opportunity to comment on these key market structure proposals.

Sincerely,

Stanislav Dolgopolov
Chief Regulatory Officer
Decimus Capital Markets, LLC

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[41] *Id.* at 5474.
[42] *Id.* at 5556.
[43] Dolgopolov, *supra* note 18.

Appendix A

Order-by-Order Competition as a Regulatory Restraint on Off-Exchange Market Making: A Long Prelude

Stanislav Dolgopolov

Medium, December 9, 2022

In his anticipated speech on reforming the retail segment of the equities space, Gary Gensler, the Chair of the U.S. Securities and Exchange Commission ("SEC"), zeroed in on the concept of order-by-order competition,[1] and the upcoming comprehensive proposal on equity market structure indeed includes a rule that "would require certain equity orders of retail investors to be exposed to competition in fair and open auctions before such orders could be executed internally by any trading center that restricts order-by-order competition."[2] There had been earlier indications of that regulatory path, and Chair Gensler had voiced an unmistakably critical perspective on competitive aspects of the business model of off-exchange market makers, commonly known as "wholesalers" or "internalizers," citing such factors as regulatory disparities for different types of market participants and industry concentration.[3] This time, Chair Gensler floated a potential regulatory solution:

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[1] Gary Gensler, Chair, U.S. Sec. & Exch. Comm'n, Market Structure and the Retail Investor: Remarks Before the Piper Sandler Global Exchange Conference (June 8, 2022), https://www.sec.gov/news/speech/gensler-remarks-piper-sandler-global-exchange-conference-060822 [https://perma.cc/Q7RG-94QD] [hereinafter Gensler, Market Structure and Retail Investor].

[2] *Open Meeting Agenda - December 14, 2022*, U.S. SEC. & EXCH. COMM'N (last modified Dec. 7, 2022), https://www.sec.gov/os/agenda-open-12142022 [https://perma.cc/9NFZ-ELWY] [hereinafter *SEC's Open Meeting Agenda - December 14, 2022*]. One financial firm is already suing the SEC in connection with its "request [under the Freedom of Information Act] to determine whether the SEC's rulemaking process included the legally required evaluation of potential investor harm and market risks, whether the SEC has solicited input from sufficiently broad sources and whether it had considered objective data before the Chair instructed the SEC staff to prepare new rule proposals for retail stock order handling and execution." Press Release, Virtu Fin., Inc., Virtu Financial Announces Commencement of Lawsuit Against the Securities and Exchange Commission to Compel Compliance with Freedom of Information Act Request (Nov. 29, 2022), https://ir.virtu.com/press-releases/press-release-details/2022/Virtu-Financial-Announces-Commencement-of-Lawsuit-Against-the-Securities-and-Exchange-Commission-to-Compel-Compliance-with-Freedom-of-Information-Act-Request/default.aspx [https://perma.cc/8EW7-4WEY]. Likewise, two U.S. Representatives have already expressed their concern that "order-by-order auctions . . . are not supported by robust empirical evidence that demonstrates the potential benefit these changes provide to American investor." Letter from U.S. Rep. Bill Huizenga & U.S. Rep. Josh Gottheimer to Gary Gensler, Chair, U.S. Sec. & Exch. Comm'n 1 (Dec. 7, 2022), https://s32566.pcdn.co/wp-content/uploads/2022/12/Huizenga-Gottheimer-12.7.22-letter-002.pdf [https://perma.cc/G8BJ-E9LG].

[3] *See, e.g.*, *Oversight of the U.S. Securities and Exchange Commission: Hearing Before the S. Comm. on Banking, Hous. & Urb. Affairs*, 117th Cong., at 1:21:16–:54 (forthcoming), https://www.banking.senate.gov/hearings/09/10/2021/oversight-of-the-us-securities-and-exchange-commission (remarks of Gary Gensler, Chair, U.S. Securities and Exchange Commission) ("[I]f a party is buying all the order flow or the bulk of order flow, then the order-by-order competition doesn't exist, so the retail public doesn't benefit from that competition. When I was growing up, you had competition. It wasn't modern technology, but it was competition on the floor of the New York Stock Exchange, and brokers could scream and yell at each other about what they were going to pay. Now, if one party is buying literally half the retail order flow in America of these market orders, that could actually have diminished competition in the marketplace."); Gary Gensler, Chair, U.S. Sec. & Exch. Comm'n, Prepared Remarks at the Global Exchange and FinTech Conference (June 9, 2021), https://www.sec.gov/news/speech/gensler-global-exchange-fintech-2021-06-09 [https://perma.cc/R4EC-BAY5]

[T]he vast majority of retail marketable orders are flowing to wholesalers that pay for this order flow. What's more, this segmentation means that institutional investors, such as pension funds, don't get to interact directly with that order flow. This segmentation—which isolates retail orders—may not benefit the retail public as much as orders being exposed to order-by-order competition. . . . I've asked staff to make recommendations . . . how to enhance order-by-order competition. This may be through open and transparent auctions or other means, unless investors get midpoint or better prices. The listed options exchanges have operated auctions for retail orders for many years. I've asked staff, in considering any recommendations for stock auctions, to draw upon lessons from the options market, focusing on assuring full competition among all market participants to provide the best prices for retail investors.[4]

The thrust of order-by-order competition, as described by Chair Gensler, is undoubtedly aimed at the "captive" nature of order flow arrangements between retail brokerage firms and off-exchange market makers. It is also an outgrowth of the lively public debate on the business model of off-exchange market making more generally, including such order flow arrangements and the practice of payment for order flow ("PFOF") channeled by wholesalers to customer-facing brokerage firms, which even reached the U.S. Congress, with the retail trading frenzy of the early months of 2021 centered around "meme stocks" being one of the focal points of this scrutiny.[5]

[hereinafter Gensler, Prepared Remarks at the Global Exchange and FinTech Conference] ("[W]holesalers have many advantages when it comes to pricing compared to exchange market makers. The two types of market makers are operating under very different rules. Exchange market makers, for example, must compete with each other on an order-by-order basis to offer the best price. Wholesalers are able to price their segmented order flow simply by referencing the NBBO [National Best Bid and Offer], which is a much less competitive benchmark. Now, let me add a second observation. Within the off-exchange market maker space, we are seeing concentration. One firm has publicly stated that it executes nearly half of all retail volume.").

[4] Gensler, Market Structure and Retail Investor, *supra* note 1. This approach had been suggested by other regulators in the past. *See* Luis A. Aguilar, Comm'r, U.S. Sec. & Exch. Comm'n, U.S. Equity Market Structure: Making Our Markets Work Better for Investors (May 11, 2015), http://www.sec.gov/news/statement/us-equity-market-structure.html [https://perma.cc/J9M8-SYU5] ("[T]he Commission should explore ways of exposing off-exchange trades to more competition. One possibility is to require trades negotiated in dark pools and with internalizers to be exposed to the exchanges for potential price improvement. This would essentially set up an auction process that would directly benefit investors, and could potentially enhance displayed liquidity." (citing HAIM BODEK, THE PROBLEM OF HFT: COLLECTED WRITINGS ON HIGH FREQUENCY TRADING & STOCK MARKET REFORM 69 (2013)) (footnote omitted).

[5] For several key congressional materials relating to this debate on the business model of off-exchange market making, see *Who Wins on Wall Street? GameStop, Robinhood, and the State of Retail Investing: Hearing Before the Subcomm. on Sec. of the S. Comm. on Banking, Hous. & Urb. Affairs*, 117th Cong. (2022), https://www.govinfo.gov/content/pkg/CHRG-117shrg46082/pdf/CHRG-117shrg46082.pdf [https://perma.cc/72VH-QBVT]; *Game Stopped? Who Wins and Loses When Short Sellers, Social Media, and Retail Investors Collide, Part I: Virtual Hearing Before the H. Comm. on Fin. Servs.*, 117th Cong. (2022), https://www.govinfo.gov/content/pkg/CHRG-117hhrg43966/pdf/CHRG-117hhrg43966.pdf [https://perma.cc/ZNF2-D4L6] [hereinafter *Game Stopped House Hearings, Part I*]; *Game Stopped? Who Wins and Loses When Short Sellers, Social Media, and Retail Investors Collide, Part II: Virtual Hearing Before the H. Comm. on Fin. Servs.*, 117th Cong. (2021), https://www.govinfo.gov/content/pkg/CHRG-117hhrg44343/pdf/CHRG-117hhrg44343.pdf [https://perma.cc/QQ53-T6BZ];]; *Game Stopped? Who Wins and Loses When Short Sellers, Social Media, and Retail Investors Collide, Part III: Virtual Hearing Before the H. Comm. on Fin. Servs.*, 117th Cong. (2021), https://www.govinfo.gov/content/pkg/CHRG-117hhrg44837/pdf/CHRG-117hhrg44837.pdf

Even before Chair Gensler's speech, an executive of a leading wholesaler expressed a critical view of the rumored direction: "Order-by-order competition enables selective competition because it removes the retail brokers' ability to demand best execution from wholesalers on every order."[6] This criticism mixes up the duty of best execution and the economics of execution services. Although the proposed regulatory approach is likely to change the economics of execution services and may have a disparate effect on certain types of orders and customers, the duty of best execution applies to each order regardless of the underlying market structure. As codified by the Financial Industry Regulatory Authority, Inc. ("FINRA"), this fundamental duty extends to "any transaction for or with a customer or a customer of another broker-dealer" in the context of order handling,[7] and the duty of best execution unambiguously applies to both customer-facing brokers and off-exchange market makers in the execution chain.[8] While FINRA has distinguished between the standards of "a regular and rigorous review" and "an order-by-order review" for the purposes of complying with the duty of best execution, with the latter standard applying to internalized and certain larger-sized orders,[9] the concept of order-by-order competition has a different meaning. The most reasonable interpretation of this concept lies in some form of exposure of retail orders for potential interaction with various market participants as a means to inject additional competition. Accordingly, the practical challenge for order-by-order competition is to craft a set of straightforward market-wide rules applicable to such retail orders, as opposed to the highly discretionary and more complex process of complying with the duty of best execution.[10] Also, other regulatory solutions in addition to auctions, which may complement or enhance order-by-order competition, appear to be on the table for equity market structure reform,[11] and all of them are virtually guaranteed to generate a variety of competing viewpoints.

[https://perma.cc/Y4GN-XWNR]; MAJORITY STAFF OF THE H. COMM. ON FIN. SERVS., 117TH CONG., GAME STOPPED: HOW THE MEME STOCK MARKET EVENT EXPOSED TROUBLING BUSINESS PRACTICES, INADEQUATE RISK MANAGEMENT, AND THE NEED FOR LEGISLATIVE AND REGULATORY REFORM (Comm. Print 2022), https://financialservices.house.gov/uploadedfiles/6.22_hfsc_gs.report_hmsmeetbp.irm.nlrf.pdf [https://perma.cc/GU77-WC22].

[6] Lydia Beyoud & Katherine Doherty, *SEC Weighs Sending Retail Stock Orders to Auctions for Execution*, BLOOMBERG (June 6, 2022), https://www.bloomberg.com/news/articles/2022-06-06/sec-weighs-sending-retail-stock-orders-to-auctions-for-execution (quoting Douglas Cifu, Chief Executive Officer, Virtu Financial, Inc.).

[7] *5310. Best Execution and Interpositioning*, FINRA, https://www.finra.org/rules-guidance/rulebooks/finra-rules/5310 [https://perma.cc/V7YN-2Z3K] (the last amendment effective as of May 9, 2014) [hereinafter FINRA Rule 5310] (cl. (a)(1)).

[8] Stanislav Dolgopolov, *Wholesaling Best Execution: How Entangled Are Off-Exchange Market Makers?*, 11 VA. L. & BUS. REV. 149, 173–76 (2016), https://ssrn.com/abstract=2744904.

[9] FIN. INDUS. REGUL. AUTH., INC., REGULATORY NOTICE NO. 15-46, BEST EXECUTION 3–4 (Nov. 2015), http://www.finra.org/sites/default/files/notice_doc_file_ref/Notice_Regulatory_15-46.pdf [https://perma.cc/M4FZ-CG6Q].

[10] This traditional nature of the duty of best execution is evident from FINRA's rule on best execution that mandates such non-mechanical concepts as "reasonable diligence to ascertain the best market," "regular and rigorous review," and "order-by-order review." FINRA Rule 5310, *supra* note 7 (cl. (a)(1)) & (Supplementary Material .09 Regular and Rigorous Review of Execution Quality)). Moreover, "[b]ecause the scope of the duty of best execution is constantly evolving and because the 'reasonably available' component of the duty is fact dependent, broker-dealers have long been required to conform customer order practices with changes in technology and markets." Newton v. Merrill, Lynch, Pierce, Fenner & Smith, Inc., 135 F.3d 266, 271 (3d Cir. 1998).

[11] Such contemplated regulatory measures include the tick size regime, visibility of better priced orders, and best execution requirements. *SEC's Open Meeting Agenda - December 14, 2022*, *supra* note 2.

