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OFF-EXCHANGE MARKET MAKERS AND THEIR BEST EXECUTION OBLIGATIONS: AN EVOLVING MIXTURE OF MARKET REFORM, REGULATORY ENFORCEMENT, AND LITIGATION

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This Article analyzes the reach of the duty of best execution to off-exchange market makers and its implications in the evolving equity market structure. The Article covers such key themes as a comparative regulatory perspective on the source of the duty of best execution and business practices in off-exchange market making, recent enforcement actions involving off-exchange market makers, the reformed market data infrastructure, IEX's D-Limit order type, stress-testing of price improvement practices, and the feasibility of a common methodology for calculating damages in best execution class actions.

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INTRODUCTION

The end of the roller-coaster year of 2020 brought two major developments for the duty of best execution governing the fundamental customer-broker relationship, which "requires broker-dealers to execute customers' trades at the most favorable terms reasonably available under the circumstances."[1] This relationship "derives from common law agency principles and fiduciary obligations" and "is incorporated in [self-regulatory organizations'] rules and . . . the antifraud provisions of the federal securities laws."[2] The raging debate on the market data infrastructure in the equities space had culminated in its comprehensive reform by the U.S. Securities and Exchange Commission (SEC).[3] The issue of best execution was definitely in the spotlight, with one of the chief goals of this regulatory reform being aimed to "facilitate the best execution of investor orders and enhance best execution analyses."[4] As illustrated by the SEC's discussion of the views expressed by numerous commenters, including key players across the securities industry, the pre-reform use of market data from the relevant Security Information Processor (SIP) not backed up by enhanced products, such as private data

1. Regulation NMS, Exchange Act Release No. 51,808, 70 Fed. Reg. 37,496, 37,538 (June 9, 2005) (to be codified at 17 C.F.R. pts. 200, 201, 230, 240, 242, 249 & 270), https://www.gpo.gov/fdsys/pkg/FR-2005-06-29/pdf/05-11802.pdf [https://perma.cc/ZZ9B-5N24].

2. *Id.*

3. Market Data Infrastructure, Exchange Act Release No. 90,610, 86 Fed. Reg. 18,596 (Dec. 9, 2020) (to be codified at 17 C.F.R. pts. 240, 242 & 249), https://www.govinfo.gov/content/pkg/FR-2021-04-09/pdf/2020-28370.pdf [https://perma.cc/5EKA-9FVT] [hereinafter Market Data Infrastructure Adopting Release]. The adoption of this rule is being contested by the three main groups of securities exchanges in the equities space. Petition for Review, NYSE LLC v. SEC, No. 21-1053 (D.C. Cir. Feb. 5, 2021); Petition for Review, Nasdaq Stock Mkt. LLC v. SEC, No. 21-1050 (D.C. Cir. Feb. 5, 2021); Petition for Review, Cboe BYX Exch., Inc. v. SEC, No. 21-1051 (D.C. Cir. Feb. 5, 2021).

4. Market Data Infrastructure Adopting Release, *supra* note 3, at 18,605.

feeds offered by individual securities exchanges, might not have been sufficient for fulfilling the duty of best execution in a wide range of scenarios.[5] In connection with this pivotal reform, the regulators reiterated that "[b]roker-dealers . . . must examine their procedures for seeking to obtain best execution in light of market and technology changes and modify those practices if necessary."[6] The other development was the enforcement action brought by the SEC against Robinhood Financial, LLC, which provided valuable insights into that brokerage firm's business model and industry practices more generally. Pointing to misleading disclosure and breaches of the duty of best execution in connection with Robinhood's touted policy of zero-commission trades, the regulators made the following pronouncement: "In reality . . . 'commission free' trading at Robinhood came with a catch: Robinhood's customers received inferior execution prices compared to what they would have received from Robinhood's competitors. For larger value orders, this price difference at Robinhood exceeded the commission its competitors would have charged."[7]

Both of these developments are closely connected to the key role played in the equities space by off-exchange market makers, commonly labeled as "wholesalers" or "internalizers." The nature of off-exchange market making is essentially described by the existence of customized/"captive" order flow arrangements with customer-facing brokers that typically accept payment for order flow (PFOF), representing chiefly retail-focused order flow aggregation, segmentation, and handling, although these market players also may function as on-exchange market makers.[8] More specifically, the SEC's reform of the

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5. *Id.* at 18,599 n.26, 18,600 & n.27, 18,610 n.165, 18,630 & nn.449–50.

6. *Id.* at 18,605.

7. Robinhood Fin., LLC, Securities Act Release No. 10,906, Exchange Act Release No. 60,694, at 2 (Dec. 17, 2020) (settled proceeding), https://www.sec.gov/litigation/admin/2020/33-10906.pdf [https://perma.cc/3K7M-YDXQ].

8. For a discussion of the business model of off-exchange market makers and their potentially multiple functions, see Stanislav Dolgopolov, *Wholesaling Best Execution: How Entangled Are Off-Exchange Market Makers?*, 11 VA. L. & BUS. REV. 149 *passim* (2016), https://ssrn.com/abstract=2744904 [hereinafter Dolgopolov, *Wholesaling Best Execution*]. Off-exchange market makers should be distinguished from "single dealer platforms." Such platforms represent an execution option, in which the same entity serves as a counterparty in each transaction, rather than captive order flow arrange-

market data infrastructure contained a detailed discussion of its implications for the business model of off-exchange market making.[9] Likewise, the regulators pointed out that "[the] inferior prices [offered by Robinhood to its customers] were caused in large part by the unusually high amounts Robinhood charged the principal trading firms [i.e., off-exchange market makers] for the opportunity to obtain Robinhood's customer order flow."[10] Interestingly, in both cases, the regulators had avoided an explicit discussion of the applicability of the duty of best execution to off-exchange market makers themselves. Yet, this applicability, which illustrates a potential reach of the best execution standard to multiple parties in the execution chain starting with customer-facing brokers, cuts through a variety of different issues in the equities space.[11] Accordingly, this Article analyzes the reach of the duty of best execution to off-exchange market makers and its implications in the evolving equity market structure. The Article covers such key themes as a comparative regulatory perspective on the source of the duty of best execution and business practices in off-exchange market making, recent enforcement actions involving off-exchange market makers, the reformed market data infrastructure, IEX's D-Limit order type, stress-testing of price improvement practices, and the feasibility of a common methodology for calculating damages in best execution class actions.

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ments, although there may be an affiliation with an off-exchange market maker. For several illustrations of single dealer platforms and their respective business models, see *Single Dealer Platform*, HRT (June 19, 2020), https://www.hudsonrivertrading.com/divi_overlay/us-equities/ [https://perma.cc/Q94H-BTZX]; *Single Dealer Platform*, IMC, https://www.imc.com/us/institutional-trading/single-dealer-platform/ [https://perma.cc/S4PT-9FES] (last visited Jan. 15, 2021); *VEQ Link Execution Protocols*, VIRTU FIN., INC., (2018), https://www.virtu.com/uploads/documents/VEQ-Execution-Protocols.pdf [https://perma.cc/6MPG-CMPP].

9. Market Data Infrastructure Adopting Release, *supra* note 3, at 18,747.

10. *Robinhood*, at 2.

11. Dolgopolov, *Wholesaling Best Execution*, *supra* note 8, at 197–99.

I.
A Comparative Regulatory Perspective on the Source of the Duty of Best Execution and Business Practices in Off-Exchange Market Making

Perhaps the source of the duty of best execution and business practices in off-exchange market making, which, of course, have real-world implications for this duty, should be analyzed by comparing different jurisdictions. In the U.S. regulatory regime, in addition to the obvious scenario of a direct customer-broker relationship, the applicability of the duty of best execution to an off-exchange market maker may stem from (i) an explicit voluntary assumption of this duty, (ii) the existence of a broad agency/executing broker relationship in the context of order flow/order handling arrangements, or, perhaps most importantly, (iii) the reach of the regulatory framework provided by the Financial Industry Regulatory Authority, Inc. (FINRA) as a self-regulatory organization.[12] In support of the second factor, it should be pointed out that off-exchange market makers, in contrast to their on-exchange counterparts, do not necessarily execute as principal the routed order flow in its entirety and often engage in complex rerouting of certain orders, thus exercising a great degree of discretion as a true executing broker. As described by a leading off-exchange market maker, it "route[s] to both exchanges and off-exchange venues as [it] sequentially search[es] for midpoint liquidity and other inside-the-quote liquidity across external venues,"[13] and, likewise, these market players may route to affiliated trading venues.[14] In its turn, FINRA has made several steps to apply its regulatory framework, such as

12. *Id.* at 168–78.

13. Stephen John Berger, Managing Dir. and Glob. Head of Gov't & Regul. Pol'y, Citadel Sec. LLC, Comment Letter to the SEC on IEX's Proposed D-Limit Order Type 5 (Aug. 14, 2020), https://www.sec.gov/comments/sr-iex-2019-15/sriex201915-7653454-222402.pdf [https://perma.cc/CQ82-CTH5] [hereinafter Citadel Securities' Third Comment Letter to the SEC on IEX's Proposed D-Limit Order Type].

14. For an illustration of an off-exchange market maker rerouting a portion of order flow to an affiliated dark pool, as well as related segmentation of orders, see UBS Sec. LLC [UBS ATS], Material Amendment to Form ATS-N (Form ATS-N/MA) (Jan. 13, 2020), https://www.sec.gov/Archives/edgar/data/230611/000091412120000126/0000914121-20-000126-index.htm.

Rule 5310 governing the best execution standard,[15] to off-exchange market makers more generally and individually. For instance, the following pronouncement is worth noting: "FINRA rules require any broker-dealer, including wholesale market makers such as Madoff, to comply with best execution and order-protection requirements for customer orders routed there by other broker-dealers, even though the executing broker-dealer does not have the direct customer relationship."[16] A recent enforcement action brought by FINRA against Virtu Americas LLC for its failure to match at midpoint certain orders routed by other broker-dealers also articulated that the duty of best execution extends to off-exchange market makers.[17] Additionally, the corresponding best execution obligations cannot be effectively undone by private arrangements between customer-facing brokers and off-exchange market makers, such as through the lack of explicit assurances or even disclaimers of best execution by the latter.[18]

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15. *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].