Seeking a regulatory fix to enhance order-by-order competition signifies the SEC's return to its old stomping grounds over the course of several decades, and the regulatory agency's concerns over the business model of off-exchange market making is hardly a new phenomenon. Moreover, revisiting some of the regulatory landmarks may enhance the understanding of the current policy debates. As an introduction, one may look at the congressional hearings held back in 1974 on the regulatory framework for the "third market" in exchange-listed securities populated by off-exchange market makers and the SEC's authority over that marketplace.[12] These hearings from almost five decades ago, while held with the epic unfolding of the fixed brokerage commissions regime in the background, demonstrate the persistence of such key issues as potential regulatory restrictions on off-exchange trading in light of various conjectures about its impact, concerns about uneven regulation of securities exchanges and off-exchange market makers as competing trading venues, and impediments to interaction of retail and institutional order flow.[13]

With respect to the last item on the list, it should be noted that Chair Gensler's speech specifically acknowledged the concern that "institutional investors, such as pension funds, don't get to interact directly with that order flow."[14] Currently, this concern is often framed by some stakeholders, notably, the institutional investor community, as the one of "inaccessible liquidity," given the existence of segmentation that constraints direct interaction of institutional order flow with "safer" retail order flow.[15] Intriguingly, that concern was turned on its head back in 1974: the underlying problem was that retail order flow going directly to exchanges could not directly interact with institutional order flow going through off-exchange market makers. As formulated by John J. Needham, the Chairman of the Board of Directors of the New York Stock Exchange ("NYSE"), "[W]hy won't the third markets firms let the investing public, the little guy get in on these trades?"[16] This comment triggered a sarcastic remark by none other than Senator Joseph Biden: "Your concern for the little guy is admirable."[17] Similarly, NYSE Chairman Needham articulated the argument about the exclusivity and secrecy of transactions between off-exchange market makers and institutional investors: "The primarily institutional third market has little, if any, individual participation. . . . All of these transactions between dealers and institutions take place

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[12] *SEC Authority Over Third Market Trading: Hearings Before the Subcomm. on Sec. of the S. Comm. on Banking, Hous. & Urb. Affairs*, 93d Cong. (1974), https://books.google.com/books?id=c6gQAAAAIAAJ [hereinafter *Senate Hearings on SEC Authority Over Third Market Trading*]. For a discussion of the preceding debates on potential restrictions on the third market and the place of off-exchange market makers in the envisioned "central market system," which involved the securities industry, the regulators, and the legislators, see SUBCOMM. ON SEC. OF S. COMM. ON BANKING, HOUS. & URB. AFFAIRS, 93D CONG., SECURITIES INDUSTRY STUDY 93–96, 101–04, 119–26 (Comm. Print 1972), https://books.google.com/books?id=9OHPAAAAMAAJ.
[13] *Senate Hearings on SEC Authority Over Third Market Trading*, *supra* note 13, *passim.*
[14] Gensler, Market Structure and Retail Investor, *supra* note 1.
[15] For a description of this concern and its implications for competition and price discovery, see Stanislav Dolgopolov, *Off-Exchange Market Makers and Their Best Execution Obligations: An Evolving Mixture of Market Reform, Regulatory Enforcement, and Litigation*, 17 NYU J.L. & BUS. 477, 544 & n.255 (2021), https://www.nyujlb.org/_files/ugd/716e9c_cc8ee2b23fd642f1a83ad978cc1a9eba.pdf [https://perma.cc/VMG4-7LK5] [hereinafter Dolgopolov, *Off-Exchange Market Makers and Their Best Execution Obligations*].
[16] *Senate Hearings on SEC Authority Over Third Market Trading*, *supra* note 12, at 94. As more vividly described by an industry group's representative, "[W]hen a third market firm purchases that block of stock . . . Aunt Jenney in Chattanooga [trading on an exchange] is not able to participate in that transaction." *Id.* at 76 (remarks of H. Virgil Sherrill, member of the Executive Committee, the Board of Directors, and the Governing Council, the Securities Industry Association).
[17] *Id.* at 94.

in the privacy of the dealer's office—or, if you will, in secret."[18] In response, Donald E. Weeden of Weeden & Co., probably the most prominent off-exchange market maker at the time, stated than a significant portion of his firm's trading was attributed to "broker-dealers who are dealing directly with and servicing the small public investor."[19] In any instance, it had been recognized long before these hearings that institutional investors were especially drawn to the third market because of the existence of the fixed brokerage commissions regime on the NYSE and other exchanges, given such characteristics of the commission structure as "[the lack of a] graduated discount for the larger transactions in which tend to deal [and the bundling of] the cost of services other than the basic brokerage function—services often of little interest or value to an institution."[20] Not surprisingly, "the off-board market maker ha[d] considerable latitude in quoting prices to institutions net of commissions that [were] better than the combination of Exchange price and commission."[21]

Referring to the SEC's authority to ban the third market as the lynchpin of the proposed legislation, NYSE Chairman Needham specifically referred to the all-to-all interaction on exchange markets as "combin[ing] the elements of fairness, orderliness, full disclosure and equal treatment": "[T]he central issue addressed by the bill is whether the orders of public investors in listed stocks should be exposed to all other orders of public investors in these stocks."[22] Moreover, when questioned by Senator Biden, he explicitly stated that "[t]he third market shouldn't exist," citing his concerns about fragmentation as being "detrimental to the public interest."[23] In turn, Senator Biden offered an amusing analogy, which nevertheless conveyed an important point about winners and losers created by anti-fragmentation rules: "If I own half the pie and you own half the pie, it is fragmented. If I want your half to be coupled up with my half on my table[,] we are bringing it together. If you want my half coupled up with your half on your table[,] we are bringing it together, too. We have a central pie, all whole and full. It all depends on whose table it is on."[24] Likewise, Senator Biden expressed the view that the third market served as "a competitive force to stock exchange specialists."[25] In its turn, as conveyed by SEC Chairman Ray Garrett, Jr., the regulatory agency appeared to be interested in having the flexibility to restrict off-exchange trading, if that explicit authority were to be offered, but did not expect this measure to be an absolute necessity.[26] As "[t]he least disruptive action," the SEC considered the possibility of mandating off-exchange market makers "to expose all of their business to the specialist's book to give the public an

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[18] *Id.* at 80.
[19] *Id.* at 135. The phenomenon of trading activities between off-exchange market makers and other broker-dealers representing their own customers had been documented much earlier. *See, e.g.*, U.S. SEC. & EXCH. COMM'N, REPORT OF SPECIAL STUDY OF SECURITIES MARKETS, H.R. Doc. No. 88-95, pt. 5, ch. VIII(D), at 139 (1963), https://books.google.com/books?id=timLsce47vQC [hereinafter SEC's 1963 SPECIAL STUDY] ("Some market makers specialize in business with institutions, some with broker-dealers, and some with a combination of both. The securities traded include not only institutional favorites but many which may be considered popular primarily with individuals. The range of transaction size shows a preponderance of large deals but also a surprisingly high percent of odd lots, apparently transacted by broker-dealers for individual public customers.").
[20] SEC'S 1963 SPECIAL STUDY, *supra* note 19, pt. 5, ch. VIII(D), at 140, https://books.google.com/books?id=timLsce47vQC.
[21] *Id.*
[22] *Senate Hearings on SEC Authority Over Third Market Trading*, *supra* note 12, at 80.
[23] *Id.* at 95.
[24] *Id.* at 97.
[25] *Id.* at 33.
[26] *Id.* at 18–21, 26–29.

opportunity to participate in their trades," while maintaining that such an approach "could be anticompetitive."[27]

Another key historical episode relates to the relaxation of off-board trading restrictions by the SEC in the late 1970s – early 1980s. For instance, the regulatory agency described the adoption of Rule 19c-3 in 1980 as "the opportunity for competition between the over-the-counter and exchange markets with concomitant benefits to investors."[28] At the same time, the SEC acknowledged the concern about "'internalization' by broker-dealer firms with large retail order flow or sizable correspondent networks," meaning that such order flow would not be "expos[ed] to buying and selling interest in . . . other market centers."[29] Notably, the regulatory agency described the arguments advanced by some commentators that internalization would be "perfectly appropriate if conducted on the basis of 'quote matching,' *i.e.*, providing an execution in one market center at a price equal to the best price displayed in the consolidated quotation system" and that "retention of order flow by a market center did not raise competitive concerns if . . . the customer is given a price which is equal to or better than the best price available in any other market."[30] The practice of quote matching in off-exchange trading was probably already quite common, as evidenced by the SEC's recognition that "[o]rders sent to regional exchanges or the third market are often executed in those markets without any intermarket exposure, either because they are executed there as a result of previously negotiated price protection against transactions in the 'primary' market or because they are executed, on an automated basis, based on a derivative pricing formula."[31] This observation of the marketplace's realities also offered a stark contrast to the regulators' earlier vision of an off-exchange marketplace and its interaction with exchanges as driven by displayed liquidity and quote-based competition:

> *[E]ach market maker's bids and offers would have to be competitive in terms of price and size compared to the prices and sizes of other market makers' bids and offers in order to ensure a regular flow of order inquiry; failure to maintain a competitively priced market of reasonable depth would be penalized by a loss of orders . . . . Spreads, the differences between market makers' bid and asked prices, should be narrowed as the bids and offers of various market makers compete with each other to attract order flow and opportunities to achieve executions.*[32]

Overarchingly, the SEC acknowledged the concern that some order exposure rule might be desirable and stated that it could be accomplished through "a trading system which provides an opportunity for interaction of order flow and exposure to other over-the-counter and exchange

[27] *Id.* at 30, 33.

[28] Off-Board Trading Restrictions, Exchange Act Release No. 16,888, 45 Fed. Reg. 41,125, 41,126 (June 10, 1980) (codified at 17 C.F.R. § 240.19c-3), https://archives.federalregister.gov/issue_slice/1980/6/18/41124-41135.pdf [https://perma.cc/K3GH-A56P].

[29] *Id.* at 41,128 & n.31.

[30] *Id.* at 41,128.

[31] *Id.* at 41,129.

[32] Off-Board Trading by Members of National Securities Exchanges, Exchange Act Release No. 11,942, 41 Fed. Reg. 4507, 4512 (Dec. 19, 1975) (codified at 17 C.F.R. § 240.19c-1), https://archives.federalregister.gov/issue_slice/1976/1/30/4507-4528.pdf [https://perma.cc/Q9EX-PYBA]. In that context, the SEC also stressed the importance of "a communications tool such as a composite quotation system, reflecting firm bids and offers by all market makers [as] a prerequisite to the kind of competitive interaction which guarantees achievement of the benefits expected of 'fair competition' among market makers." *Id.* at 4513.

market makers," perhaps combined with some minimum exposure time.[33] Interestingly, as described above, the focus of the regulators and the securities industry appeared to have shifted from institutional to retail orders traded off-exchange, including order flow arrangements between broker-dealers, which probably reflected the evolution of the marketplace in the aftermath of the abolition of the fixed brokerage commissions regime.[34]

In due course, the SEC proposed two versions of such an order exposure rule in 1982.[35] The regulatory agency described the gist of the these two alternative rules, which would have covered either only off-exchange market makers or both off-exchange market makers and exchange specialists, as follows: "[A] firm would be required publicly to bid or offer the customer order at an eighth [corresponding to one price increment] better than its proposed execution price, which must equal the best prevailing quotation to avoid a trade-through, in order to elicit any interest at that better price from other market centers."[36] Such customer *market* orders would have been "stopped," i.e., guaranteed to be executed at the prevailing price by market makers, and then exposed to the marketplace for sixty seconds.[37] Moreover, the regulators had recognized that "an anti-internalization measure involving order exposure requirements [could be justified] on grounds distinct from the question of whether [it was] necessary to eliminate potential overreaching by OTC [over-the-counter] market makers."[38] In support of this measure, the SEC stated that "market makers would for the first time be able to compete aggressively for other markets' order flow, offering the possibility of the development of vigorous intermarket competition, with possible resultant benefits for the quality of the markets" and maintained that such an order exposure rule "could benefit public customers by requiring affirmative efforts on behalf of customer orders, augmenting those owned pursuant to a firm's fiduciary best execution responsibility."[39] The alternative order exposure rules generated a significant amount of attention from various stakeholders during the public comment period, yielding a number of arguments for and against

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[33] Off-Board Trading Restrictions, 45 Fed. Reg. at 41,128–29.

[34] For a discussion of the distortionary impact on the fixed brokerage commissions regime on institutional trading, see Stanislav Dolgopolov, *Insider Trading, Chinese Walls, and Brokerage Commissions: The Origins of Modern Regulation of Information Flows in Securities Markets*, 4 J.L. ECON. & POL'Y 311 *passim* (2008), https://ssrn.com/abstract=897180.

[35] Order Exposure Rules, Exchange Act Release No. 18,738, 47 Fed. Reg. 22,376 (proposed May 13, 1982) (to be codified at 17 C.F.R. § 240.11A-1), https://archives.federalregister.gov/issue_slice/1982/5/24/22375-22387.pdf [https://perma.cc/75E3-ZNKL].

[36] *Id.* at 22,380.

[37] *Id.* at 22,380–81.

[38] *Id.* at 22,380. The SEC defined "overreaching" as the scenario of "broker-dealer firms taking advantage of their customers by executing retail transactions as principal at prices favorable to those customers than could have been obtained had those firms acted as agent." *Id.* at 22,377 n.8. The regulators also articulated earlier that "the existence of [the] fiduciary relationship [between broker-dealers and their clients] should, as a legal matter, reduce the risks of overreaching in connection with over-the-counter trading by integrated firms." Off-Board Trading Restrictions, 45 Fed. Reg. at 41,130. On the other hand, the regulators had acknowledged the argument that, "if large retail firms are permitted to integrate their functions as agent and upstairs market maker in particular listed securities . . . the temptations and opportunity for such firms to engage in overreaching will prove irresistible." Off-Board Trading Restrictions, Exchange Act Release No. 13,662, 42 Fed. Reg. 33,510, 33,519 (proposed June 23, 1977) (to be codified at 17 C.F.R. §§ 240.19c-1, 240.19c-2 & 250.15c5-1), https://archives.federalregister.gov/issue_slice/1977/6/30/33479-33524.pdf [https://perma.cc/6CTK-RTM2].

[39] Order Exposure Rules, 47 Fed. Reg. at 22,380.

this measure.[40] Interestingly, the SEC noted a particular concern expressed by institutional investors that is somewhat similar to today's concern about "inaccessible liquidity":

> *The role of order exposure in preserving the integrity of the market's pricing mechanism was of particular note to commentators representing institutional investors, because of the importance of the pricing function to institutions in accumulating and disposing of stocks for themselves and on behalf of clients. . . . [T]hey [also] argued that the importance of true and current quotations reflecting total supply and demand for a security required more extensive exposure of orders.*[41]

Ultimately, the SEC had deferred its decision on adopting an order exposure rule.[42] Indeed, one of the key considerations articulated by the regulatory agency was that the "low level of OTC trading in [Rule 19c-3] securities limit[ed] the benefits that could be achieved by an order exposure rule,"[43] and another observation dealt with the departure of several firms no longer interested in serving as off-exchange market makers in Rule 19c-3 securities.[44] On the other hand, even during the proposal process, some firms had expressed interest in adopting some form of order exposure as a matter of company policy,[45] and probably the most famous example of such a policy is the one employed by Bernard L. Madoff Investment Securities ("BLMIS"). As described by BLMIS, it stopped market orders for at least 300 shares and exposed them for price improvement at one tick better than the prevailing price for one minute, claiming that BLMIS's trading system was "the only one that exposes orders across all markets for price improvement."[46] A later description of BLMIS's price exposure process stated the following:

> *Madoff's system automatically seeks price improvement opportunities for larger customer market orders (of less than block size), by exposing a better price in the NMS [National Market System] displayed quotation. Madoff provides its clients' orders with the greatest possibility of obtaining the best price available across all*

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[40] Reproposal of an Order Exposure Rule, Exchange Act Release No. 19,372, 47 Fed. Reg. 58,287, 58,290–91 (proposed Dec. 23, 1982) (to be codified at 17 C.F.R. § 240.11A-1), https://www.govinfo.gov/content/pkg/FR-1982-12-30/pdf/FR-1982-12-30.pdf [https://perma.cc/2UGE-KCRC].
[41] *Id.* at 58,291.
[42] Deferral of an Order Exchange Rule, Exchange Act Release No. 20,074, 48 Fed. Reg. 38,250 (Aug. 12, 1983), https://archives.federalregister.gov/issue_slice/1983/8/23/38247-38252.pdf [https://perma.cc/SM4Z-UCCK].
[43] *Id.* at 38,252.
[44] *Id.* at 38,251–52.
[45] Reproposal of an Order Exposure Rule, 47 Fed. Reg. at 58,292. In fact, years before even formally proposing this version of an order exposure rule, the SEC had suggested a similar mechanism as an example of voluntary "trading strategies advantageous to customers": "[F]irms prepared to buy stock as principal could, for example, offer to 'stop' a purchasing customer at a given price for a period of time and, before executing the order as principal, either (i) hold the order for execution at any better price offered by another customer during that period or (ii) represent the order during that period in a composite quotation system at a price 1/8 of a dollar above the price the dealer is offering to pay." Off-Board Trading Restrictions, Exchange Act Release No. 13,662, 42 Fed. Reg. 33,510, 33,524 (proposed June 23, 1977) (to be codified at 17 C.F.R. §§ 240.19c-1, 240.19c-2 & 250.15c5-1), https://archives.federalregister.gov/issue_slice/1977/6/30/33479-33524.pdf [https://perma.cc/6CTK-RTM2].
[46] Letter from Peter B. Madoff & Bernard L. Madoff, Bernard L. Madoff Inv. Sec., to Stephen A. Blumenthal, Minority Couns., Comm. on Energy & Com., U.S. House of Reps. 1–3 (June 16, 1994), *reproduced in Unlisted Trading Privileges: Hearing Before the Subcomm. on Telecomms. & Fin. of the H. Comm. on Energy & Com.*, 103d Cong. 151–53 (1994), https://books.google.com/books?id=6dr7ECh875UC.

> *markets. Because the entire order is stopped and guaranteed an execution at the NBBO [National Best Bid and Offer] during the exposure process, there is no risk to a customer of receiving less than the best price. The exposure process lasts for up to thirty (30) seconds; more than enough time for other market participants to interact with our quote and establish the availability of price improvement.*[47]

In 1995, the SEC proposed yet another version of an order exposure rule in conjunction with, among other things, a rule mandating display of customer limit orders.[48] The proposed "price improvement" rule would have required "each specialist or OTC market maker in a covered security that accepts a customer market order to provide that order with an opportunity for price improvement."[49] At the same time, the proposal "d[id] not specify the extent to which an opportunity for price improvement must be provided, or what method must be used to provide this opportunity."[50] However, one safe harbor mechanism was offered:

> *[P]rior to executing a customer market order in a covered security, the specialist or market maker would be required to stop the customer order at the NBBO, and publish, and maintain for 30 seconds, a bid or offer on behalf of the customer. The specialist or market maker's quote must be for at least the size of the customer order, at a price one minimum variation away from the stop price on the opposite side of the market.*[51]

It is notable that the proposed safe harbor excluded both block and odd-lot orders,[52] but contained no general exclusion for small orders, distinguishing it from the mechanism employed, for instance, by BLMIS. Overarchingly, the SEC expressed its belief that "the rule would complement the long-standing duties of broker-dealers to seek to obtain best execution of their customer orders [and] is intended to foster competition among markets and market makers on the basis of price improvement opportunities."[53]

However, the SEC once again declined to adopt the proposed rule, listing such arguments advanced by various stakeholders as that "an absolute rule would reduce the broker-dealer's fiduciary obligation of best execution to an algorithm, eliminating the exercise of professional judgment in identifying price improvement opportunities," "the proposed safe harbor would dictate the minimum acceptable standard to follow, thereby stifling innovation and competition," and "market price integrity would be reduced due to the proliferation of flickering, ephemeral

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[47] BERNARD L. MADOFF INV. SEC., ORDER HANDLING GUIDE 1 (Apr. 1998) (on file with author).
[48] Order Execution Obligations, Exchange Act Release No. 36,310, 60 Fed. Reg. 52,792 (proposed Sept. 29, 1995) (to be codified at 17 C.F.R. §§ 240.11Aa3-1, 240.11Ac1-1, 240.11Ac1-4 & 240.11Ac1-5), https://www.govinfo.gov/content/pkg/FR-1995-10-10/pdf/95-24911.pdf [https://perma.cc/827U-4FE6]. For an earlier discussion of the SEC's post-1983 considerations of an order exposure rule, see DIV. OF MKT. REGUL., U.S. SEC. & EXCH. COMM'N, MARKET 2000: AN EXAMINATION OF CURRENT EQUITY MARKET DEVELOPMENTS, at IV-10–13 (Jan. 1994), https://www.sec.gov/divisions/marketreg/market2000.pdf [https://perma.cc/Z36D-PXF3] [hereinafter SEC'S MARKET 2000 STUDY].
[49] Order Execution Obligations, 60 Fed. Reg. at 52,805 (footnote omitted).
[50] *Id.*
[51] *Id.* (footnote omitted).
[52] *Id.* at 52,806.
[53] *Id.* at 52,804.

quotations."[54] The opposition—or, at least skepticism—to this measure was expressed by off-exchange market makers, exchange specialists, and exchanges themselves,[55] which is not surprising, given that the proposed rule would have applied to the two first categories. This list even included BLMIS,[56] although that very firm had advertised itself as "proud to have helped set the standards for these new proposals" by the SEC, including the one that "[c]ustomer market orders must have an opportunity for meaningful price improvement."[57] At the same time, the SEC expressed its belief that the other rules adopted in the same release, such as the order display rule, would "greatly improve the price discovery process and the opportunity for customer orders to receive enhanced execution prices."[58] The regulatory agency also stressed that "routing order flow for automated execution, or internally executing order flow on an automated basis, at the best bid or offer quotation, would not necessarily satisfy a broker-dealer's duty of best execution for small orders in listed and OTC securities,"[59] which was consistent with the focus of the unadopted price improvement rule on *market* orders. Furthermore, while the price improvement proposal was pending, the Cincinnati Stock Exchange ("CSE") adopted a somewhat similar yet truncated mechanism for its Dealer Preferencing Program ("DPP"), a de facto on-exchange internalization facility, in order to "require that, in greater than minimum variation markets, a preferencing dealer immediately execute market orders routed to him or her for execution on the CSE at an improved price or expose the orders on the Exchange for a minimum of thirty seconds to give other market participants an opportunity to provide an improved price."[60]

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[54] Order Execution Obligations, Exchange Act Release No. 37,619A, 61 Fed. Reg. 48,290, 48,322 (Sept 6, 1996) (codified at 17 C.F.R. §§ 240.11Aa3–1, 240.11Ac1-1 & 240.11Ac1–4), https://www.govinfo.gov/content/pkg/FR-1996-09-12/pdf/96-23210.pdf [https://perma.cc/923M-FVWS].

[55] *Id.*

[56] *Id.* at 48,322 & nn.336–37, 340, 344, 346.

[57] Bernard L. Madoff Inv. Sec., Advertisement, *Madoff Welcomes the Proposed SEC Rules for Order Execution Obligations. In Fact, We Have Been Applying Them for Years.*, BARRON'S, Oct. 23, 1995, at MW2, MW2.

[58] Order Execution Obligations, 61 Fed. Reg. at 48,322.

[59] *Id.* at 48,323.

[60] Order Granting Approval to a Proposed Rule Change by the Cincinnati Stock Exchange to Adopt Permanently Rules Regarding the Preferencing of Public Agency Orders, Exchange Act Release No. 37.046, 67 Fed. Reg. 15,322, 15,323–24 (Mar. 29, 1996), https://www.govinfo.gov/content/pkg/FR-1996-04-05/pdf/96-8397.pdf [https://perma.cc/B7BU-RTPN]. Approved by the SEC on a pilot basis in 1991, the DPP was specifically designed to make order flow more, but not absolutely, "captive" and incentivize market participants to route their retail order flow to the CSE. *Id.* at 15,322. Importantly, when approving the DPP pilot, the SEC required the CSE to ban payment for order flow, although that ban was lifted in 1996. *Id.* at 15,323, 15,329. Accordingly, it appears that certain on-exchange PFOF practices had existed on the CSE in the 1980's and perhaps even as early as the late 1970's, and it is possible that these practices had influenced or cross-pollinated off-exchange PFOF practices. An intriguing fact is that BLMIS had maintained a presence of the CSE, which was probably important in the era of the remaining off-exchange trading restrictions. *See* Peter Chapman, *Before the Fall*, TRADERS MAG., Mar. 2009, at 30, 36, 40–41 (describing Madoff's interest in joining the CME and BLMIS's eventual participation, in part guided by regulatory reasons, including the limitations of Rule 19c-3); SEC'S MARKET 2000 STUDY, *supra* note 48, at II-9 (stating that "several third market makers that pay for order flow are designated dealers on the CSE and use it to access ITS [the Intermarket Trading System] for stocks that are not subject to exchanges' off-board trading restrictions"); ERIN ARVEDLUND, TOO GOOD TO BE TRUE: THE RISE AND FALL OF BERNIE MADOFF 191 (2009) (describing the CSE as "the hub of the Madoffs' payment for order flow"); *see also* Order Approving a Proposed Rule Change by the Cincinnati Stock Exchange, Exchange Act Release No. 14,674, 43 Fed. Reg. 17,894, 17,895 (Apr. 18, 1978), https://www.govinfo.gov/content/pkg/FR-1978-04-26/pdf/FR-1978-04-26.pdf [https://perma.cc/EJ2F-23S5] (approving a multiple dealer trading facility on a pilot basis and noting that "the CSE experiment will provide new opportunities for large retail firms, by making markets through the CSE facility, to deal directly with their customers on a principal basis").