16. *The Madoff Investment Securities Fraud: Regulatory and Oversight Concerns and the Need for Reform: Hearing Before the S. Comm. on Banking, Hous., & Urban Affairs*, 111th Cong. 75 (2009) (prepared statement of Stephen I. Luparello, Interim Chief Executive Officer, Financial Industry Regulatory Authority, Inc.), https://www.gpo.gov/fdsys/pkg/CHRG-111shrg50465/pdf/CHRG-111shrg50465.pdf [https://perma.cc/SYC2-N24K]. FINRA also made a more general pronouncement that the respective best execution obligations of different entities in the execution chain are not necessarily identical: "[W]hen a firm receives customer orders from a routing firm for purposes of order handling and execution, both the routing firm and the executing firm have best execution obligations, although the routing firm and the executing firm may have different best execution obligations." FIN. INDUS. REGUL. AUTH., INC, REGULATORY NOTICE NO. 15-46, BEST EXECUTION 3 (Nov. 2015), http://www.finra.org/sites/default/files/notice_doc_file_ref/Notice_Regulatory_15-46.pdf [https://perma.cc/M4FZ-CG6Q] [hereinafter FINRA, REGULATORY NOTICE NO. 15-46].

17. Virtu Ams. LLC, Letter of Acceptance, Waiver and Consent No. 2016049752801 (Fin. Indus. Regul. Auth., Inc. July 21, 2020), https://www.finra.org/sites/default/files/fda_documents/2016049752801%20Virtu%20Americas%20LLC%20%28f%20k%20a%20KCG%20Americas%20LLC%29%20CRD%20149823%20AWC%20jlg.pdf [https://perma.cc/5CZY-C3ER].

18. Dolgopolov, *Wholesaling Best Execution*, *supra* note 8, at 168–78.

With respect to the reach of the duty of best execution, off-exchange market makers operating in the U.S. equity markets are hardly unique. Their widely recognized counterparts, stand-alone liquidity providers known as "systematic internalisers" (SIs) under the European regulatory regime centered around Directive 2014/65/EU, also known as MiFID II, are required to "execute the orders they receive from their clients in relation to the shares, depositary receipts, ETFs [exchange-traded funds], certificates and other similar financial instruments for which they are systematic internalisers at the quoted prices at the time of reception of the order," specifically "while complying" with the provision that sets the best execution standard to govern the relationship between investment firms and their clients.[19] In other words, SIs are explicitly required to incorporate the best execution standard into their business model.[20] However, the protections of this provision, as well as

19. Regulation (EU) No 600/2014 of the European Parliament and of the Council of 15 May 2014 on Markets in Financial Instruments and Amending Regulation (EU) No 648/2012, art. 15(2), 2014 O.J. (L 173) 84, 112, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0600&from=en [https://perma.cc/D4HU-Z2TM] [hereinafter Regulation (EU) No 600/2014] (citing Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on Markets in Financial Instruments and Amending Directive 2002/92/EC and Directive 2011/61/EU, art. 27, 2014 O.J. (L 173) 349, 412–13, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0065&from=en [https://perma.cc/JWT4-8DJD] [hereinafter Directive 2014/65/EU]). For the specifics of the best execution standard and required execution policies and procedures of investment firms, see Commission Delegated Regulation (EU) 2017/565 of 25 April 2016 Supplementing Directive 2014/65/EU of the European Parliament and of the Council as Regards Organisational Requirements and Operating Conditions for Investment Firms and Defined Terms for the Purposes of That Directive, arts. 64 & 66, 2017 O.J. (L 87) 1, 57–58, 59–60 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R0565&from=en [https://perma.cc/N5VK-REM6] [hereinafter Commission Delegated Regulation (EU) 2017/565].

20. Interestingly, the very business model of SIs in terms of being classified as an "execution venue" is still questioned in the European regulatory regime, which underscores this model's fragility to regulatory forces. While noting that "SIs have been an important source of liquidity in the past and have a crucial role in providing efficient trading alternatives," the European regulators stated that "it is a declared objective of MiFIR [Regulation (EU) No 600/2014] to reduce the liquidity fragmentation and to offer deeper pools of liquidity to investors" and questioned "whether the significant role of SIs in share trading and their increased number do not run in contradiction with this goal." EUR. SEC. & MKTS. AUTH., NO. ESMA70-156-2188, CON-

several other key provisions, do not extend to dealings with the category of sophisticated "eligible counterparties"—such as "investment firms, credit institutions, insurance companies, UCITS [regulated collective investment vehicles] and their management companies, [and] pension funds and their management companies"—while "the right of such entities to request, either on a general form or on a trade-by-trade basis,

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SULTATION PAPER: MIFID II/ MIFIR REVIEW REPORT ON THE TRANSPARENCY REGIME FOR EQUITY AND EQUITY-LIKE INSTRUMENTS, THE DVC AND THE TRADING OBLIGATIONS FOR SHARES paras. 281, 283–84, at 96–97 (Feb. 4, 2020), https://www.esma.europa.eu/sites/default/files/library/cp_review_report_transparency_equity_dvc_tos.pdf [https://perma.cc/W2H8-GA2Z]. Accordingly, the European regulators posed the question on "removing SIs as eligible execution places for the purposes of the share trading obligation." *Id.* at 97 (referencing Regulation (EU) No 600/2014, *supra* note 19, art. 23, at 117). This change is likely to be a proverbial death blow for the business model of SIs in equities markets. For responses to this consultation by various entities, such as SIs themselves, other trading firms, including on-exchange market makers, securities exchanges, and asset managers, with several criticisms and defenses of the value to the marketplace provided by the business model of SIs, see *MiFID II/ MiFIR Review Report on the Transparency Regime for Equity and Equity-Like Instruments, the DVC and the Trading Obligations for Shares*, ESMA, https://www.esma.europa.eu/press-news/consultations/consultation-mifid-ii-mifir-review-report-transparency-regime-equity-and [https://perma.cc/R8T3-39F8] (last visited Dec. 6, 2020). Ultimately, the European regulators did not endorse "excluding SIs as eligible execution venues under the STO [share trading obligation]," but still posed "the question about whether trading with SI[s] in shares should be further limited and only permitted for trades above the LIS [i.e., 'large in scale' or block-like] thresholds," argued that, while "SIs constitute a crucial alternative source of liquidity for large trades, there seems to be fewer supporting arguments justifying the maintenance of SI trading for smaller trades," and noted that SIs have "more choice regarding the order flow they can execute against" relative to other types of trading venues. EUR. SEC. & MKTS. AUTH., NO. ESMA70-156-2682, MIFID II/ MIFIR REVIEW REPORT ON THE TRANSPARENCY REGIME FOR EQUITY AND EQUITY-LIKE INSTRUMENTS, THE DVC AND THE TRADING OBLIGATIONS FOR SHARES paras. 243–44, 246–47, at 43 (July 16, 2020), https://www.esma.europa.eu/sites/default/files/library/esma70-156-2682_mifidii_mifir_report_on_transparency_equity_dvc_tos.pdf [https://perma.cc/R385-TVV3] [hereinafter ESMA, MIFID II/ MIFIR REVIEW REPORT ON THE TRANSPARENCY REGIME]. For essentially the same question on SIs and the share trading obligation posed by another European regulatory body, see EUR. COMM'N, PUBLIC CONSULTATION ON THE REVIEW OF THE MIFID II / MIFIR REGULATORY FRAMEWORK 27 (Feb. 17, 2020), https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/2020-mifid-2-mifir-review-consultation-document_en.pdf [https://perma.cc/8TYZ-MWNF].

treatment as clients whose business with the investment firm is subject [to the best execution standard]" is specifically recognized.[21] This feature allows for a scenario in which an SI would not be subject to the best execution standard in its dealings with an agency broker as an "investment firm," thus placing the sole burden of this standard on the latter, which should be contrasted to the lack of such an opt-out in the U.S. regulatory regime. However, that investment firm, such as a retail broker, could still negotiate with the SI in question for an extension of the best execution standard down the execution chain.[22]

While off-exchange market makers in both regulatory regimes are subject, in varying degrees, to the best execution standard, SIs also need to "make public their quotes on a regular and continuous basis during normal trading hours . . . in a manner which is easily accessible to other market participants on a reasonable commercial basis."[23] Furthermore, these quotes are subject to a certain minimum quote size, "at least the equivalent of 10% of the standard market size," and need to "reflect the prevailing market conditions."[24] One of the dimensions of the term "prevailing market conditions" is that such quotes are required to be "close in price, at the time of publication, to quotes of equivalent sizes for the same financial instrument on the most relevant market in terms of liquid-

21. Directive 2014/65/EU, *supra* note 19, art. 30(1)–(2), at 415.

22. For a discussion by the European regulators of potentially different, as well as overlapping, best execution obligations in the execution chain and the corresponding implications for the existence of an eligible counterparty in such a chain under a prior iteration of the European regulatory regime, see EUR. COMM. OF SEC. REGULS., NO. CESR/07-050B, PUBLIC CONSULTATION: BEST EXECUTION UNDER MIFID paras. 63–76, at 16–17 (Feb. 2007), https://www.esma.europa.eu/sites/default/files/library/2015/11/07_050b.pdf [https://perma.cc/HW8B-UF6D].

23. Regulation (EU) No 600/2014, *supra* note 19, art. 15(1), at 111–12.

24. *Id.* art. 14(3), at 111. The European regulators recently recommended raising the applicable minimum quote size established by this provision: "Considering that most of the instruments fall in the smallest bucket which results in SIs required to quote at a minimum of EUR 1,000 only, this leads to very limited transparency. ESMA [the European Securities and Markets Authority] is therefore proposing to amend Article 14(3) of MiFIR and increase the minimum quoting size to 100% of SMS [standard market size]." ESMA, MIFID II/ MIFIR REVIEW REPORT ON THE TRANSPARENCY REGIME, *supra* note 20, para. 159, at 28.

ity,"[25] which serves as an additional mechanism of securing a proper reference price. However, SIs are also "allowed to decide, on the basis of their commercial policy and in an objective non-discriminatory way, the clients to whom they give access to their quotes" and, more generally, "may refuse to enter into or discontinue business relationships with clients on the basis of commercial considerations."[26] In other words, not unlike their U.S. counterparts, SIs are able to customize, subject to certain limits, their order flow arrangements, although this feature is controversial.[27]

In any instance, these quoting obligations of SIs should be contrasted to their complete lack in the U.S. equity markets, where off-exchange market makers have adopted the business model of "dark," i.e., undisplayed, liquidity, which is typically tied to the National Best Bid and Offer (NBBO) with potential price improvement.[28] On the other hand, this model is not entirely ignored in the European regulatory regime. In addition to a broad set of exemptions from pre-trade transparency

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25. Commission Delegated Regulation (EU) 2019/442 of 12 December 2018 Amending and Correcting Delegated Regulation (EU) 2017/587 to Specify the Requirement for Prices to Reflect Prevailing Market Conditions and to Update and Correct Certain Provisions, art. 1(3), 2019 O.J. (L 77) 56, 57, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0442&from=en [https://perma.cc/3REZ-X7D4] [hereinafter Commission Delegated Regulation (EU) 2019/442].