The SEC revisited the issue of an order exposure rule only a few years later, once again in connection with the remaining restrictions on off-board trading and the broader concerns over fragmentation:

> *As a means to enhance the interaction of trading interest, the Commission could require that all market centers expose their market and marketable limit orders in an acceptable way to price competition. . . . As [an] example of acceptable exposure, a market maker, before executing an order as principal in a security whose quoted spread is greater than one minimum variation, could publish for a specified length of time a bid or offer that is one minimum variation better than the NBBO.*[61]

As potential alternatives, the SEC considered, among other things, "reducing the extent to which market makers trade against customer order flow by matching other market center prices" and "adopt[ing] an intermarket prohibition against market makers (including exchange specialists) using their access to directed order flow to trade ahead of investor limit orders that were previously displayed by any market center and accessible through automatic execution by other market centers."[62] Additionally, in its discussion of price competition and order interaction, the regulators emphasized the nature of the statutory mandate:

> *Section 11A(a)(1)(C)(v) of the Exchange Act provides that the national market system should assure an opportunity for investors' orders to be executed without the participation of a dealer. This objective is explicitly conditioned on its being consistent with the national market system objectives of efficiency and best execution of investor orders. It is not conditioned on consistency with the objective of fair competition among different types of market centers. Thus, dealer participation in securities transactions is warranted only to the extent that it leads to more efficient execution of securities transactions or the best execution of investor orders.*[63]

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[61] Notice of Filing of Proposed Rule Change by the New York Stock Exchange, Inc. to Rescind Exchange Rule 390; Commission Request for Comment on Issues Relating to Market Fragmentation, Exchange Act Release No. 42,450, 65 Fed. Reg. 10,577, 10,586–87 (Feb. 23, 2000), https://www.govinfo.gov/content/pkg/FR-2000-02-28/pdf/00-4595.pdf [https://perma.cc/SZ38-YZSY]. One of the factors behind this initiative was the NYSE's request to the SEC to "adopt a market-wide requirement . . . that broker-dealers not be permitted to trade against their customer orders unless they provide a price to the order that is better than the national best bid or offer against which the order might otherwise be executed." *Id.* at 10,578. In this context, the NYSE also expressed the following concern about the business model of off-exchange market making: "The Exchange believes that broker-dealer internalization results in the most objectionable of all forms of market fragmentation: the execution of 'captive' customers' orders in such a manner as to insulate them from meaningful interaction with other buying and selling interest. This not only decreases competitive interaction among markets and market makers, but also isolates segments of the total public order flow and impedes competition among orders, with no price benefit to the orders being internalized." *Id.* at 10,579.
[62] *Id.* at 10,586–87.
[63] *Id.* at 10,581 n.28.

The issue of an order exposure rule had attracted attention of various stakeholders,[64] and, interestingly, one of the most detailed responses on this issue came from Primex Trading, a trading platform linked to BLMIS.[65] The comment letter maintained that "exposure of market orders . . . can provide a greater degree of order confluence, particularly in a multi-dealer market, by making a larger pool of trading interest available to a broader range of participants [and] enhanced abilities for broker-dealer fiduciaries to obtain price improvement for their customers."[66] On the other hand, such change was advocated to "be in a form that encourages exposure of market orders to the greatest extent possible, but should not be strictly mandatory."[67] Primex also criticized the proposed mechanism for an order exposure rule on the grounds that "[m]erely exposing a market order as a priced order one minimum variation better than the NBBO . . . may not serve to maximize the benefits of exposure for the order, particularly in a decimal environment [as] any price chosen for purposes of displaying an unpriced market order in the quote is almost completely arbitrary, and may not maximize price improvement opportunities for the order."[68] Not unexpectedly, Primex proposed its own business model as a potential solution:

> *[O]ne way to accomplish this is to employ new technology to emulate and expand upon the traditional floor trading model of exposing orders to a trading crowd for price competition. Primex Trading is finalizing development of such a system that facilitates the interaction of buyers and sellers through an electronic auction process. The system is predicated primarily on providing price improvement*

[64] For the SEC's discussion of the feedback on this issue, see Order Approving the Proposed Change by New York Stock Exchange, Inc. to Rescind Rule 390, Exchange Act Release No. 42,758, 65 Fed. Reg. 30,175, 30,177 (May 5, 2000), https://www.govinfo.gov/content/pkg/FR-2000-05-10/pdf/00-11682.pdf [https://perma.cc/R49W-4A6J].

[65] Glen Shipway, Chief Exec. Officer & Peter B. Madoff, Manager, Primex Trading N.A., LLC, Comment Letter to the SEC on Issues Relating to Market Fragmentation (May 12, 2000), https://www.sec.gov/rules/sro/ny9948/shipway1.htm [https://perma.cc/84XZ-KFCV] [hereinafter Primex's Comment Letter on Market Fragmentation]. *See also Another Stab at the Third Market: Madoff's Brave New Trading World*, TRADERS MAG. (Aug. 31, 1999), https://www.tradersmagazine.com/news/another-stab-atthe-third-market-madoffs-brave-new-trading-world/ (discussing BLMIS's early design for Primex as a price improvement auction for market and marketable limit orders, including the proposed use of the maker-taker pricing model, and the impact of such factors as decimalization); Auction Market with Price Improvement Mechanism, U.S. Patent Publication No. US 2001/0044767 A1 (filed Mar. 19, 1999) (published Nov. 22, 2001), https://patentimages.storage.googleapis.com/9f/aa/5c/49729216f5e948/US20010044767A1.pdf (asserting the novelty of Primex's business model); Order Granting Approval of a Proposed Rule Change by the National Association of Securities Dealers, Inc. Relating to Permanent Approval of the Primex Auction System, Exchange Act Release No. 47,351, 68 Fed. Reg. 8055 (Feb. 11, 2003), https://www.govinfo.gov/content/pkg/FR-2003-02-19/pdf/03-3945.pdf [https://perma.cc/9MYB-L2BH] (describing Primex as a voluntary trading facility of Nasdaq that offered a price improvement auction for market and marketable limit orders within the NBBO); *Madoff's Guide to Best Execution – Listed Securities*, BERNARD L. MADOFF INV. SEC. (Feb. 7, 2003), https://web.archive.org/web/20030207120654/http://www.madoff.com/dis/display.asp?id=352&mode=1&home=1 (stating that "Madoff will expose 'eligible' orders we receive from our customers in the Primex Auction System," clarifying that "[e]ligible orders include immediately marketable orders greater than 99 shares that are received during normal trading hours in securities," and maintaining that, "[i]f the Primex auction does not immediately achieve a better price or provide enhanced liquidity, Madoff will execute the orders based on our traditional algorithmic approach"); Ivy Schmerken, *Nasdaq Unwinds Exclusive with Primex Auction System*, WALL ST. & TECH. (Jan. 8, 2004), https://www.wallstreetandtech.com/trading-technology/nasdaq-unwinds-exclusive-with-primex-auction-system/d/d-id/1256311.html [https://perma.cc/52ZV-3W77] (describing the discontinuation of Primex as NASDAQ's trading facility).

[66] Primex's Comment Letter on Market Fragmentation, *supra* note 65.

[67] *Id.*

[68] *Id.*

> *opportunities for market orders. These orders are announced to an electronic 'crowd' who 'bid' for them within the context of the NBBO in a fair, orderly, and highly automated manner using a variety of new and sophisticated tools designed for this purpose.*[69]

Ultimately, the SEC did not embark on refining the proposed order exposure rule in connection with the abolition of the remaining restrictions on off-board trading, but it still expressed its concerns about "certain broker-dealer practices that may substantially reduce the opportunity for investor orders to interact"[70] and presented the following frame of analysis that took a critical approach to the business model of off-exchange market making:

> *Internalization and payment for order flow arrangements provide dealers with a guaranteed source of order flow, eliminating the need to compete aggressively for orders on the basis of their displayed quotation. Instead, the dealers can merely match the prices that are publicly displayed by other market centers. These prices in many cases will represent limit orders that are displayed by agency market centers (such as the NYSE or an ECN [electronic communication network]). The limit orders may be denied an opportunity for an execution if dealers choose not be route orders to the market center displaying the limit orders and instead match the limit order prices. . . . Moreover, if a substantial portion of the total order flow in a security is subject to dealer price-matching arrangements, it reduces the ability of other dealers to compete successfully for order flow on the basis of their displayed quotations. In both cases (unfilled limit orders and disregarded dealer quotations), those market participants who are willing to participate in public price discovery by displaying firm trading interest at the best prices are not rewarded for their efforts. This creates disincentives for vigorous price competition, which, in turn, could lead to wider bid-asked spreads, less depth, and higher transaction costs. These adverse effects would harm all orders, not just the ones that are subject to internalization and payment for order flow arrangements. . . . Moreover, an agent-principal monitoring problem may tend to perpetuate rather than alleviate the isolation of investor orders that are subject to internalization and payment for order flow arrangements. It can be very difficult for retail customers to monitor the quality of execution provided by their brokers, particularly in fast-moving markets. Given the difficulty of monitoring execution quality, the most rational strategy for any individual customer may be simply to opt for the lowest commission possible (which may be low in part because the broker is receiving payment for order flow, part of which is passed on the customer). If many individual customers adopt this strategy, it could blunt the forces that otherwise would reward market centers that offer high quality executions.*[71]

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[69] *Id.*

[70] Order Approving the Proposed Change by New York Stock Exchange, Inc. to Rescind Rule 390, Exchange Act Release No. 42,758, 65 Fed. Reg. 30,175, 30,179 (May 5, 2000), https://www.govinfo.gov/content/pkg/FR-2000-05-10/pdf/00-11682.pdf [https://perma.cc/BGY7-4XCC].

[71] *Id.* (footnotes omitted).

Not having pursued any concrete steps for another ten years, the regulators floated the idea of "a 'trade-at' rule that would prohibit any trading center from executing a trade at the price of the NBBO unless the trading center was displaying that price at the time it received the incoming contra-side order" in the context of the hypothetical that "the quality of public price discovery [may have] been harmed by undisplayed liquidity."[72] In terms of potential implementation, the SEC advanced the following approach: "[A] trading center that was not displaying the NBBO at the time it received an incoming marketable order could either: (1) Execute the order with significant price improvement (such as the minimum allowable quoting increment . . .); or (2) route ISOs [intermarket sweep orders] to full displayed size of NBBO quotations and then execute the balance of the order at the NBBO price."[73] This approach may be seen as a proxy for order-by-order competition because it prioritizes displayed liquidity, while allowing an exception for price improvement at one tick similar to the earlier versions of an order exposure rule proposed by the SEC, but some forms of such competition may take place via dark liquidity, such as interaction of hidden orders on a trading venue with multiple market participants rather than just one off-exchange market maker. Not surprisingly, numerous stakeholders were critical of the trade-at rule proposal,[74] which ultimately had not gained much traction with the regulators.

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[72] Concept Release on Equity Market Structure, Exchange Act Release No. 61,358, 75 Fed. Reg. 3594, 3613 (Jan. 14, 2010), https://www.govinfo.gov/content/pkg/FR-2010-01-21/pdf/2010-1045.pdf [https://perma.cc/32K5-6W9Q].

[73] *Id.*

[74] *See, e.g.*, Dan Mathisson, Managing Dir., Credit Suisse Sec. (USA) LLC, Comment Letter to the SEC on Equity Market Structure 4–6 (Apr. 21, 2010), https://www.sec.gov/comments/s7-02-10/s70210-140.pdf [https://perma.cc/NHA3-RU9X] ("A trade-at rule would damage competition among exchanges and ATSs [alternative trading systems], and therefore drive exchange fees higher. It might also lead to some unintended consequences, including an increase in retail commissions, a decrease in the average print size, and more flickering quotes. . . . If a trade-at rule was implemented, retail brokers would be required to route marketable orders to displayed markets. Routing orders to displayed markets would prevent the current standard practice of market makers providing guaranteed price improvement and enhanced liquidity to retail investors, and would therefore result in worse pricing for the retail orders. It would force retail brokers to incur access costs which would almost certainly be transferred to their customers in the form of higher commissions."); Greg Tusar, Managing Dir., Goldman Sachs Execution & Clearing, L.P. & Matthew Lavicka, Managing Dir., Goldman Sachs & Co., Comment Letter to the SEC on Equity Market Structure 3 (June 25, 2010), https://www.sec.gov/comments/s7-02-10/s70210-243.pdf [https://perma.cc/6LNQ-K6J6] ("We do not support adoption of a trade-at rule, which we view as incorrectly focusing on price as the only determinant of best execution. A trade-at rule also likely would increase execution costs because of increased information leakage about trading interest, missed opportunities to access liquidity, additional latencies and increased access fees."); Leonard J. Amoruso, Gen. Counsel, Knight Capital Grp., Inc., Comment Letter to the SEC on Equity Market Structure 5 (Apr. 25, 2010), https://www.sec.gov/comments/s7-02-10/s70210-156.pdf [https://perma.cc/Q2VA-HQ24] ("Trade-At would add significant costs to retail and institutional orders: implicitly by minimizing competition and competitive innovation, explicitly by forcing many users of lower cost alternative venues to pay access fees. It would minimize the opportunities for price improvement (and eliminate sub-penny price improvement) to retail orders as they would always trade at the NBBO. It would reduce liquidity provided by market makers as increased costs would outweigh their liquidity provision ability in most cases. It would vastly increase quote message traffic and quote flickering as firms would be forced to be at the NBBO (likely at the lowest permissible quantity) to service their customers. It would significantly diminish the ability of investors, including long-term investors, to use non-displayed trading venues (which typically do not place orders into the displayed markets) to handle their sensitive order flow."); Janet M. Kissane, Senior Vice President – Legal & Corp. Sec'y, Office of the Gen. Counsel, NYSE Euronext Comment Letter to the SEC on Equity Market Structure 11 (Apr. 23, 2010), https://www.sec.gov/comments/s7-02-10/s70210-154.pdf [https://perma.cc/JAB4-EV46] ("As a means for encouraging displayed liquidity, adoption of a full trade-at rule would be a very strong step. Accordingly, we believe the Commission should consider whether there are lesser means to achieve the same objectives. As an alternative, the Commission could consider adopting specific requirements on broker-dealers who internalize orders.").