26. Regulation (EU) No 600/2014, *supra* note 19, art. 17(1), at 112. As a matter of the applicable commercial policy, some SIs limit access to their quotes just to eligible counterparties and hence are not subject to the best execution standard: "MiFID II permits SIs to decide the clients to whom they give access to their quotes. We only permit clients who are eligible counterparties to access our executable quotes." XTX Mkts. Ltd., Regulatory Client Disclosures Annex 1, at 2 (Jan. 5, 2021).

27. As asserted by an on-exchange market maker, "SIs are able to choose and pick over order flow: meaning they can choose to only transact with retail flow, leaving the less attractive, informed order flow of institutional investors to the public market [making it] less attractive to trade on (or provide liquidity on) . . . ." Optiver, Response to the ESMA on the Consultation Paper on MiFID II/ MiFIR Review Report on the Transparency Regime for Equity and Equity-Like Instruments, the DVC and the Trading Obligations for Shares 7 (2020), https://www.esma.europa.eu/file/55349/download?token=P5Kbeb9B [https://perma.cc/76P4-Z6HL]. Of course, very similar arguments have been advanced by some stakeholders in connection with off-exchange market making under the U.S. regulatory regime. Dolgopolov, *Wholesaling Best Execution*, *supra* note 8, at 155–56 & n.19.

28. Dolgopolov, *Wholesaling Best Execution*, *supra* note 8, at 158.

and other requirements available to SIs for orders "above standard market size,"[29] "in justified cases, [SIs] may execute . . . orders at a better price [i.e., relative to a quoted price] provided that the price falls within a public range close to market conditions."[30] As another illustration, an SI may, for certain orders, "execute that part of the order which exceeds its quotation size, provided that it is executed at the quoted price."[31] Interestingly, one empirical study analyzed SIs operating on the French equity market and concluded that "a large portion of SI transactions [is] not subject to pre-trade transparency requirements [based on the applicable exemptions] [and] that transactions subject to pre-trade transparency requirements represent only 22% of the amounts traded by SIs during the continuous trading phase."[32]

The distinction between "lit" and "dark" liquidity also implicates different approaches to complying with the duty of best execution, and this factor is intricately connected to risk management. For instance, SIs are permitted, "under exceptional market conditions, to withdraw their quotes," "to limit in a non-discriminatory way the number of transactions from the same client which they undertake to enter at the published conditions," and "in a non-discriminatory way [to] limit the total number of transactions from different clients at the same time provided that this is allowable only where the number and/or volume of orders sought by clients considerably exceeds the norm."[33] A later regulatory measure specified "exceptional market conditions [that] are considered to exist where to impose on a systematic internaliser an obligation to provide firm quotes to clients would be contrary to prudent risk management" and "the number or volume of orders [that] considerably exceed the norm where a systematic in-

29. Regulation (EU) No 600/2014, *supra* note 19, art. 14(2), at 111.

30. *Id.* art. 15(2), at 112.

31. *Id.* art. 15(4), at 112.

32. Iris Lucas, Autorité des Marchés Financiers, Quantifying Systematic Internalisers' Activity: Their Share in the Equity Market Structure and Role in the Price Discovery Process 3–4 (May 2020) (unpublished manuscript) (on file with author), https://www.amf-france.org/sites/default/files/2020-06/202005_etude_internalisateurs_integrale_va.pdf [https://perma.cc/2XQV-8L4X].

33. Regulation (EU) No 600/2014, *supra* note 19, arts. 15(1) & 17(2), at 111–12.

ternaliser cannot execute the number or volume of those orders without exposing itself to undue risk."[34]

Given price-related considerations relevant for the best execution standard, the applicable tick size regime as a mandatory pricing grid for quoting, price improvement, and execution has quite a bit of significance. One solution under the European regulatory regime is to incorporate the relevant granular/dynamic tick size regime as follows: "[T]he prices published by a systematic internaliser in respect of shares and depositary receipts shall be deemed to reflect prevailing market conditions only where those prices . . . respect minimum price increments corresponding to the tick sizes specified in Article 2 of Commission Delegated Regulation (EU) No 2017/588."[35] A subsequent regulatory change was more radical, as it went beyond quoting requirements. This change extended the tick size regime to SIs' "quotes, price improvements on those quotes and execution prices," with the reservation that "[a]pplication of tick sizes shall not prevent systematic internalisers matching orders large in scale [i.e., block-like] at mid-point within the current bid and offer prices," and clarified that this regime applies to SIs "when dealing in all sizes."[36] An industry group criticized the anticipated implementation of this measure on the following grounds:

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34. Commission Delegated Regulation (EU) 2017/567 of 18 May 2016 Supplementing Regulation (EU) No 600/2014 of the European Parliament and of the Council with Regard to Definitions, Transparency, Portfolio Compression and Supervisory Measures on Product Intervention and Positions, arts. 14–15, 2017 O.J. (L 87) 90, 99–100, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R0567&from=en [https://perma.cc/W54Q-APLC].

35. Commission Delegated Regulation (EU) 2019/442, *supra* note 25, art. 1(3), at 57 (citing Commission Delegated Regulation (EU) 2017/588 of 14 July 2016 Supplementing Directive 2014/65/EU of the European Parliament and of the Council with Regard to Regulatory Technical Standards on the Tick Size Regime for Shares, Depositary Receipts and Exchange-Traded Funds, art. 2, 2017 O.J. (L 87) 411, 412–13, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R0588&from=en [https://perma.cc/SDK2-YSPL]).

36. Regulation (EU) 2019/2033 of the European Parliament and of the Council of 27 November 2019 on the Prudential Requirements of Investment Firms and Amending Regulations (EU) No 1093/2010, (EU) No 575/2013, (EU) No 600/2014 and (EU) No 806/2014, recital 44, art. 63, 2019 O.J. (L 314) 1, 10, 57, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R2033&from=en [https://perma.cc/FBU4-R7SM].

> The application of the tick size regime above Large-in-Scale [i.e., block-like] (other than trades executed at mid-point) will in our view not contribute to the price discovery process for [Large-in-Scale] trades and may actually inhibit appropriate price formation between systematic internalisers and their clients. Furthermore, the ability to execute Large-in-Scale trades on a sub-tick basis provides meaningful price improvement for clients trading in large sizes which brings benefits to end investors.[37]

On the other hand, several stakeholders had previously argued that the option of de minimis price improvement by SIs in combination with the best execution standard conferred an unjustified advantage over other trading venues and could ultimately harm the entire marketplace.[38] The European regulators also asserted in their earlier guidance that

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37. EUR. F. OF SEC. ASS'NS, EFSA – INITIAL COMMENTS ON MIFID 2/R REVIEW 3 (Jan. 20, 2020), https://www.afme.eu/Portals/0/DispatchFeaturedImages/EFSA%20comments%20on%20MiFID%20Review%20dated%202020%20January%202020.pdf [https://perma.cc/KFS9-EAFA].

38. *See, e.g.*, Fed'n of Eur. Sec. Exch., Response to the European Commission on the Public Consultation on the Draft Commission Delegated Regulation Amending the MiFID 2 Delegated Regulation with Respect to Systematic Internaliser Definition (July 18, 2017), https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/1077-Commission-Delegated-Regulation-amending-the-MiFID-2-Delegated-Regulation-with-respect-to-systematic-internaliser-defint/F2172 [https://perma.cc/BKQ6-H52J] ("The capacity of SIs to improve prices without respecting tick sizes means they will be able to offer (often meaningless) price improvement to their clients. In conjunction with best execution requirements, this means SIs are extremely likely to capture significant trading flows in the post-MIFID II market structure. This unlevel playing field is not justifiable; SIs should be subject to the same obligations as trading venues in this respect."); Optiver, Response to the European Commission on the Public Consultation on the Draft Commission Delegated Regulation Amending the MiFID 2 Delegated Regulation with Respect to Systematic Internaliser Definition (July 12, 2017), https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/1077-Commission-Delegated-Regulation-amending-the-MiFID-2-Delegated-Regulation-with-respect-to-systematic-internaliser-defint/F2049 [https://perma.cc/P3L9-2RA5] ("[O]ne very important reason why the SI regime attracts so many new entrants and that is the fact they are not subject to the tick size regime, allowing SI[s] to offer (usually meaningless) price improvement that is not attainable on public markets. . . . This meaningless price improvement will however make SIs the de-facto destination of choice for

> marginal price improvements on quoted prices would challenge the efficient valuation of equity instruments without bringing any real benefits to investors [and in order] to ensure that price improvements do not undermine the efficient pricing of instruments traded, price improvements on quoted prices would only be justified [under Article 15(2) of Regulation (EU) No 600/2014] when they are meaningful and reflect the minimum tick size.[39]

This debate on the specifics of the applicable tick size regime illustrates that finding an optimal combination of a level playing field for competing trading venues, material price improvement for specific types of orders, and effective price discovery in the marketplace remains a difficult detail-driven exercise for any regulatory regime.

On the other end of the spectrum, off-exchange market makers in the U.S. equity markets have substantial leeway to offer subpenny price improvement in providing undisplayed liquidity because Regulation NMS specifically sanctions this practice, as opposed to the ban on displaying subpenny quotes or accepting subpenny orders under Rule 612.[40] Yet, being di-

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Smart Order Routers (SORs) seeking best execution, but in the long term, at great cost for the public markets' role in central price formation.").

39. EUR. SEC. & MKTS. AUTH., NO. ESMA70-872942901-38, QUESTIONS AND ANSWERS: ON MIFID II AND MIFIR MARKET STRUCTURES TOPICS 59 (rev. Apr. 6, 2021), https://www.esma.europa.eu/sites/default/files/library/esma70-872942901-38_qas_markets_structures_issues.pdf [https://perma.cc/8T2T-LF6D] [hereinafter ESMA, Q&A ON MIFID II AND MIFIR MARKET STRUCTURES TOPICS] (referencing Regulation (EU) No 600/2014, *supra* note 19, art. 15(2), at 112).

40. For a discussion of the significance of Rule 612 and additional considerations under FINRA's regulatory framework, see Dolgopolov, *Wholesaling Best Execution*, *supra* note 8, at 158–59, 179. For the rule in question, see Minimum Pricing Increment, 17 C.F.R. § 242.612 (2020). One notable exception to this subpenny ban relates to retail liquidity programs adopted by several securities exchanges, the very existence of which has been influenced by the competitive dynamics between such securities exchanges and off-exchange market makers. *See, e.g.*, Order Granting Approval of a Proposed Rule Change by NYSE Arca, Inc. to Make Permanent the Retail Liquidity Program Pilot and Order Granting Limited Exemption Pursuant to Rule 612(c) of Regulation NMS, Exchange Act Release No. 87,350, 84 Fed. Reg. 57,106, 57, 128–29 (Oct. 18, 2019), https://www.govinfo.gov/content/pkg/FR-2019-10-24/pdf/2019-23167.pdf [https://perma.cc/8ZLP-CRH9] ("The Commission believes that the limited exemption . . . should continue to pro-

rectly connected to the duty of best execution, one should note "a lively discussion about the value and market-wide effects of price improvement provided by off-exchange market makers, which is often seen as de minimis rather than a reflection of the value of retail order flow,"[41] as well as the concern that provided price improvement sometimes conceals more substantial price improvement elsewhere, which could also be realized by an off-exchange market maker for itself.[42]

Another important feature of MiFID II is that an SI is defined as "an investment firm which, on an organised, frequent systematic and substantial basis, deals on own account when executing client orders outside a regulated market, an MTF [multilateral trading facility] or an OTF [organised trading facility] without operating a multilateral system."[43] When the criteria for the mandatory application of the SI status were originally adopted, such an entity was not allowed to "bring together third party buying and selling interests in functionally the same way as a trading venue" and hence constitute "an internal matching system which executes client orders on a multilateral basis . . . which [would] result[ ] in the investment firm undertaking matched principal transactions on a regular and not occasional basis."[44] A subsequent regulatory change specified that "dealing on own account" excludes an investment firm's "participat[ion] in matching arrangements entered into with entities outside its own group with the objective or consequence of carrying out *de facto* riskless back-to-back transactions in a financial instrument outside a trading venue" and clarified that the exclusion covers "the internal or external matching."[45] The European regulators provided additional guidance on these issues, which, among other things, stresses

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mote competition between exchanges and OTC [i.e., off-exchange] market makers [and such] sub-penny prices will not be disseminated through the consolidated quotation data stream, which should avoid quote flickering and its reduced depth at the inside quotation.").

41. Dolgopolov, *Wholesaling Best Execution*, *supra* note 8, at 159.

42. *Id.* at 177 & nn.86–87.

43. Directive 2014/65/EU, *supra* note 19, art. 4(1)(20), at 382.

44. Commission Delegated Regulation (EU) 2017/565, *supra* note 19, recital 19, arts. 12–17, at 3–4, 24–27.

45. Commission Delegated Regulation (EU) 2017/2294 of 28 August 2017 Amending Delegated Regulation (EU) 2017/565 as Regards the Specification of the Definition of Systematic Internalisers for the Purposes of Directive 2014/65/EU, recital 2, art. 1, 2017 O.J. (L 329) 4, 4–5, https://eur-

that "the trading activity of [an] SI is characterised by risk-facing transactions that impact the Profit and Loss account of the firm," states that an SI is not prohibited "from hedging the positions arising from the execution of client orders as long as it does not lead to the SI de facto executing non risk-facing transactions and bringing together multiple third party buying and selling interests," and advises against "systems or arrangements, be they automated or not, intended to match opposite client orders [or] aimed at increasing opportunities for client order matching."[46] Moreover, citing the concerns expressed by several stakeholders, the European regulators posed the questions—in the context of both equity and non-equity markets—whether "there are networks of SIs currently operating in such a way that . . . qualify as a multilateral system" and whether "the line differentiating bilateral and multilateral trading in the context of SIs is sufficiently clear."[47] However, in addition to the permissibility of certain contemporaneous offsetting transactions elsewhere, it should also be recognized that firms and their affiliates could handle clients' orders, such as nonmarketable limit orders, outside of their respective SI platforms and route them to other destinations.[48] By contrast,

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lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R2294&from=en [https://perma.cc/84ZZ-LT75].

46. ESMA, Q&A ON MiFID II AND MiFIR MARKET STRUCTURES TOPICS, *supra* note 39, at 56–58.

47. EUR. SEC. & MKTS. AUTH., NO. ESMA70-156-2013, CONSULTATION PAPER: ON THE FUNCTIONING OF ORGANISED TRADING FACILITIES (OTF) 26–27 (Sept. 25, 2020), https://www.esma.europa.eu/sites/default/files/library/esma70-156-2013_consultation_paper_on_the_functioning_of_organised_trading_facilities.pdf [https://perma.cc/UH42-7UWL]. Some responses alleged the existence of "shadow" networks involving SIs that "qualify as multilateral systems." FIA Eur. Principal Traders Ass'n, Response to the ESMA on the Consultation Paper on the Functioning of Organised Trading Facilities 7–8 (2020), https://www.esma.europa.eu/file/69209/download?token=YfaglAB7 [https://perma.cc/ZV5J-94R4]. Other responses emphasized the legitimate nature of known interactions among SIs and referenced such factors as best execution obligations and risk management. Ass'n for Fin. Mkts. in Eur., Response to the ESMA on the Consultation Paper on the Functioning of Organised Trading Facilities 5–6 (2020), https://www.esma.europa.eu/file/69210/download?token=QHaLXBjg [https://perma.cc/UA88-Z6Z8].

48. For a detailed illustration provided by a representative order execution protocol, see VIRTU FIN. IR. LTD., NO. COM-20399, ORDER EXECUTION POLICY FOR PROFESSIONAL CLIENTS (Jan. 2020), https://www.virtu.com/

off-exchange market makers in the U.S. equity markets are not required to trade only as principal or engage in segregation of liquidity provision: a portion of order flow routed by other broker-dealers on the basis of customized arrangements could be further "cherry-picked"/internalized or matched, with the rest rerouted elsewhere.[49] On the other hand, such rerouting practices of off-exchange market makers could be scrutinized from the standpoint of compliance with the duty of best execution.[50]

The controversial practice of PFOF, which characterizes order flow arrangements between customer-facing brokers and off-exchange market makers based on monetary incentives paid by the latter to the former in the U.S. equity markets,[51] should be singled out as a key distinction between the European and U.S. regulatory regimes. While the SEC has employed a disclosure-based approach to PFOF, as exemplified by its pivotal 1994 release,[52] MiFID II, in the context of its best execution standard, prohibits an "investment firm" from "receiv[ing] any remuneration, discount or non-monetary benefit for routing client orders to a particular trading venue or execution venue" relating to certain conflicts of interest and inducements.[53] This provision has been interpreted as a

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uploads/documents/VFIL_Order_Execution_Policy_Jan_2020.pdf [https://perma.cc/2EUN-8GT8].

49. *See, e.g.*, Equities & Options Order Handling Agreement among E*Trade Fin. Corp., E*Trade Sec. LLC, & Citadel Derivatives Grp. LLC § 2.1(a) (Nov. 29, 2007) [hereinafter E*Trade-Citadel Equities and Options Order Handling Agreement], https://www.sec.gov/Archives/edgar/data/1015780/000119312508041906/dex1029.htm [https://perma.cc/2ANR-S9X7] (stating that the off-exchange market maker in question "shall, in its sole discretion, determine to execute such Covered Orders [contemplated by the agreement] either as principal or by acting as riskless principal or agent, including, where applicable, determining the market center for execution of such Covered Orders"), *reproduced in* E*Trade Fin. Corp., Annual Report (Form 10-K) Ex. 10.29, at 8 (Feb. 28, 2008).

50. Dolgopolov, *Wholesaling Best Execution*, *supra* note 8, at 179–83.

51. For a detailed discussion of PFOF, see *id.* at 151, 154–58, 160, 162–65.

52. Payment for Order Flow, Exchange Act Release No. 34,902, 59 Fed. Reg. 55,006 (Oct. 27, 1994) (to be codified at 17 C.F.R. pt. 240).

53. Directive 2014/65/EU, *supra* note 19, art. 27(2), at 412. This provision is subject to the carveout, as well as the optout option, applicable to eligible counterparties. *Id.* art. 30(1)–(2), at 415. In practice, this provision is directed at agency brokers rather than SIs themselves.

de facto ban on PFOF. For instance, as asserted by the U.K. regulators, "MiFID II . . . will place further restrictions on charging PFOF. For professional client business, MiFID II further reinforces the ineligibility of these third-party payments when executing orders on behalf of clients [under the provision in question]."[54] This conclusion was accompanied by a number of criticisms of PFOF in general, as this practice was said to "create[ ] a conflict of interest between a firm (the broker) and its clients because the firm is incentivised to pursue payments from market makers rather than to provide best execution in the interests of their clients," to "undermine[ ] the transparency and efficiency of the price formation process . . . because the prices paid by clients include hidden costs [in the form of] the higher spread that they may additionally need to pay to take account of the fees paid by the market [maker]," and to "[f]orc[e] market makers to 'pay-to-play' [and thus] distort competition by creating barriers to entry and expansion."[55] The U.K. regulators formally codified this interpretation of MiFID II as follows: "A *firm* is unlikely to meet its obligations relating to best execution, inducements, and conflicts of interest where it receives payment, remuneration or commission from third parties (including those entities to whom or which it directs orders for execution) in relation to the execution of *client* orders."[56] However, with PFOF being just one example, the prohibition on collecting incentives from a routing destination in connection with client orders, such as those stemming from maker-taker arrangements, is not absolute under MiFID II.[57]

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54. U.K. FIN. CONDUCT AUTH., MKT. WATCH NO. 51, OBSERVATIONS FROM MARKET MAKER REVIEW 8–9 (Sept. 2016), https://www.fca.org.uk/publication/newsletters/marketwatch-51.pdf [https://perma.cc/346W-TRPT].