The historical trajectory of the SEC's concerns and views on potential regulatory reforms to enhance order-by-order competition incorporates several themes, which, however, should be viewed in the context of the regulatory agency's perspective on the desirability of competition between exchange and non-exchange trading venues. Overarchingly, the regulators expressed their concerns over the themes of more efficient interaction of orders, improved market quality, and restraints on unnecessary intermediation, while realizing that the very concept of best execution could potentially be molded in a systematic way, and not just on a firm-by-firm basis, by the very features of the underlying regulatory regime. Moreover, the focus of the regulators had largely shifted to off-exchange activities involving market and marketable limit retail orders, although some contemplated measures, such as the trade-at rule, could have had a major impact on dark liquidity involving institutional orders and alternative trading venues as multilateral trading venues often employed by such investors. This shift is not surprising, given the fundamental change in retail trading since the 1970s.[75] The business model of off-exchange market making based on some combination of such key elements as customized order flow arrangements with other broker-dealers, aggregation and segmentation of order flow typically focused on retail orders, payment for order flow arrangements, automated execution, provision of dark liquidity based on matching the prevailing marketwide price with potential price improvement, and order size guarantees had been firmly established by the early 1990's.[76] Accordingly, the regulators' concerns falling under the umbrella of order-by-order competition have had a clear connection to this model, including the captive nature of order flow arrangements, conflicts of interest potentially presented by the phenomenon of payment for order flow, and the commission structure.

On the other hand, off-exchange market makers did not appear to be interested in a regulatory disruption of order flow relationships and their captive nature, for instance, through some version of an order exposure rule, which is logical from the standpoint of the underlying business model. Even BLMIS opposed a mandatory order exposure rule, despite having used its own order exposure mechanism as a marketing tool. In its comment letter to the SEC, BLMIS stated that the proposed "safe harbor may . . . not be appropriate for small orders (100-500 shares),"[77] which would have excluded the bulk of bread-and-butter retail orders this firm and its competitors, after all, were paying retail brokers for. Another theme relates to the specifics of implementing order-by-order competition, calibrating the process of price discovery, and determining the magnitude of price improvement. While such mandatory measures as abolishing or severely restricting off-exchange trading or converting market orders and exposing them with one-tick price improvement

[75] *Compare* Off-Board Trading by Members of National Securities Exchanges, Exchange Act Release No. 11,942, 41 Fed. Reg. 4507, 4509 (Dec. 19, 1975) (codified at 17 C.F.R. § 240.19c-1), https://archives.federalregister.gov/issue_slice/1976/1/30/4507-4528.pdf [https://perma.cc/Q9EX-PYBA] ([W]hile institutions may direct orders to over-the-counter market makers or to an exchange market for execution, relatively modest orders of smaller customers are confined to exchange markets because of restrictions placed upon members of the 'primary' exchanges (who represent the great majority of noninstitutional customers)."), *with* Concept Release on Equity Market Structure, 75 Fed. Reg. at 3600 ("OTC market makers . . . appear to handle a very large percentage of marketable (immediately executable) order flow of individual investors that is routed by retail brokerage firms. A review of the order routing disclosures required by Rule 606 of Regulation NMS of eight broker-dealers with significant retail customer accounts reveals that nearly 100% of their customer market orders are routed to OTC market makers.").

[76] PAYMENT FOR ORDER FLOW COMM., NAT'L ASS'N OF SEC. DEALERS, INC., INDUCEMENTS FOR ORDER FLOW: A REPORT TO THE NASD BOARD OF GOVERNORS 14–15, 25–26, App. C, at 41–42 (July 1991).

[77] Bernard L. Madoff & Peter B. Madoff, Bernard L. Madoff Inv. Sec., Comment Letter to the SEC on Order Execution Obligations 17 (Jan. 12, 1996) (on file with author).

have failed to gain steam, other measures, such as price improvement auctions, have been used on a voluntary basis and likewise failed to be universally adopted, quite plausibly as counter to the key stakeholders' vested interests. Fast forwarding to today, these vested interests may be jeopardized by the immanent rule proposal pushed through by Chair Gensler. The persistence of certain issues under the umbrella of order-by-order competition, as evidenced by the sheer weight of the past regulatory deliberations, is about to lead to a hotly contested overhaul of equity market structure.

Appendix B

The Current Market Structure and the Challenge of Order-by-Order Competition: Models of Competition and Tradeoffs

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Medium, December 12, 2022

Defining the essence of order-by-order competition as exposure of orders for potential interaction with various market participants does not preclude the existence of price competition as such under the existing business model of off-exchange market making in the current market structure, aside from any other additional services provided by wholesalers. One important trackable metric is price improvement *over* the National Best Bid and Offer ("NBBO") provided by individual wholesalers in the aggregate or for specific categories or customers. An executive of a leading off-exchange market maker maintained such market participants "compete against each other and over 40 other liquidity sources (exchanges, ATSs [alternative trading systems]) for the opportunity to provide execution and routing of orders for retail brokers" and presented evidence that average price improvement provided by wholesalers had increased by 750% on a per share basis from 2013 to 2020.[1] As argued further, because "[r]etail brokers measure liquidity sources based on the amount of price improvement provided . . . [t]his structure puts wholesalers in competition to provide the best execution for the retail broker on all orders handled."[2] The same commentator maintained that, given the practice of some customer-facing brokerage firms of relying on multiple wholesalers, "Robinhood [a leading retail brokerage firm] will make routing changes intramonth all the time based on how we're performing."[3] As described by an executive of Robinhood itself, "[O]ur order router looks across these six or seven market makers that we have relationships with; it determines who has done the best on that size order in that issuer over the last thirty days, and it sends the order there."[4] On the other hand, the regulators had identified instances when certain

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[1] Douglas Cifu, Chief Exec. Officer, Virtu Financial, Inc., Measuring Real Execution Quality: Benefits to Retail Are Significantly Understated 5, 7 (June 10, 2021), https://www.sec.gov/comments/265-28/26528-8901054-242178.pdf [https://perma.cc/WG5F-UK8G]. *But see* Alexander Gerko, *Separating Fiction from Facts Separated from Fiction*, LINKEDIN (June 11, 2021), https://www.linkedin.com/pulse/separating-fiction-from-facts-separated-alexander-gerko/ [https://perma.cc/LD3M-MQTT] ("Both the size of [price improvement] and [the relevant bid-ask] spreads are driven by 2 factors: 1) because both are measured in cents per share, and stock splits are not as common now, average share price in 2020 is much higher than in 2013 [and] 2) Dramatic change in the composition of stocks that retail participants are trading (towards stocks with wider spreads), driven by perverse incentives throughout the system.").

[2] Cifu, *supra* note 1, at 7.

[3] *Market Structure Conference 3.0 - Doug Cifu, CEO of Virtu Keynote Discussion*, BLOOMBERG, at 16:39–:46 (May 24, 2022), https://www.bloomberg.com/news/videos/2022-05-24/market-structure-conference-3-0-virtu-ceo-keynote-video (remarks of Douglas Cifu, Chief Exec. Officer, Virtu Financial, Inc.) [hereinafter *Market Structure Conference 3.0 - Doug Cifu*]. For an illustration of Robinhood's practice of allocating equity orders across several off-exchange market makers, as opposed to other types of trading venues, and resulting month-to-month changes within one calendar quarter, see Robinhood Sec., LLC, Held NMS Stocks and Options Order Routing Public Report, 2d Q., 2022 (July 28, 2022), https://cdn.robinhood.com/assets/robinhood/legal/RHS%20SEC%20Rule%20606%20and%20607%20Disclosure%20Q2%202021.pdf [https://perma.cc/25MD-GRJX].

[4] Paul Hastings, *SEC Roundup – Episode 27: Robinhood CLO Dan Gallagher on Regulatory Response to Meme Stocks*, YOUTUBE, at 6:53–7:08 (July 20, 2022), https://www.youtube.com/watch?v=Rs7l7Au5DBk; *see also* THE CHARLES SCHWAB CORP., U.S. EQUITY MARKET STRUCTURE: ORDER ROUTING PRACTICES, CONSIDERATIONS, AND OPPORTUNITIES 13–14 (2022), https://content.schwab.com/web/retail/public/about-schwab/Schwab-2022-order-

"firms . . . did not disclose that they represented to their routing or executing brokers that they would provide exclusively retail order flow to the routing broker in order to receive PFOF [payment for order flow] under arrangements with their routing brokers,"[5] which by definition precludes the type of wholesaler competition described above.

Overarchingly, the competitive forces inherent in the current environment may have their imperfections. One major concern is the level of concentration in the wholesaling segment, which has been flagged by the SEC's leadership,[6] and, in fact, one empirical study concluded that "reduced segmentation of retail flow (via a reduction in internalized trading volume, where competition for order flow appears to be much weaker) would lead to especially large market quality improvements for stocks with highly concentrated internalizer markets."[7] Furthermore, the level of concentration has been tied to other structural factors: "Given the amount of private information they have [about order flow] and the role they play in public exchanges [as designated market makers], the concentration of the large wholesalers is concerning."[8] More specifically, the concern is that the existing level of concentration in combination the informational edge provided by captive order flow arrangements, as well as other channels, such as wholesalers' institutional business, could further inhibit competition in providing liquidity and increase marketwide transaction costs.[9] Furthermore, it has been questioned whether competing on average execution quality could be inferior to order-by-order competition:

> *While some market makers may have more capital and are able to offer better spreads on average, this is not true all the time for all stocks. Market makers are*

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routing-whitepaper.pdf [https://perma.cc/2WX9-LQVZ] ("[T]he competitive environment [for retail order flow is] fostered by the current market structure, where wholesalers must compete on the basis of execution quality to win more flow. For this competition between wholesalers to stay dynamic, Schwab has invested in its own order routing capabilities to ensure that seamless routing changes from one wholesaler to another can be made based on execution performance. We also invest in both in-house and third-party analytics to rigorously and impartially evaluate these wholesalers so we can route order flow in a way that optimizes our clients' trading experience.").

[5] DIV. OF EXAMINATIONS, U.S. SEC. & EXCH. COMM'N, RISK ALERT, OBSERVATIONS RELATED TO REGULATION NMS RULE 606 DISCLOSURES 5–6 (Nov. 10, 2022), https://www.sec.gov/files/reg-nms-rule-606-disclosures-risk-alert.pdf [https://perma.cc/9MTG-TSP2] [hereinafter SEC'S RISK ALERT ON RULE 606 DISCLOSURES].

[6] *See, e.g.*, Gary Gensler, Chair, U.S. Sec. & Exch. Comm'n, Prepared Remarks at the Global Exchange and FinTech Conference (June 9, 2021), https://www.sec.gov/news/speech/gensler-global-exchange-fintech-2021-06-09 [https://perma.cc/R4EC-BAY5] ("Within the off-exchange market maker space, we are seeing concentration. One firm has publicly stated that it executes nearly half of all retail volume.").

[7] Edwin Hu & Dermot Murphy, Competition for Retail Order Flow and Market Quality 8 (Sept. 23, 2022) (unpublished manuscript) (on file with author), https://ssrn.com/abstract=4070056.

[8] HITESH MITTAL, FOUNDER & CHIEF EXEC. OFFICER, AND KATHRYN BERKOW, SENIOR RESEARCHER, THE GOOD, THE BAD & THE UGLY OF PAYMENT FOR ORDER FLOW 15 (May 3, 2021), https://f.hubspotusercontent10.net/hubfs/4982966/BestEx%20Research%20PFOF%2020210503.pdf [https://perma.cc/56J7-9N7Y].