55. *Id.* at 5.

56. U.K. Fin. Conduct Auth., No. FCA 2017/39, Conduct, Perimeter Guidance and Miscellaneous Provisions (MiFID 2) Instrument 2017 Annex F, at 62 (June 30, 2017) (to be codified at FCA HANDBOOK COBS 2.3A.31G), https://www.handbook.fca.org.uk/instrument/2017/FCA_2017_39.pdf [https://perma.cc/DJ24-4SWZ] (internal citations omitted).

57. *See, e.g.*, Commission Delegated Regulation (EU) 2017/565, *supra* note 19, art. 66(6), at 60 ("Investment firms . . . shall inform clients about the inducements that the firm may receive from the execution venues."); Bank of Am. Merrill Lynch, BofAML 2017 Top Five Execution Venues for Client Orders: Regulation (EU) 2017/576 ("RTS 28"), v. 1, at 5 (Apr. 2018), https://markets.ml.com/web/public/bestex/eq/BofAML%20RTS%2028

At the same time, the experience of the European regulatory regime shows that there is a possibility that PFOF arrangements involving both on-exchange and off-exchange market makers and customer-facing brokers could be concealed via bundled products or intermediated by other parties, such as trading venues, which has relevance for both compliance with MiFID II and further regulatory refinement. For instance, in the context of internalization, one industry group characterized as de facto PFOF the scenario when "aggregators . . . are still able to offer other soft inducements that provide benefits to the party routing flow to their platforms, [for example] because the full trade life cycle of execution, clearing and custody is bundled into one cost package."[58] Moreover, another industry group expressed the concern that some trading venues

> operate a single-market maker trading model, whereby only one market maker per product segment is responsible for the entire order book [and] are further oftentimes characterised by [PFOF] practices whereby the retail broker, in exchange for steering its clients' orderflow [sic] to a specific system, receives a monetary inducement from the relevant market maker on that system who will be the exclusive counterparty to the retail investors' orders.[59]

%20Qualitative%20Statement%20FY2017%20(April%202018)%20v1.0.pdf [https://perma.cc/23ZY-KUAX] ("Some European Exchanges and MTFs [multilateral trading facilities] operate a transparent maker/taker fee structure, whereby posting liquidity earns a rebate. BofAML receives such rebates in accordance with the rulebook and fee structures of these venues. BofAML has no private arrangements to receive compensation from any execution venue.").

58. Ass'n of Proprietary Traders, Response to the ESMA on the Consultation Paper on MiFID II/ MiFIR Review Report on the Transparency Regime for Equity and Equity-Like Instruments, the DVC and the Trading Obligations for Shares 5 (2020), https://www.esma.europa.eu/file/54992/download?token=1jRCoMer [https://perma.cc/8MZ4-D9XP].

59. FIA Eur. Principal Traders Ass'n, Response to the European Commission on the Public Consultation on the Review of the MiFID II / MiFIR Regulatory Framework 37–38 (May 18, 2020), https://www.fia.org/sites/default/files/2020-05/20200518_FIA%20EPTA_EC%20consultation%20on%20MiFID%202.1_material%20responses_FINAL%20.pdf [https://perma.cc/5MFS-JAZF].

Likewise, another commenter pointed to the phenomenon of "online brokers (order flow providers) which actively route free of charge their clients' order flows for execution exclusively to venues that facilitate PFOF schedules and receive a fee or commission from liquidity providers/market makers closely connected to these venues in return" and asserted that "the trend towards higher PFOF from larger market makers / liquidity providers to order flow providers is worrisome as it may impair competition and/or serve as entry barriers for new market participants."[60]

Turning back to the U.S. regulatory regime, PFOF in itself has not been considered a breach of the duty of best execution.[61] Moreover, several arguments have been offered in defense of this practice, such as competition with other trading venues' incentive programs and paid-for benefits for customers.[62] Accordingly, the focus should be on execution quality provided by off-exchange market makers and the very structure of the underlying PFOF arrangements, which need to provide for meaningful monitoring of execution quality and compliance with the duty of best execution by both off-exchange market makers and customer-facing brokers.[63] Yet an-

60. Fed'n of Eur. Sec. Exch., Response to the European Commission on the Public Consultation on the Review of the MiFID II / MiFIR Regulatory Framework 54–55 (May 18, 2020), https://fese.eu/app/uploads/2020/05/200518-FESE-Response-to-MiFID-II-Review-Consultation_FINAL-for-website.pdf [https://perma.cc/GHK4-HH3Y].

61. *See, e.g.*, Payment for Order Flow, Exchange Act Release No. 34,902, 59 Fed. Reg. 55,006, 55,011 (Oct. 27, 1994) (to be codified at 17 C.F.R. pt. 240) ("The Commission does not believe that all payment for order flow arrangements are against the customer's best interest and must be banned *per se* as compromising a broker's duty to seek best execution of the customer's order.").

62. For a discussion of some of these arguments, see Dolgopolov, *Wholesaling Best Execution*, *supra* note 8, at 162–64.

63. An important regulatory dimension of such an arrangement is that a customer-facing broker that "routes customer orders to other broker-dealers for execution on an automated, non-discretionary basis" needs to "periodically conduct[ ] regular and rigorous reviews of the quality of the executions of its customers' orders if it does not conduct an order-by-order review," with such a review "conducted on a security-by-security, type-of-order basis (e.g., limit order, market order, and market on open order)." FINRA Rule 5310, *supra* note 15 (Supplementary Material .09 Regular and Rigorous Review of Execution Quality (a)). Moreover, a customer-facing broker's reliance on another party, such as an off-exchange market maker, in conducting such a review has its limitations: "A member that routes its order flow to another

other important issue embedded in such arrangements relates to a potential tradeoff and hence a proper split between the respective amounts of price improvement for customers and PFOF for their brokers.[64] As opined by an industry insider,

> Brokers that extract the best price improvement for their customers necessarily forgo some hefty payments that other brokers get for sending their order flows to market makers. "The market makers are not both going to pay you a lot for order flow and then turn around and provide your customers with a high level of price improvement," says Gregg Murphy, Fidelity Brokerage's senior vice president for trading.[65]

While the very existence of *some* amount of PFOF is unlikely to be a smoking gun, the relative shares of such a split could be subjected to further scrutiny.

The phenomenon of zero-commission trades for retail customers is a prominent illustration of the economics of PFOF and the corresponding implications for the best execution standard. One commentator linked this phenomenon spearheaded by Robinhood, with other leading retail brokerage firms following behind, to the rising level of PFOF: "By eliminating broker fees and cutting those revenue streams to zero, brokerages are required to make up that lost revenue elsewhere."[66] Not surprisingly, PFOF "has become especially vi-

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member that has agreed to handle that order flow as agent for the customer . . . can rely on that member's regular and rigorous review as long as the statistical results and rationale of the review are fully disclosed to the member and the member periodically reviews how the review is conducted, as well as the results of the review." *Id.* (Supplementary Material .09 Regular and Rigorous Review of Execution Quality (c)).

64. For several sources addressing this tradeoff, see Dolgopolov, *Wholesaling Best Execution*, *supra* note 8, at 156 n.20, 160.

65. Bill Alpert, *Fidelity Tops in Price Improvement for Retail Investors*, BARRON'S (July 11, 2015), https://www.barrons.com/articles/fidelity-tops-in-price-improvement-for-retail-investors-1436589662 [https://perma.cc/ERC8-AXH9].

66. Alex Steiner, *PFOF Trends and the Explosion of Retail Trading*, MEDIUM (July 6, 2020), https://medium.com/anthemis-insights/pfof-trends-and-the-explosion-of-retail-trading-a2339aa423e2 [https://perma.cc/CG7K-TGMX]. As an illustration of disparities between the retail and institutional segments, brokerage commissions in the equities space for institutional investors are estimated to have *risen* by seven percent to $7.2 billion in 2020. LARRY TABB & JACKSON GUTENPLAN, BLOOMBERG INTEL., U.S. INSTITUTIONAL EQUITY TRADING STUDY 3 (Feb. 2021), https://assets.bbhub.io/professional/sites/10/

tal to companies' bottom line after commissions went to zero,"[67] although this new pricing structure as a de facto industry standard has not been uniformly implemented and managed from the standpoint of conflicts of interest. One notable outlier is Fidelity, which offers zero-commission trades to its retail customers,[68] but still does not accept PFOF from off-exchange market makers despite routing a sizeable portion of its order flow to such market players.[69] While zero-commission trades are a clear example of a PFOF-funded benefit accruing directly to customers, there may be a potentially greater cost in the form of inferior execution quality. Notably, FINRA released a target examination letter focused on the phenomenon of zero-commission trades that specifically scrutinizes

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2021_02-Market-Structure-Buyside-Survey-US.pdf [https://perma.cc/9V5S-7ULH].

67. Kate Rooney & Maggie Fitzgerald, *Here's How Robinhood Is Raking in Record Cash on Customer Trades — Despite Making It Free*, CNBC (Aug. 13, 2020, 12:08 PM), https://www.cnbc.com/2020/08/13/how-robinhood-makes-money-on-customer-trades-despite-making-it-free.html. In addition to PFOF, other sources of revenue potentially available to customer-facing brokers, which are not borne by customers directly, include contractually set collections of interest on customers' cash balances and lending of customers' securities. SHANE SWANSON, GREENWICH ASSOCS., LLC, THE IMPACT OF ZERO COMMISSIONS ON RETAIL TRADING AND EXECUTION 9 (2020), https://www.greenwich.com/file/89651/download?token=Alc1igTf [https://perma.cc/6S7X-YV7Z].

68. *See The Fidelity Advantage: A Clear Choice*, FIDELITY, https://www.fidelity.com/why-fidelity/overview [https://perma.cc/L77F-AL4Y] (last visited Jan. 26, 2021) ("$0.00 commission applies to online U.S. equity trades, exchange-traded funds (ETFs), and options (+ $0.65 per contract fee) in a Fidelity retail account only for Fidelity Brokerage Services LLC retail clients.").

69. *See* Fid. Brokerage Servs. LLC, Held NMS Stocks and Options Order Routing Public Report, 3d Quarter 2020 *passim* (Oct. 24, 2020), https://capitalmarkets.fidelity.com/app/proxy/content?literatureURL=/990075 3.PDF [https://perma.cc/9N8F-JD6U] (providing order flow breakdown for various months and types of securities accompanied by the standard disclosure that "FBS [Fidelity Brokerage Services LLC], through its affiliated broker-dealer NFS [National Financial Services LLC], does not receive payment for order flow or have a profit-sharing arrangement related to any order flow routed to wholesale market-makers, including marketable equity orders (market and marketable limit orders), non-marketable limit orders, all-or-none (AON) orders, stop orders, and other special order types" and describing how some orders are routed to CrossStream, an affiliated dark pool, where NFS "may receive a trading commission from the contra-side party [e.g., an institutional investor] against which the FBS order executed").

PFOF arrangements, including any relevant changes to such arrangements potentially caused by the new pricing structure, "written supervisory procedures concerning best execution and FINRA Rule 5310," and documentation on "reasonable diligence to ascertain the best market for orders that the Firm routed for execution to any market center so that the resultant price was as favorable as possible for its customer under prevailing market conditions."[70]

In light of this development, an executive of a leading retail brokerage firm gave a rather problematic description of different tiers of "best execution" offered by that firm *aside* from any ancillary trading products and services:

> If it's IBKR Lite with zero commissions we do what the other brokers do, we send them off to a market maker just like everybody else and there's payment for order flow that comes back and you may not get as good of an execution. . . . If its [sic] IBKR Pro you'll get better execution.[71]

The nature of IBKR Lite has been officially disclosed and explained in a number of ways, including an explicit admission of inferior execution quality stemming from the lack of efforts to obtain additional price improvement.[72] Yet, while

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70. *Targeted Examination Letter on Zero Commissions*, FINRA (Feb. 2020), https://www.finra.org/rules-guidance/guidance/targeted-examination-letters/zero-commissions [https://perma.cc/V97H-3WJJ].

71. Rooney & Fitzgerald, *supra* note 67 (quoting Steve Sanders, Executive Vice President of Marketing and Product Development of Interactive Brokers).

72. *See* Interactive Brokers Grp., Inc., Annual Report (Form 10-K) 4 (Feb. 28, 2020), https://www.sec.gov/ix?doc=/archives/edgar/data/1381197/000138119720000006/ibkr-20191231x10k.htm ("IBKR Lite℠ was designed to meet the needs of investors who are seeking a simple, commission-free way to trade U.S. exchange-listed stocks and ETFs and do not wish to consider our efforts to obtain greater price improvement through our IB SmartRouting℠ system."); Nancy Stube, Director, IR, Interactive Brokers Group's (IBKR) Q3 2019 Results – Earnings Call Transcript 2 (Oct. 15, 2019), https://investors.interactivebrokers.com/download/ir/3Q19_IBKR_earnings_call_transcript.pdf [https://perma.cc/N2JY-V74W] ("Since the inception of our Electronic Brokerage business, we have prided ourselves in our commitment to offering the best platform for our customers. To us, this meant best execution by routing orders directly to a venue and not selling customer order flow. It meant routing our customers' orders to whichever venue is likely to offer the best price for that specific security at that particular time. . . . More recently, we found that not everyone shared our definition of what is 'best'.

the scope of the duty of best execution could be tweaked contractually, any distancing from the depth of this standard for specific transactions by a customer-facing broker, either with or without disclosure, raises several legal and regulatory issues, such as compliance with FINRA Rule 5310. As previously emphasized by the regulators, "A broker-dealer's obligations to meet minimum business conduct requirements cannot be satisfied through disclosure to the customer: in other words, a customer cannot waive or contract away these obligations."[73] More specifically, "explicit rules and guidance that establish minimum, unwaivable obligations" include the obligation to "seek to execute customers' trades at the most favorable terms reasonably available under the circumstances."[74] Likewise,

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To some investors, 'best' meant paying 0 commissions first and foremost. If this is what some of our customers wanted, we decided to oblige."); Press Release, Interactive Brokers Grp., Inc., Interactive Brokers to Launch IBKR Lite (Sept. 29, 2019, 1:19 PM), https://www.businesswire.com/news/home/20190926005753/en/Interactive-Brokers-Launch-IBKR-Lite [https://perma.cc/99DK-NYC3] ("IBKR Lite was designed to meet the needs of investors who are seeking a simple, cost-free way to trade US exchange-listed stocks and ETFs and do not wish to consider our efforts to obtain greater price improvement through our IB SmartRouting℠ system. . . . Like many other brokers, Interactive Brokers will route the orders of IBKR Lite clients to market makers in exchange for receiving payment for order flow. Clients that opt to use IBKR Pro will continue to receive the best prices our sophisticated algorithms can secure for them.").

73. STAFF, U.S. SEC. & EXCH. COMM'N, STUDY ON INVESTMENT ADVISERS AND BROKER-DEALERS: AS REQUIRED BY SECTION 913 OF THE DODD-FRANK WALL STREET REFORM AND CONSUMER PROTECTION ACT 50 (Jan. 2011), https://www.sec.gov/news/studies/2011/913studyfinal.pdf [https://perma.cc/8MBV-YLKA] [hereinafter SEC STUDY ON INVESTMENT ADVISERS AND BROKER-DEALERS]. The cited statutory provision in part states that "[a]ny condition, stipulation, or provision binding any person to waive compliance with any provision of this chapter or of any rule or regulation thereunder, or of any rule of a self-regulatory organization, shall be void." 15 U.S.C. § 78cc(a) (2018), https://www.govinfo.gov/content/pkg/USCODE-2018-title15/pdf/USCODE-2018-title15.pdf [https://perma.cc/KCR2-UUMK].

74. SEC STUDY ON INVESTMENT ADVISERS AND BROKER-DEALERS, *supra* note 73, at 121. The SEC has also stressed the unwaivable character of the fiduciary duties, including the duty of best execution, owed by investment advisors, as opposed to broker-dealers, relying on a similar statutory provision and the general nature of fiduciary duties. Commission Interpretation Regarding Standard of Conduct for Investment Advisers, Investment Advisers Act Release No. 5248, 84 Fed. Reg. 33,669, 33,670–78 (June 5, 2019), https://www.govinfo.gov/content/pkg/FR-2019-07-12/pdf/2019-12208.pdf [https://perma.cc/R22T-VHQ5].

some foreign jurisdictions permitting a waiver of the duty of best execution for *more sophisticated* customers had expressed some skepticism about the need for such a waiver, even with a reference to potentially lower costs,[75] and ultimately adopted further restrictions on that option.[76] Moreover, this description of IBKR Lite coming from a prominent market player raises the question of how other customer-facing brokers are handling the new pricing structure and casts doubts on execution quality offered by some off-exchange market makers and, accordingly, their own compliance with the duty of best execution as a potentially widespread and less transparent problem.

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75. *See, e.g.*, U.K. FIN. SERVS. AUTH., DISCUSSION PAPER NO. 5, BEST EXECUTION paras. 9.2, 9.4, at 37 (April 2001), https://webarchive.nationalarchives.gov.uk/20100806165033/http://www.fsa.gov.uk/pubs/discussion/DP5.pdf [https://perma.cc/66MN-4Y8E] ("A long-standing feature of current policy is that a non-private customer may waive his rights to best execution in agreement with the firm through which he deals. The original rationale for this was that, in return, a customer may be able to negotiate finer rates or perhaps lower costs for transactions of particular kinds or sizes. [However, it is] questionable whether the waiver in fact serves its original purpose."); *see also* U.K. FIN. SERVS. AUTH., CONSULTATION PAPER NO. 154, BEST EXECUTION para. 5.9, at 35 (Oct. 2002), https://webarchive.nationalarchives.gov.uk/20090903082531/http://www.fsa.gov.uk/pubs/cp/cp154.pdf [https://perma.cc/U6A3-CC6T] ("We . . . are . . . minded to retain the ability for intermediate customers [such as most institutional investors] to waive best execution protections. However, we believe that it would be for the firm to demonstrate that foregoing the best execution protections was appropriate to the business, to be done and that the customer's agreement to do so was evidenced in writing.").

76. U.K. FIN. SERVS. AUTH., DISCUSSION PAPER NO. 06/3, IMPLEMENTING MIFID'S BEST EXECUTION REQUIREMENTS para. 3.11, at 20 (May 2006), https://webarchive.nationalarchives.gov.uk/20090414220521/http://www.fsa.gov.uk/pubs/discussion/dp06_03.pdf [https://perma.cc/35YL-8J93] ("Under existing UK rules, intermediate customers may agree with a firm that best execution will not be provided. Some intermediate customers, including expert retail customers who have opted up to intermediate customer status, take advantage of this and some firms, for example those operating in certain dealer markets, purport to operate only on this basis. Intermediate customers that will not be classified as eligible counterparties under MiFID must be provided best execution once MiFID is implemented.") (citing Directive 2004/39/EC of the European Parliament and of the Council of 21 April 2004 on Markets in Financial Instruments Amending Council Directives 85/611/EEC and 93/6/EEC and Directive 2000/12/EC of the European Parliament and of the Council and Repealing Council Directive 93/22/EEC, 2004 O.J. (L 145) 1, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004L0039&from=en [https://perma.cc/58P2-SBH7]).

Several differences and similarities pertaining to the European and U.S. regulatory regimes are striking in connection with the reach of the duty of best execution and related business practices. On one hand, while SIs are subject to certain quoting obligations, their ability to provide dark liquidity and customize order flow arrangements—just like their U.S. counterparts—is also salient. Additionally, the specificity of these quoting obligations to some extent compensates for a potential exemption of SIs from the best execution standard while dealing with certain parties. On the other hand, SIs are subject to restrictions related to PFOF-based order flow arrangements or subsequent agency-based rerouting of orders, although some variations of these practices are still feasible. These very features are broadly permitted in the U.S. regulatory regime and, in fact, are widely used, but they also constitute flashpoints for compliance with the best execution standard. Finally, the application of the tick size regime to SIs is a distinguishing feature of the European regulatory regime, while its lack in the U.S. regulatory regime raises some issues related to the best execution standard.