[9] *Id.* at 14–17. For an additional discussion of informational advantages in the context of the business model of off-exchange market making, see Stanislav Dolgopolov, *Off-Exchange Market Makers and Their Best Execution Obligations: An Evolving Mixture of Market Reform, Regulatory Enforcement, and Litigation*, 17 NYU J.L. & BUS. 477, 528 (2021), https://www.nyujlb.org/_files/ugd/716e9c_cc8ee2b23fd642f1a83ad978cc1a9eba.pdf [https://perma.cc/VMG4-7LK5]. *See also* Gerko, *supra* note 1 ("Informational advantage applies to aggregate characteristics of the flow rather than an individual order. A wholesale market maker is highly unlikely to 'front run' a client order in any sense, that would be very illegal. On the other hand[,] retail flow in aggregate is highly predictable and certainly can be used to inform a trading strategy and allow to position yourself for expected incoming flow. There is a big information advantage that comes with running a wholesale retail operation at scale.").

> *incentivized to quote a better bid than offer if they are short a stock, and a better offer than bid if they are long a stock, creating an opportunity for smaller market makers to step in front of large market makers when their inventories are skewed against incoming order flow.*[10]

As a counterargument, another commentator maintained that order-by-order competition "paradoxically could lead to substantially worse price improvement for retail users [because] competing in a blind Dutch auction, you have to consider the toxicity of both your counterparties *and* your competitors," triggering the "winner's curse" scenario.[11] Moreover, "[f]or retail order flow, per-order is almost certainly sub-optimal to bulk competition . . . because there's far less asymmetric information at the bulk level."[12]

Another concern relates to the possibility of a trade-off between price improvement and PFOF, which may create conflicts of interest and impede competition based on price. This very tradeoff was one of the key elements of the SEC's enforcement action against Robinhood,[13] which demonstrates its practical relevance, a flashpoint during the questioning of Kenneth C. Griffin, the Chief Executive Officer of Citadel LLC, by U.S. Representative Brad Sherman at a recent congressional hearing,[14] and an important issue in the financial media's coverage.[15] Moreover, targeting the same tradeoff in its recent guidance, the Financial Industry Regulatory Authority, Inc. specifically stated that "order routing firms and firms receiving customer orders from other firms for handling and execution . . . may not negotiate the terms of order routing arrangements for those customer orders in a manner that reduces the price improvement opportunities that otherwise would be available to those customer orders absent payment for order flow" as inconsistent with their best execution obligations.[16] Furthermore, the SEC later observed, without identifying any specific entities, that, "[w]hile firms had discussions with their execution venues regarding an increase (decrease) in PFOF for a corresponding decrease (increase) in price improvement ('PI') and thereby lower (higher) execution quality ('EQ'), firms did not disclose the PFOF and PI/EQ trade-off in their Rule 606 reports."[17] Such conflicts of interest may be countered by the practice adopted by certain customer-facing brokerage firms of accepting equal PFOF rates

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[10] MITTAL & BERKOW, *supra* note 8, at 16.
[11] @0xdoug [Doug Colkitt], TWITTER (June 8, 2022, 5:34 PM CST), https://mobile.twitter.com/0xdoug/status/1534665158773047300.
[12] *Id.*
[13] Robinhood Fin., LLC, Securities Act Release No. 10,906, Exchange Act Release No. 60,694, at 2–7 (Dec. 17, 2020) (settled proceeding), https://www.sec.gov/litigation/admin/2020/33-10906.pdf [https://perma.cc/3K7M-YDXQ].
[14] *Game Stopped? Who Wins and Loses When Short Sellers, Social Media, and Retail Investors Collide, Part I: Virtual Hearing Before the H. Comm. on Fin. Servs.*, 117th Cong. 23–24 (2022), https://www.govinfo.gov/content/pkg/CHRG-117hhrg43966/pdf/CHRG-117hhrg43966.pdf [https://perma.cc/ZNF2-D4L6].
[15] *See, e.g.*, @SquawkCNBC [Squawk Box], TWITTER, at 2:16–:23 (Mar. 11, 2021, 6:55 AM CST), https://twitter.com/SquawkCNBC/status/1369995291148050432 (remarks of Douglas Cifu, Chief Executive Officer, Virtu Financial, Inc.) ("Overall . . . through the course of a month, we will provide more price improvement to Fidelity [that does not accept PFOF] than we do to Robinhood [that does].").
[16] FIN. INDUS. REGUL. AUTH., INC., REGULATORY NOTICE NO. 21-23, BEST EXECUTION AND PAYMENT FOR ORDER FLOW 4 (June 23, 2021), https://www.finra.org/sites/default/files/2021-06/Regulatory-Notice-21-23.pdf [https://perma.cc/H48X-FSBV].
[17] SEC'S RISK ALERT ON RULE 606 DISCLOSURES, *supra* note 5, at 5–6.

from all wholesalers,[18] but this approach does not necessarily ensure that every *alternative* wholesaler is evaluated on the basis of price improvement.[19]

Some recent empirical evidence on the existence of the tradeoff between price improvement and PFOF is provided by two experimental studies of controlled trading activities, which, however, relied on different methodologies and data sets. The first study concluded that "PFOF to brokers cannot explain the differences in price improvement,"[20] further maintaining that "current PFOF is too small to explain the variation in price improvement across brokers and, in the cross-section, is unrelated to the quality of price improvement."[21] Focusing on five leading zero-commission brokers and six leading wholesalers, the study concluded that "observed differences in price execution quality are due to different treatments of the same trades by market centers across brokers."[22] On the other hand, the study acknowledged that wholesalers "might be willing to provide better price improvement for trades from brokers with better quality order flow (not highly correlated or uninformed)."[23] By contrast, another study compared two leading zero-commission brokers, Robinhood and TD Ameritrade, with Interactive Brokers as a "direct orders" / non-

[18] *See, e.g.*, E*TRADE Sec. LLC, Held NMS Stocks and Options Order Routing Public Report, 2d Q., 2022, at 1–3 (July 27, 2022), https://cdn2.etrade.net/1/22072812590.0/aempros/content/dam/etrade/retail/en_US/documents/pdf/order-routing-reports/2022/606-ETRS-2022Q2.pdf [https://perma.cc/LD8Y-LBVN] (listing near-identical PFOF rates offered by various wholesalers, maintaining that there are no order flow arrangements with such wholesalers that "require E*TRADE to meet certain volume thresholds or that provide incentives to E*TRADE for meeting or exceeding certain volume thresholds," "require E*TRADE to meet certain minimum volume thresholds or that provide disincentives to E*TRADE for failing to meet certain minimum volume thresholds," for volume-based tiered payment schedules," or "require E*TRADE to route any orders or a minimum number of orders," and disclosing that "[t]here is a potential conflict inherent to a market maker . . . both paying for order flow and providing price improvement, as the potential source of funds for each is the same, namely the anticipated profit the market maker seeks to earn from executing or facilitating the execution of E*TRADE customer orders"); Robinhood Sec., LLC, Held NMS Stocks and Options Order Routing Public Report, 2d Q., 2022, at 1 (July 28, 2022), https://cdn.robinhood.com/assets/robinhood/legal/RHS%20SEC%20Rule%20606%20and%20607%20Disclosure%20Q2%202021.pdf [https://perma.cc/25MD-GRJX] ("The payment varied based upon a fixed percentage of the spread between the National Best Bid and National Best Offer for the security at the time of order execution. The fixed percentage is the same for all non-exchange third-party market centers to which Robinhood Securities routes equity order flow."); TD Ameritrade Clearing, Inc, Held NMS Stocks and Options Order Routing Public Report, 2d Q., 2022, at 1 (July 18, 2022), https://www.tdameritrade.com/content/dam/tda/retail/marketing/en/pdf/cftc/tdac-TDA2054-q2-2022.pdf [https://perma.cc/2GJX-CKZC] ("All market makers pay the same rate for each respective order flow type. TD Ameritrade does not negotiate payment as a condition for sending more order flow to a market maker."); TradeStation Sec., Inc., Held NMS Stocks and Options Order Routing Public Report, 2d Q., 2022, at 2 (July 27, 2022), https://uploads.tradestation.com/uploads/2022-Q2-SEC-Rule-606-607.pdf [https://perma.cc/3LM7-ZDJD] ("TradeStation established the same per share rate, based on order type, with all non-exchange routing venues to which it routed orders.").

[19] *See, e.g.*, SEC'S RISK ALERT ON RULE 606 DISCLOSURES, *supra* note 5, at 5 n.18 ("Some firms informed Staff that they had eliminated any PFOF conflicts by negotiating the same PFOF rates for all of the execution venues and not factoring those payments into the firms' routing decisions. However, those inducements for routing orders must still be disclosed because the firm may be influenced, for example, not to route orders to venues that do not pay the same PFOF as the firm's current execution venues.").

[20] Christopher Schwarz et al., The "Actual Retail Price" of Equity Trades 26 (Sept. 13, 2022) (unpublished manuscript) (on file with author), https://ssrn.com/abstract=4189239.

[21] *Id.* at 33.

[22] *Id.* at 1 n.1, 2, 32.

[23] *Id.* at 34.

wholesaler comparative.[24] Ultimately, this study presented "[the] evidence . . . consistent with the notion that Robinhood has effectively negotiated to allocate the PFOF surplus between itself and the wholesaler, and does not pass along any portion of the surplus to the retail customers."[25] Moreover, Robinhood's customers did not appear to have realized a tangible benefit from segmentation of order flow: "Using direct orders as a baseline, across all measures of price-based execution quality I find that orders transmitted to TDA [TD Ameritrade] receive economically and statistically significant improvement. In contrast, across all measures of price-based execution quality I find no evidence of improvement for orders transmitted to Robinhood."[26] In addition, Robinhood's orders appear to be executed slower than TD Ameritrade's, with "PFOF orders execut[ing] much more slowly than direct orders" overall.[27]

Ultimately, the imperfections of competitive forces described above weave into the theme of whether order-by-order competition, as contrasted to the existing business model of off-exchange market makers, would result in more efficient risk sharing by involving other market participants, such as institutional and retail investors or even other market makers. A related theme, as exemplified by the concern over "inaccessible liquidity" for institutional investors based on the segmentation of order flow, is whether order-by-order competition could lead to more direct interaction of natural liquidity and hence produce economic gains for these market participants and/or decrease potential economic rents of wholesalers from some degree of disintermediation.[28]

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[24] Bradford (Lynch) Levy, Price Improvement and Payment for Order Flow: Evidence from a Randomized Controlled Trial 2, 11–12 (June 2022) (unpublished manuscript) (on file with author), https://ssrn.com/abstract=4189658.
[25] *Id.* at 5.
[26] *Id.* at 24. A related key conclusion is that "direct orders receive economically and statistically significant price improvement relative to the NBBO [which] suggests that prior studies relying on the NBBO as a baseline for price improvement have over-stated the benefits of PFOF to retail investors." *Id.* at 4. For an alternative perspective on the magnitude of price improvement offered by Robinhood, which, however, was measured relative to the NBBO, see S.P. Kothari et al., Commission Savings and Execution Quality for Retail Trades (Dec. 2021) (unpublished manuscript) (on file with author), https://ssrn.com/abstract=3976300.
[27] Levy, *supra* note 24, at 5, 17. This observation appears to be in conflict with the argument that "[t]he characteristics of retail flow allow the wholesalers to provide . . . fast execution speed." CHARLES SCHWAB, *supra* note 4, at 11. Interestingly, from a historical perspective, one of the attractions of the business model of off-exchange market making relative to routing to exchanges was in fact execution speed. *See, e.g.*, U.S. SEC. & EXCH. COMM'N, REPORT OF SPECIAL STUDY OF SECURITIES MARKETS, H.R. Doc. No. 88-95, pt. 2, ch. VIII(D), at 905–06 (1963), https://books.google.com/books?id=nVATAQAAMAAJ [hereinafter SEC'S 1963 SPECIAL STUDY] ("The market makers assert their ability to provide speedier executions, since they can close a transaction immediately while orders on the Exchange must go to the floor and are subject to the impact of forces there. Apparently some investors agree with them . . . . Further, where secrecy is important over-the-counter executions can provide a veil of obscurity."); U.S. Sec. & Exch. Comm'n, Roundtable on Commission Dollar and Payment for Order Flow Practices 123 (July 24, 1989), http://3197d6d14b5f19f2f440-5e13d29c4c016cf96cbbfd197c579b45.r81.cf1.rackcdn.com/collection/papers/1980/1989_0724_CommisionDollar_1of4.pdf [https://perma.cc/G392-C643], http://3197d6d14b5f19f2f440-5e13d29c4c016cf96cbbfd197c579b45.r81.cf1.rackcdn.com/collection/papers/1980/1989_0724_CommisionDollar_4of4.pdf [https://perma.cc/SYJ7-29M6] (remarks of William F. Devin, Senior Vice President, Fidelity Brokerage Services, Inc.) ("The public's view of best execution is not just in price but also in speed of execution. . . . The firms that we are dealing with and receiving payment from are not only sending us the payment, but also sending us that execution in around five seconds. We are clearly able to hold a customer on the phone and give him that report, and it makes him very happy . . . .").
[28] A somewhat related empirical study focusing on a potential mode of intermediation by wholesalers *between* retail and institutional investors concluded that "large imbalances in internalized retail buy and retail sell orders . . . reflect the internalized retail order flow used by wholesalers to balance their inventory while providing liquidity to

That is not suggest that the market making function and specialized providers of liquidity themselves could be completely disintermediated. It is telling, as expressed by a representative of the institutional investor community, that such market participants are not seeking to replace market makers, that they are generally takers of liquidity, and that "retail activity and institutional activity [do not necessarily] blend together well," for instance, in connection with one-sided waves of trading activity in "meme stocks."[29]

In any instance, evaluating these theories and interpreting the existing empirical evidence is no easy task. For instance, one industry study concluded that the business model of off-exchange market making "has taken valuable liquidity out of the marketplace [resulting in] significantly higher costs and volatility in 'retail' names for mutual funds and hedge funds,"[30] while another maintained that "stocks with the highest rates of inaccessible liquidity see significantly higher slippage versus arrival costs when executing liquidity-seeking orders."[31] While this empirical evidence supporting the hypothesis of potential costs for the lit market is a proxy for a marketwide cost, it is also ambiguous in the sense that the segmented lit and dark components have to be analyzed together. The concept, which is almost true by definition, that the diversion of "safer" order flow off-exchange increases transaction costs in the lit markets has been known for decades.[32] The other side of the coin is that such safer order flow can be provided price improvement *relative* to the relevant benchmark in the lit markets. For instance, a key industry study maintained that "retail investors currently receive an average of 24.5% price improvement

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institutional investors." Yashar H. Barardehi et al., Internalized Retail Order Imbalances and Institutional Liquidity Demand 1 (Nov. 5, 2022) (unpublished manuscript) (on file with author), https://ssrn.com/abstract=3966059.