II.
Recent Enforcement Actions Involving Off-Exchange Market Makers

There are several recent enforcement actions, each of them being a settlement and hence not a binding precedent, brought by the SEC, FINRA, and state authorities that involved off-exchange market makers and implicated the best execution standard. These enforcement actions were brought against off-exchange market makers themselves or, while brought against customer-facing brokers, at least touched on the critical role of the former in the execution chain. However, the bulk of these enforcement actions never made an authoritative pronouncement that these firms are subject to the duty of best execution. This approach is exemplified by the enforcement action brought by the SEC against Citadel Securities LLC focusing on two algorithms with the monikers FastFill and SmartProvide that handled the routed order flow.[77] Both

77. Citadel Sec. LLC, Securities Act Release No. 10,280, Exchange Act Release No. 79,790, 115 SEC Docket 5519 (Jan. 13, 2017) (settled proceeding).

algorithms were triggered by price discrepancies between the consolidated and private data feeds, i.e., the "official" market data distributed by a designated SIP and more detailed and inherently faster market data products offered by securities exchanges themselves.[78]

In some circumstances, FastFill presented a perfect illustration of latency arbitrage: "[C]ontemporaneous with determining to internalize the order at the SIP NBB [National Best Bid] or NBO [National Best Offer], as applicable, FastFill sent a proprietary order to the market in an effort to execute for itself at a price better than the SIP NBB or NBO, as relevant."[79] The regulators also noted that, "if the best quote displayed on an exchange is based on an odd lot [i.e., a sub-100-share order], this information would not be included in the SIP NBBO" and observed that, "[f]or approximately 20% of all orders internalized by FastFill, the triggering event was caused by an odd lot from one or more of the depth of book feeds."[80] However, given the price guarantee feature for orders exceeding the available displayed liquidity, "FastFill improved the overall execution price for a substantial number of (predominantly larger) orders."[81] On the other hand, certain orders were disadvantaged: "[A] substantial number of smaller orders fared worse because of FastFill in that there was sufficient liquidity displayed in the market to fill all or most of such orders at a price better than the SIP NBB or NBO, as applicable."[82] The regulators also observed that "the order often received price improvement, but this amount often was not sufficient to equal the price difference that had triggered the [underlying] strategy."[83] Turning to SmartProvide, this algorithm converted marketable orders into nonmarketable orders,[84] which might have reflected a deliberate decision to capture liquidity rebates offered by securities exchanges.[85] As a result, this algorithm introduced significant time delays. More

78. *Id.* at 5520.
79. *Id.* at 5523.
80. *Id.* at 5522–23.
81. *Id.* at 5523.
82. *Id.*
83. *Id.*
84. *Id.*
85. For a discussion of this scenario, see Dolgopolov, *Wholesaling Best Execution*, *supra* note 8, at 180–81.

specifically, an order could end up being "displayed for up to one to five seconds (depending on the size of the order) or until CES [Citadel Execution Services] chose a new order handling strategy (which might be prompted by updates in market data)," which "likely delayed execution of some marketable orders (as compared to internalizing those orders immediately or routing the order at a marketable price)."[86] In other words, this timeframe is much longer than a typical contemporaneous delay of less than one millisecond, i.e., one-thousandth of a second, for the consolidated data feed relative to faster private data feeds,[87] indicating that this algorithm went beyond a simple data feed arbitrage. Ultimately, despite being advantageous to some orders, SmartProvide led to a subset of orders "receiv[ing] a price that was worse than they would have received" in the scenario of immediate execution.[88]

Importantly, the enforcement action against Citadel Securities was based on the existence of affirmative misrepresentations made by the firm. As described in the settlement,

> During the relevant period, CES provided a written disclosure to certain retail broker-dealer clients that described a market order as an "[o]rder to buy (sell) at the best offer (bid) price currently available in the marketplace," and made other, similar representations to its clients [which] suggested that CES would either internalize the marketable order at, or seek to

86. *Citadel Sec.*, 115 SEC Docket at 5523–24.

87. *See* PHIL MACKINTOSH & KA WO CHEN, KCG HOLDINGS, INC., THE NEED FOR SPEED V: HOW IMPORTANT IS 1 MS? 2 (May 2016) ("[T]he SIP is typically less than 1 ms [millisecond] slower than the direct feeds—even after we add back the extra distance the SIP needs to cover to get to our servers.").

88. *Citadel Sec.*, 115 SEC Docket at 5524. In an earlier enforcement action, the regulators had classified the introduction of a delay mechanism aimed to benefit one class of customers at the expense of another class as a breach of the duty of best execution: "MS & Co. developed and implemented a trading mechanism that sometimes slowed down the execution of orders so that MS & Co. could try to obtain price improvement for not held orders. The new trading mechanism improperly delayed the execution of certain held market orders for which MS & Co. had an obligation to execute without hesitation as required." Morgan Stanley & Co., Exchange Act Release No. 55,726, 90 SEC Docket 1625, 1626 (May 9, 2007) (settled proceeding).

> obtain through routing, the best bid or offer from the various market data feeds CES referenced.[89]

In other words, the regulators did not pursue the approach based on breaches of the duty of best execution, although a key detail is that at least one of the order handling agreements during the relevant period contained a provision mandating the best execution standard.[90] Marking a trend, this enforcement action had been followed by several others that similarly sidestepped the best execution angle.

In one of these enforcement actions, the SEC penalized Citigroup Global Markets, Inc. and its off-exchange market maker subsidiary, Citi Order Routing and Execution, LLC (CORE), for operating a trading platform housed at CORE, which was neither properly registered as a securities exchange nor exempted as an alternative trading system, and accompanying misleading disclosure related to the purported absence of high-frequency trading, which nevertheless was occurring on a large scale, and the specifics of external routing.[91] A key fact is that "retail orders [which were covered by order flow arrangements involving PFOF] passed through Citi Match [the trading platform in question] *prior* to being exposed to CORE's market maker,"[92] although some price improvement might have been involved.[93]

In yet another enforcement action brought against an off-exchange market maker, the SEC penalized Credit Suisse Securities (USA) LLC for "material misrepresentations and omissions concerning its handling of held retail equity orders"

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89. *Citadel Sec.*, 115 SEC Docket at 5524.

90. *See* E*Trade-Citadel Equities and Options Order Handling Agreement, *supra* note 49, § 2.3(a), at 9 (stating that "Company [Citadel] shall use commercially reasonable efforts, consistent with its duty of best execution, to obtain the most favorable terms reasonably available for Covered Orders to fulfill the Execution Quality Service Levels"); *id.* § 2.3(h), at 10 (stating that "Parent [E*Trade] and Company [Citadel] shall assess Company Services . . . in conformance with their respective duties of best execution.").

91. Citigroup Glob. Mkts., Inc., Securities Act Release No. 10,545, Exchange Act Release No. 84,124 (Sept. 14, 2018) (settled proceeding), https://www.sec.gov/litigation/admin/2018/33-10545.pdf [https://perma.cc/8XGP-YB6T].

92. *Id.* at 5 (emphasis added).

93. *Id.* at 7 fig.

routed by other broker-dealers.[94] Key examples of misleading disclosure related to the availability of "'enhanced liquidity' [via] internal and external pools of liquidity, including access to Credit Suisse's own and other dark pools" and the existence of "'robust' and 'enhanced' price improvement."[95] Despite the explicit commitment to handle the routed order flow under the "most favorable terms reasonably available" and to control for market impact, Credit Suisse also used a routing tactic that allowed its market making desk "to profit from, or 'capture,' market impact if there was post-trade price reversion, in which stock prices that have been temporarily displaced as a result of market activity may revert toward the original price level."[96] As described further, "For large outsized orders, with the potential to cause significant market impact, impact capture was frequently the most important factor in the code's determination of how much of an order to internalize."[97]

Another enforcement action, now brought by FINRA, penalized Citadel Securities LLC for violating the rules of this self-regulatory organization that prohibit trading ahead of customer orders and mandate displaying customer limit orders,[98] with at least the first of these rules being closely related to the best execution standard. As observed by FINRA,

> While [over-the-counter] customer orders [routed by other broker-dealers] were inactive, Citadel Securities, in many instances, as part of its market making activities, traded for its own account on the same side of the market at prices that would have satisfied the orders, without immediately thereafter executing

94. Credit Suisse Sec. (USA) LLC, Securities Act Release No. 10,565, Exchange Act Release No. 84,314, at 2 (Sept. 28, 2018) (settled proceeding), https://www.sec.gov/litigation/admin/2018/33-10565.pdf [https://perma.cc/B9AM-CRC6].

95. *Id.*

96. *Id.* at 3.

97. *Id.* at 8.

98. Citadel Sec. LLC, Letter of Acceptance, Waiver and Consent No. 2014041859401 (Fin. Indus. Regul. Auth., Inc. July 16, 2020), https://www.finra.org/sites/default/files/fda_documents/2014041859401%20Citadel%20Securities%20LLC%20CRD%20116797%20AWC%20sl.pdf [https://perma.cc/9PR6-WH3K].

> them up to the size and at the same or better price as it traded for its own account.[99]

In a similar enforcement action against another off-exchange market maker, FINRA penalized Virtu Americas LLC, the old KCG entity that became a subsidiary of Virtu Financial Inc., for violating the rule that prohibits trading ahead of customer orders, as "the firm did not maintain a reasonable written methodology governing the execution and priority of all pending orders that it received for handling and execution [from other broker-dealers]" for certain securities.[100]

However, FINRA reversed the enforcement trend of avoiding best execution-focused charges and later penalized Virtu Americas LLC for violations of Rule 5310:

> Virtu failed to provide best execution with respect to 13,136 customer orders it had received from two of its broker-dealer clients outside of normal trading hours, by failing to use reasonable diligence to ascertain the best market for the subject securities and by failing to buy or sell in such market so that the resultant prices to the customers were as favorable as possible under prevailing market conditions.[101]

Yet, while documenting direct harm to customer orders, no intentional conduct was alleged:

> [D]ue to a programming error in the Firm's order management system, certain hold and release orders were executed by the Firm's electronic market making systems prior to the completion of the crossing process. The hold and release orders were received and executed outside of normal trading hours, and

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99. *Id.* at 3.