[29] *SIFMA Equity Market Structure Roundtable*, SIFMA, at 2:14:14–:17:03 (Sept. 13, 2022), https://events.sifma.org/equity-market-structure-roundtable [hereinafter *SIFMA Equity Market Structure Roundtable*] (remarks of Mehmet Kinak, Global Head of Systematic Trading & Market Structure, T. Rowe Price).

[30] Linda Giordano & Jeff Alexander, *Meme Stocks: Inaccessible Trading Share, Trading Cost, and Risk*, BABELFISH ANALYTICS (Feb. 5, 2021), https://www.babelfishanalytics.com/news/2021/2/4/meme-stocks-inaccessible-trading-share-trading-cost-and-risk [https://perma.cc/F74J-KURF].

[31] Jennifer Hadiaris, *Retail Trading – What's Going on, What May Change, and What Can You Do About It?*, COWEN, INC. (Mar. 23, 2021), https://www.cowen.com/insights/retail-trading-whats-going-on-what-may-change-and-what-can-institutional-traders-do-about-it/ [https://perma.cc/7PDZ-GZEY].

[32] As this argument has been described in an early academic study, "Unlike NYSE specialists, who must make a market for all NYSE-listed stocks, purchasers of order flows can target the more profitable 'low end' business, which consists mainly of small trades in more liquid stocks. The NYSE specialist, finding profit margins reduced, may look to recover these losses by increasing the quoted spreads and, thus, the overall liquidity costs." Charles M.C. Lee, *Market Integration and Price Execution for NYSE-Listed Securities*, 48 J. FIN. 1009, 1014 (1993). For a survey of earlier studies on several relevant topics, see Anton Golub et al., *The Impact of Internalisation on the Quality of Displayed Liquidity* (Foresight, U.K. Office for Sci., No. EIA10, 2012), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/289048/12-1071-eia10-impact-internalisation-on-quality-of-displayed-liquidity.pdf [https://perma.cc/7SQK-TPHY]. For another earlier academic study focusing on the role played by BLMIS, see Robert H. Battalio, *Third Market Broker-Dealers: Cost Competitors or Cream Skimmers?*, 52 J. FIN. 341 (1997). Moreover, even the parent company of today's leading off-exchange market maker took a critical view of the impact of wholesaling on lit markets in the past: "As more and more brokers engage in the practice of internalization, bid-ask spreads in the public markets will continue to be wider than they otherwise would, quoted liquidity will continue to fall and the role and value of the public markets will be greatly diminished. Furthermore, as bid-ask spreads widen in response to internalization, aggressive broker-dealers will be able to internalize an ever increasing portion of their order flow, sending only the most challenging of orders into the market place for execution – and only further worsening the situation corroding the value of the market." Kenneth Griffin, President & Chief Exec. Officer, Citadel Inv. Grp., L.L.C., Comment Letter to the SEC on Regulation NMS 8 (July 9, 2004), https://www.sec.gov/rules/proposed/s71004/s71004-436.pdf [https://perma.cc/9AUY-42W6].

from wholesalers [and] other market participants are receiving an average of 8.7% of the spread on exchanges."[33] Importantly, this very feature of the current market structure has been hailed as the key advantage for retail order flow: "The fact that US equity market structure has enabled such a segmentation of retail order flow is the underlying driver of the value that retail investors have been able to increasingly participate in."[34] However, the very existence of price improvement relative to the NBBO provided to safer order flow or even its specific amount[35] does not necessarily indicate that such investors are better off: it is critical to compare the current market structure to its alternative. Accordingly, the industry study in question critiqued the assumption that "[t]he NBBO spread would remain the same even after retail flow moved to exchanges."[36] Moreover, it made the following conclusion about relative magnitudes of the existing price improvement practices and the hypothetical compression of bid-ask spreads if retail order flow would be routed directly to exchanges rather than wholesalers: "Considering a reduction in the NBBO spread by over 25% [under the hypothetical alternative], the price improvement currently received by retail investors (about 15% of [the] NBBO spread as discussed earlier) is not the 'deal' it is advertised to be."[37] Additional concerns about limited interaction of retail market and limit orders under the current market structure are also notable: "[L]imit orders from retail investors lose the opportunity to interact with retail market orders and instead only interact with the more toxic flow on exchanges, yielding the same higher adverse selection and lower fill rates other investors face."[38] Likewise, it has been suggested that a greater level of interaction of retail and institutional orders would yield an additional benefit: "If institutional investors have the ability to interact with marketable retail flow, they will likely experience improved fill rates and reduced adverse selection and make more use of limit orders and hidden midpoint orders, reducing effective spreads even further."[39]

There could be an extensive debate on the applicable methodology and data samples in order to compare these magnitudes, with the frequency of midpoint executions in wholesaling and its

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[33] MITTAL & BERKOW, *supra* note 8, at 9. By contrast, an academic study from three decades ago found that "off-Board trades generally involve higher execution costs" and interpreted the evidence as "suggest[ing] that the high execution costs in the off-Board trades [are] sufficient to cover the cost of [PFOF]." Lee, *supra* note 32, at 1023.

[34] CHARLES SCHWAB, *supra* note 4, at 7.

[35] *See, e.g.*, CHARLES SCHWAB, *supra* note 4, at 13 (a retail brokerage firm claiming that "routing to wholesalers saved Schwab's clients at least $3.4B in 2021, vs. what their outcomes would have been from utilizing exchanges" and that "Schwab clients received $4.4B+ in value from size improvement across all orders in 2021"); Cifu, *supra* note 1, at 2–3 (a wholesaler claiming that "Virtu alone provided over $3B in Real Price Improvement to retail investors in 2020," including size improvement). In addition to estimates of aggregate price improvement, there is an important discussion on contextualizing such amounts on a per share basis and the relevant distribution, including such considerations as de minimis price improvement and the frequency of price improvement of at least one tick. For a mix of such sources, see *Who Wins on Wall Street? GameStop, Robinhood, and the State of Retail Investing: Hearing Before the S. Comm. on Banking, Hous. & Urb. Affairs*, 117th Cong. 58 (2022) (prepared statement of Michael S. Piwowar, Executive Director, Milken Institute Center for Financial Markets), https://www.govinfo.gov/content/pkg/CHRG-117shrg46082/pdf/CHRG-117shrg46082.pdf [https://perma.cc/BRL5-BTHT]; NASDAQ, INC., OPTIMIZING MARKETS FOR TODAY AND TOMORROW: A FRAMEWORK FOR U.S. EQUITIES MARKET REFORM 4–5 (2022), https://www.nasdaq.com/docs/optimizing-markets-for-today-and-tomorrow; Dave Lauer, *How's That Price Improvement Working out for You?*, THE TERMINAL (Jan. 26, 2022), https://www.urvin.finance/blog/how-is-that-price-improvement-working-out-for-you [https://perma.cc/3FPB-JC5C].

[36] MITTAL & BERKOW, *supra* note 8, at 8.

[37] *Id.* at 14.

[38] *Id.*

[39] *Id.* at 18.

implications for the economics of the applicable business model as one illustration.[40] It no easy task, as there could be competing ways of measuring price improvement offered by wholesalers under the current market structure,[41] let alone an estimate of execution quality under a hypothetical market structure.[42] However, the chartered approach is critical for making meaningful policy decisions. In that respect, a mere more favorable treatment of retail order flow relative to lit markets does not constitute conclusive evidence in support of the current market structure, and the following argument should be criticized:

> *Some argue that displayed quotes would tighten if retail order flow were required to be traded on exchanges. Today, market makers face less adverse selection on marketable retail order flow than on professional order flow, which is why they are willing to provide retail orders with better prices, or a better "effective spread". Forcing all market participants to anonymously send their marketable order flow to exchanges would result in both retail and professional investors receiving the same experience, which means that compared to the current structure, professionals may receive better prices – but this would come directly at the expense of retail investors. The result would be a transfer of wealth from retail investors to institutional participants and professional traders.*[43]

Additionally, even from a distributional perspective, numerous institutional investors "ultimately represent retail investors."[44] Even more so, dropping the assumption of an anonymous admixture of all orders on exchanges, retail order flow could realize a net or additional benefit form *on-exchange segmentation* with corresponding pricing advantages combined with order-by-order competition between a variety of market participants.[45] More generally, "moving retail flow to a public forum would likely require regulatory changes."[46] Also, under the current market structure,

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[40] For instance, one retail brokerage firm made the claim that "50% of Schwab's market orders receive midpoint execution." CHARLES SCHWAB, *supra* note 4, at 20. For additional empirical investigation of midpoint executions obtained by leading retail brokerage firms, see Schwarz et al., *supra* note 20, at 20–25. Given that the study used the NBBO as the benchmark for price improvement and focused on smaller $100 orders, the following observation should be noted: "The NBBO benchmark is based on orders for 100 shares or more (round lots), while odd lots now account for more than 60% of all trades. As a result, the NBBO is an easy benchmark to beat, with trades routinely executing within the NBBO spread." *Id.* at 6, 17–18, 20.

[41] *See, e.g.*, Samuel Adams et al., Do Investors Save When Market Makers Pay? Retail Execution Costs Under Payment for Order Flow Models 4 (Nov. 2021) (unpublished manuscript) (on file with author), https://ssrn.com/abstract=3975667 (maintaining that "NBBO-based price improvement measures overstate economic savings by a factor of at least three"); Cifu, *supra* note 1, at 3 (presenting a revised methodology for measuring price improvement "by including odd lot and short sell orders and updating the benchmark price to be the average price available for the same quantity of shares considering all displayed quotes – NBBO, depth of book and odd lots").

[42] *See also* Adams et al., *supra* note 41, at 12–13 ("Ideally, we would compare the execution costs retail traders incur in the current environment with a counterfactual cost they would pay if, say, payment for order flow arrangements did not exist and their trades were exclusively routed to the public stock exchanges. Of course, such counterfactual is not observable . . . .").

[43] CHARLES SCHWAB, *supra* note 4, at 18.

[44] MITTAL & BERKOW, *supra* note 8, at 18.

[45] For an illustration of the probably most prominent type of an on-exchange segmentation feature, see N.Y. STOCK EXCH. LLC, THE NEW YORK STOCK EXCHANGE'S RETAIL LIQUIDITY PROGRAM (2021), https://www.nyse.com/publicdocs/nyse/markets/liquidity-programs/RLP_Fact_Sheet.pdf [https://perma.cc/T7HU-8M6N].

[46] MITTAL & BERKOW, *supra* note 8, at 18.

it would be problematic for an individual retail brokerage firm to jettison order routing arrangements with wholesalers even when any conflicts of interest are assumed away:

> *[I]t would be a comparative disadvantage for an individual retail broker who routes orders away from wholesalers to exchanges, because relative to other retail brokers, its customers would receive poorer pricing. This retail broker's order flow would decrease the NBBO spread only slightly on exchanges. And other retail brokers (sending order flow to wholesalers) would still receive better prices than the retail broker that shifted its flow to exchanges.*[47]

Taking a step back, it is also critical to evaluate the arguments defending the current market structure from the standpoint of the services provided by wholesalers. As described by a leading retail broker,

> *In the current market, Schwab typically routes client equity orders to non-exchange market centers [i.e., wholesalers], which is a form of strategic outsourcing that leverages the concept of comparative advantage. This model allows brokers (e.g., Schwab) to focus on providing low-cost access to the markets, omni-channel services, financial planning, and broader wealth management services – while non-exchange market centers can focus and invest heavily in sophisticated order routing / liquidity seeking capabilities, cutting-edge and resilient technology platforms, and highly specific risk management capabilities.*[48]

Related arguments in favor of order flow arrangements between brokerage firms and wholesalers include "access[ing] markets and pools of liquidity to which [retail brokers] do not have direct connections (both on- and off-exchange),"[49] "navigat[ing] the complex order types and fee schedules of exchanges and ATSs [alternative trading systems],"[50] "provid[ing] enhanced fill rates [by] significantly increasing the likelihood that a non-marketable order is filled in its entirety compared to routing directly to an exchange,"[51] "incur[ring] meaningful trading fees to execute orders at exchanges and ATS[s], an expense . . . expect[ed to] fall to retail brokers if they routed orders directly to these market centers,"[52] and, more generally, "navigat[ing] and extract[ing] the

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[47] Hitesh Mittal, *Payment for Order Flow: A Prisoner's Dilemma*, LINKEDIN (May 10, 2021), https://www.linkedin.com/pulse/payment-order-flow-prisoners-dilemma-hitesh-mittal/ [https://perma.cc/9P3K-9LHN].

[48] CHARLES SCHWAB, *supra* note 4, at 8.

[49] *Id.* at 9.

[50] *Id.* at 9.

[51] *Id.* at 10.

[52] Cifu, *supra* note 1, at 5. However, in addition to bearing certain fees, at least some wholesalers also collect exchange rebates in connection with certain types of orders instead of remitting such rebates to brokerage firms, which might be a common practice. *See, e.g.*, E*TRADE Sec. LLC, Held NMS Stocks and Options Order Routing Public Report, 2d Q., 2022, at 2 (July 27, 2022), https://cdn2.etrade.net/1/22072812590.0/aempros/content/dam/etrade/retail/en_US/documents/pdf/order-routing-reports/2022/606-ETRS-2022Q2.pdf [https://perma.cc/LD8Y-LBVN] ("In addition to revenues that Citadel may collect for executing or facilitating the execution of E*TRADE customer orders, Citadel also receives remuneration from U.S. securities exchanges to which it routes or directs E*TRADE customer orders in the form of rebates. Although E*TRADE has no knowledge of any facts to suggest that such is the case, these U.S. exchange rebate payments could, in theory, incentivize Citadel to route higher percentages of E*TRADE customer orders to particular

fragmented liquidity that spans across public and private trading venues."[53] However, this group of arguments merely reflects the division of labor between customer-facing brokers and executing brokers that does not hinge on the key features of the current market structure. The respective roles of an executing broker and a trading venue based on order flow arrangements and segmentation should be distinguished, as the division of labor in question is likely to emerge under an alternative market structure. While the array of services provided by an executing broker, under the current market structure or otherwise, are valuable, there is no inherent reason why they should be "free" in the sense of being subsidized by wholesalers' trading profits. An alternative customer-facing broker-executing broker relationship could be based on an explicit commission structure, whether a flat fee, cost plus, based on some price improvement / execution metric, or something else. This commission would ultimately be borne by customers, but they might be better off economically as a result of potentially better execution quality metrics.

Ultimately, the benefits of the current market structure to the marketplace at large or certain groups of market participants, such as retail investors, must ultimately stem from the principal trading function of wholesalers rather than their role as executing brokers in the context of order flow relationships. For instance, the argument that wholesalers "provide additional flexibility and are not subject to limited liability as are the exchanges"[54] is of particular significance for trade error-fixing and adjustments, which could be seen as more feasible for a trading venue combined with a principal trading entity rather than a neutral order matching facility. Once again, another source of

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venues over others, subject to Citadel's independent order routing and best execution obligations. Exchange rebates provided to Citadel for E*TRADE customer executions are not passed through to E*TRADE or its customers. E*TRADE does not share directly in any such rebates Citadel receives for executions of E*TRADE customer orders, although Citadel's receipt of such rebates potentially increases Citadel's revenue and thereby the source of funds Citadel may use to provide price improvement to E*TRADE customers, order flow payment to E*TRADE, and/or a combination of such payments.").

[53] CHARLES SCHWAB, *supra* note 4, at 13. In addition to the regulatory requirement for wholesalers to display non-marketable limit orders, the reality is that a non-trivial portion of market and marketable limit orders are effectively routed away and executed elsewhere. *See, e.g.*, Virtu Fin., Inc, Current Report (Form 8-K) Exh. 99.1, at 5 (June 10, 2021), https://www.sec.gov/Archives/edgar/data/1592386/000110465921079146/tm2119142d1_ex99-1.htm [https://perma.cc/2UF3-W6LK] ("We . . . commit[] capital and internaliz[e] approximately 70% of marketable orders and by sourcing inventory from other market centers to fill the remaining 30%. These retail orders indirectly interact with liquidity on exchanges and ATSs when wholesalers go to these market centers seeking midpoint or other price improvement. . . . As for non-marketable orders, Virtu reflects a substantial percentage of these orders on lit exchanges and all wholesalers must reflect such orders in accordance with the requirements of the 'Limit Order Display' rule."). Moreover, there is a debate on whether the rerouted portion of marketable order flow represent a toxic exhaust or merely reflects risk management, but probably both of these factors have a role to play. *See, e.g.*, John Ramsay, Chief Mkt. Pol'y Officer, Invs. Exch. LLC, Comment Letter to the SEC on IEX's Proposed D-Limit Order Type 10–11 (Aug. 3, 2020), https://www.sec.gov/comments/sr-iex-2019-15/sriex201915-7534417-222147.pdf [https://perma.cc/K23F-EGBG] (discussing the concept of exhaust); Gerko, *supra* note 1 (arguing that "[a]ny quantitative market maker given the choice of whether to internalize or externalize flow would be able to generate high toxic 'exhaust' flow which would have different characteristics from the original flow in aggregate by selecting 'good' 60% of their flow to internalize"); *Market Structure Conference 3.0 - Doug Cifu*, *supra* note 3, at 26:31–29:06 (rejecting the "exhast" label, arguing that wholesalers often reroute such portion of order flow to each other, which still has profitable execution characteristics, and stressing the role of risk parameters); *Market Structure Conference 3.0 - Equity Market Structure: Centralization or Segmentation?*, BLOOMBERG, at 24:02–25:00 (May 24, 2022), https://www.bloomberg.com/news/videos/2022-05-25/market-structure-conference-3-0-equity-market-structure-centralization-or-segmentation (remarks of Stephen Cavoli, Global Head of Execution Services, Virtu Financial, Inc.) (arguing that the primary reason for not internalizing such portion of order flow is approaching risk limits).

[54] CHARLES SCHWAB, *supra* note 4, at 9.

the current market structure's benefits to retail investors is the very existence of segmentation and size improvement, which is of particular relevance to "retail investors when the marketable order size is larger than the number the shares displayed at the NBBO."[55] A closely related argument is that dark liquidity instead of lit liquidity is essential for managing adverse selection in the current market structure. As described by an executive of a leading wholesaler, "If we posted today the size that we are two-sided in a thousand names on . . . national security exchanges right now, we would get trucked [and] picked off day and night by HFT [high-frequency trading] firms. . . . We have tried to post more size on exchanges around the world. What ends up happening? We get dramatically adverse selected."[56] At the same time, there could be room for on-exchange segmentation with order-by-order competition for retail orders, large or otherwise, and the concern over adverse selection perhaps could be alleviated by the very nature of segmentation or by tweaking the mix of dark and lit liquidity.

Perhaps one of the strongest arguments in defense of the current market structure with all of its major elements is that it allows wholesalers to support less liquid / less active / less profitable names at the expense of more desirable ones. For instance, an executive of a leading wholesaler remarked that retail brokers request wholesalers to support a wide range of names, with many of them "not of particular interest to the buyside [i.e., institutional investors]," and also asserted that the proposed auction approach to order-by-order competition would lead to an even further concentration of liquidity in the top one or two hundred names.[57] Yet another commentator, as a criticism of the proposed auction approach, made the observation that "the broader the securities universe[,] the greater the likelihood that the wholesaler is accommodating orders in securities with increasingly limited liquidity (particularly, non-optionable stocks)" and pointed to "legitimate reasons why market makers need incentives to warehouse the risk of certain securities," while speculating that covering a broader set of names may involve order flow volume guarantees from a retail broker to a wholesaler to compensate for additional risk.[58] In other words, the phenomenon being described here is a form of cross-subsidization between more desirable and less desirable names in a bundled set, which essentially constitutes a balance between trading obligations and privileges. This cross-subsidization effectively precludes order-by-order competition and strongly suggests the existence of excess profits for certain names in the bundle in question. In fact, the concept of cross-subsidization in market making, particularly in the context of the historical NYSE specialist system, is well known, and it should be connected to the existence of externalities in providing liquidity as an argument in favor of such an arrangement, under certain parameters, in

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[55] Cifu, *supra* note 1, at 4. Importantly, enhancing depth available in lit markets has been a value proposition of off-exchange market makers for many decades. *See, e.g.*, SEC's 1963 SPECIAL STUDY, *supra* note 27, pt. 2, ch. VIII(D), at 903 ("[T]he third market, whatever its effect on the depth of the primary market, provides the public customer with overall markets of greater depth. The institutional customer with an order too large to be transacted on the auction market without effect on price and too large to be handled in its entirety by the specialist, can, and often does, trade with the market makers.").

[56] U.S. Sec. & Exch. Comm'n, *2021 06 10 IAC Part 2* [the Investor Advisory Committee Meeting on June 10, 2021], YOUTUBE, at 1:15:37–:47, 1:17:53–:18:08 (Jan. 3, 2022) (remarks of Douglas Cifu, Chief Executive Officer, Virtu Financial, Inc.).

[57] *SIFMA Equity Market Structure Roundtable*, *supra* note 29, at 2:18:25–20:15 (remarks of Douglas Cifu, Chief Executive Officer, Virtu Financial, Inc.).

[58] Paul Rowady, *SEC Proposing Auctions?! Let's Understand Liquidity Economics First*, ALPHACUTION (Aug. 31, 2022), https://alphacution.com/sec-proposing-auctions-lets-understand-liquidity-economics-first/ (registration required).

order to benefit the marketplace as a whole.[59] In any instance, any relevant change to the current market structure might raise the issue of additional incentives for market makers in less liquid securities in a different form.[60]

In summary, analyzing the competitive aspects of the current market structure, as well as its other benefits, compared to order-by-order competition amounts to a multifaceted issue that requires formal modeling, sophisticated data analysis, and, potentially, regulatory experimentation. While considerations of an alternative market structure aimed to foster order-by-order competition may be seen as speculative, it would also be speculative, by the same token, to characterize the current market structure as the most appropriate one. Moreover, depending on the specifics of an alternative market structure, one might see a disparate impact on several dimensions, such as small versus large orders, institutional versus retail investors, and less liquid versus more liquid securities. In any instance, the anticipated unveiling of the overhaul of equity market structure, including the details of its approach to order-by-order competition,[61] will raise the stakes in this debate.

[59] For a discussion by the author of the concept of cross-subsidization between groups of securities with different characteristics and the concept of externalities in providing liquidity in conjunction with some balance of trading obligations and privileges of market makers, see Stanislav Dolgopolov, *Linking the Securities Market Structure and Capital Formation: Incentives for Market Makers?*, 16 U. PA. J. BUS. L. 1, 4–5, 28–30 (2013), https://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1459&context=jbl [https://perma.cc/9MX3-BEYG] [hereinafter Dolgopolov, *Linking the Securities Market Structure and Capital Formation*]; Stanislav Dolgopolov, *Regulating Merchants of Liquidity: Market Making from Crowded Floors to High-Frequency Trading*, 18 U. PA. J. BUS. L. 651, 662–77 (2016), https://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1514&context=jbl [https://perma.cc/ZWZ7-6BGC]. Interestingly, BLMIS had attacked the cross-subsidization argument to in connection with exchange specialists in order to deflect the allegations of cherry picking by off-exchange market makers: "Primary markets claim that in order for them to make an efficient, liquid market in all securities, they must be protected from their competitors 'Cherry Picking' the most profitable business. If not, the end result will be that the primary markets will be forced to widen their spreads. [But] [t]here is no evidence to demonstrate the specialists' claim that order flow in a good security encourages them to improve the quality of their market in a less liquid security." Bernard L. Madoff & Peter B. Madoff, Bernard L. Madoff Inv. Sec., Comment Letter to the SEC on the U.S. Equity Market Structure Study 14 (Oct. 16, 1992) (on file with author). BLMIS also noted that it was "mak[ing] regular and continuous two-sided markets in over 400 of the most active listed securities; 200 NASDAQ securities, and several hundred convertible securities." *Id.* at 2.

[60] For a discussion by the author of various incentives for market makers in the context of such securities, see Dolgopolov, *Linking the Securities Market Structure and Capital Formation*, *supra* note 59.

[61] *Open Meeting Agenda - December 14, 2022*, U.S. SEC. & EXCH. COMM'N (last modified Dec. 7, 2022), https://www.sec.gov/os/agenda-open-12142022 [https://perma.cc/9NFZ-ELWY].