100. Virtu Ams. LLC, Letter of Acceptance, Waiver and Consent No. 2013037127501, at 1–3 (Fin. Indus. Regul. Auth., Inc. Jan. 6, 2020), https://www.finra.org/sites/default/files/fda_documents/2013037127501%20Virtu%20Americas%20LLC%20%28fka%20KCG%20Americas%20LLC%29%20CRD%20149823%20%20AWC%20va%20%282020-1580948373656%29.pdf [https://perma.cc/5AVW-5SS8].

101. Virtu Ams. LLC, Letter of Acceptance, Waiver and Consent No. 2016049752801, at 2 (Fin. Indus. Regul. Auth., Inc. July 21, 2020), https://www.finra.org/sites/default/files/fda_documents/2016049752801%20Virtu%20Americas%20LLC%20%28f%20k%20a%20KCG%20Americas%20LLC%29%20CRD%20149823%20AWC%20jlg.pdf [https://perma.cc/5CZY-C3ER].

> were marketable against each other and designated by each customer for execution at the same time, but were not executed against each other at the NBBO midpoint. Instead, the Firm executed such eligible buy and sell orders separately, on a principal basis, at the NBBO or a price that was better than the NBBO but that was at prices less favorable than the NBBO midpoint.[102]

Importantly, this enforcement action had no discussion of any disclosures or other statements by the off-exchange market maker in question, which is also consistent with the broad applicability of the duty of best execution, as it may be *implied* rather than strictly *express* in the context of customer-broker/order routing relationships.[103]

Another group of enforcement actions targeted customer-facing brokers rather than off-exchange market makers. One example is the New York Attorney General's settlement with Bank of America Corporation and its subsidiary, Merrill Lynch, Pierce, Fenner & Smith Inc.[104] Although not best execution-based, this enforcement action zeroed in on the active efforts by the customer-facing broker to conceal from its institutional customers the very existence of, as well as relevant execution quality metrics for, order flow arrangements with "electronic liquidity providers," such as leading off-exchange market makers, and these arrangements appear to have been based on the option of matching the NBBO in exchange for free execution for such institutional order flow.[105] A parallel enforcement action by the SEC for the same underlying conduct, which was based on the charges of misleading disclosure and fraudulent or deceitful practices, also emphasized that certain customers had requested that their orders should not

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102. *Id.* at 3.

103. *See, e.g.*, Newton v. Merrill, Lynch, Pierce, Fenner & Smith, Inc., 135 F.3d 266, 269 (3d Cir. 1998) ("[A] broker-dealer, by accepting an order without price instructions, impliedly represents that the order will be executed in a manner consistent with the duty of best execution and that a broker-dealer who accepts such an order while intending to breach that duty makes a misrepresentation that is material to the purchase or sale.").

104. Bank of Am. Corp., Settlement Agreement No. 18-025 (N.Y. Att'y Gen. Mar. 22, 2018), https://ag.ny.gov/sites/default/files/bofaml_settlement_agreement.pdf [https://perma.cc/L5XQ-X3ZF].

105. *Id.* at 2–9.

be routed to, or otherwise interact with, electronic liquidity providers and referenced information leakage as one of the relevant concerns.[106] The regulators also observed that, "[w]hen orders were executed by [electronic liquidity providers], Merrill Lynch avoided the access fees typically charged by exchanges while receiving commissions from customers."[107] Accordingly, the presented facts raise the question of compliance with the duty of best execution by such off-exchange market makers, including potentially missed price improvement opportunities or more advantageous order routing down the execution chain.

A similar enforcement action against a customer-facing broker was brought by FINRA against Robinhood Financial, LLC.[108] This household name is a recent entrant known for zero-commission trades, although its relationships with leading off-exchange market makers have been scrutinized for years.[109] This enforcement action was essentially framed in terms of breaches of the duty of best execution, relying on FINRA Rule 5310:

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106. Merrill Lynch, Pierce, Fenner & Smith Inc., Securities Act Release No. 10,507, Exchange Act Release No. 83,462, Investment Advisers Release No. 4944, at 3, 7 (June 19, 2018) (settled proceeding), https://www.sec.gov/litigation/admin/2018/33-10507.pdf [https://perma.cc/PSF2-CNSM].

107. *Id.* at 5. This feature of mere free executions rather than the presence of PFOF is an illustration of a more problematic nature of institutional order flow, as opposed to retail order flow. For a discussion of this factor, see Dolgopolov, *Wholesaling Best Execution*, *supra* note 8, at 155 & n.18.

108. Robinhood Fin., LLC, Letter of Acceptance, Waiver and Consent No. 2017056224001 (Fin. Indus. Regul. Auth., Inc. Dec. 19, 2019), https://www.finra.org/sites/default/files/fda_documents/2017056224001%20Robinhood%20Financial%2C%20LLC%20CRD%20165998%20AWC%20jm%20%282020-1579393181640%29.pdf [https://perma.cc/3TFP-U389].

109. *See* Sal Arnuk & Joseph Saluzzi, *Robin Hood – The Legend of Internalization – Part II*, THEMIS TRADING LLC (Sept. 1, 2017), https://blog.themistrading.com/2017/09/robin-hood-the-legend-of-internalization-part-ii/ [https://perma.cc/W4JE-ZSVG]; Simone Foxman et al., *Robinhood Gets Almost Half Its Revenue in Controversial Bargain with High-Speed Traders*, BLOOMBERG (Oct. 15, 2018), https://www.bloomberg.com/news/articles/2018-10-15/robinhood-gets-almost-half-its-revenue-in-controversial-bargain-with-high-speed-traders; Kate Rooney, *A Controversial Part of Robinhood's Business Tripled in Sales Thanks to High-Frequency Trading Firms*, CNBC (Apr. 18, 2019, 1:39 PM), https://www.cnbc.com/2019/04/18/a-controversial-part-of-robinhoods-business-tripled-in-sales-thanks-to-high-frequency-trading-firms.html.

> Robinhood routed its customers' non-directed equity orders to four broker-dealers, including its clearing broker, for execution, all of which paid Robinhood for that order flow [but] did not exercise reasonable diligence to ascertain whether these four broker-dealers provided the best market for the subject securities to ensure its customers received the best execution quality from these as compared to other execution venues.[110]

Likewise, this brokerage firm "did not systematically review certain order types" as an integral part of the required "regular and rigorous review" under the relevant rule.[111] Moreover, FINRA reiterated that PFOF arrangements should not interfere with the duty of best execution.[112] On the other hand, the regulators never addressed the issues of actual execution quality and the reach of the duty of best execution to other parties.[113]

The subsequent enforcement action brought by the SEC against Robinhood for the same conduct was in many respects more explosive, while also highlighting the role played by off-exchange market makers. Aside from breaches of the duty of best execution by Robinhood, the regulators pointed to "material misrepresentations and omissions by Robinhood relating to its revenue sources, specifically its receipt of payments from certain principal trading firms, also known as electronic market makers, for routing Robinhood customer orders to them, and relating to certain statements about the execution quality Robinhood achieved for its customers' orders."[114] In addition to deliberate disclosure violations with respect to execution

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110. *Robinhood*, at 2.

111. *Id.* at 2–4.

112. *Id.* at 4–5.

113. It should be noted that Vlad Tenev, Robinhood's co-CEO and co-founder, had made the statement that off-exchange market makers receiving its order flow as executing brokers were "responsible for filling customer orders and fulfilling the best execution obligations" and that several off-exchange market makers "compete to see who can provide the best execution to our [Robinhood's] customers." Spencer White, *Why—And How—Did Robinhood Decide To Clear Its Own Trades?*, BENZINGA (Oct. 10, 2018), https://www.benzinga.com/fintech/18/10/12481341/why-and-how-did-robinhood-decide-to-clear-its-own-trades [https://perma.cc/9QVC-X24V].

114. Robinhood Fin., LLC, Securities Act Release No. 10,906, Exchange Act Release No. 60,694, at 2 (Dec. 17, 2020) (settled proceeding), https://

quality and the existing PFOF arrangements, including the claim that PFOF revenues were "indirect" and "negligible,"[115] the regulators focused on the causal link based on the very structure of such PFOF arrangements:

> From September 2016 through June 2019, while Robinhood was on notice that its high payment for order flow rates from principal trading firms could result in inferior execution prices for its customers, Robinhood violated its duty of best execution by failing to conduct adequate regular and rigorous reviews of the execution quality it was providing on customer orders. Robinhood did not begin comparing its execution quality to that of its competitors until October 2018, and did not take appropriate steps during the entire period to assess whether its higher payment for order flow rates were adversely affecting customer execution prices.[116]

The following passage describes the specifics of the negotiations between Robinhood and off-exchange market makers, revealing much about Robinhood's conduct and industry practices related to PFOF arrangements:

> In or around May 2016, Robinhood began negotiations with a number of principal trading firms about potentially routing Robinhood customer orders to those entities. In the course of those negotiations, certain of the principal trading firms told Robinhood that there was a trade-off between payment for order flow on the one hand and price improvement on the other: If Robinhood negotiated for higher payment for order flow revenue, according to the principal trading firms, there would be less money available for the principal trading firms to provide price improvement to Robinhood's customers. . . . At least one principal trading firm communicated to Robinhood that large retail broker-dealers that receive payment for order flow typically receive four times as much price improvement for customers than they do pay-

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www.sec.gov/litigation/admin/2020/33-10906.pdf [https://perma.cc/3K7M-YDXQ].

115. *Id.* at 2–3, 5, 7–10.

116. *Id.* at 3.

> ment for order flow for themselves—an 80/20 split of the value between price improvement and payment for order flow. . . . Robinhood negotiated a payment for order flow rate that was substantially higher than the rate the principal trading firms paid to other retail broker-dealers—which resulted in approximately a 20/80 split of the value between price improvement and payment for order flow. Robinhood explicitly offered to accept less price improvement for its customers than what the principal trading firms were offering, in exchange for receiving a higher rate of payment for order flow for itself.[117]

The nature of the bargain is also confirmed by the following fact:

> [W]hen one of the principal trading firms to which Robinhood routed order flow told Robinhood it would no longer agree to pay Robinhood's unusually high payment for order flow rates, but would pay a lower payment for order flow rate, Robinhood stopped routing customer orders to that principal trading firm.[118]

Although some orders might have benefitted from the model based on zero-commission trades, with this model itself inherently requiring *some* reallocation of the price improvement-PFOF split, the magnitude of abuse, as calculated by the regulators for unambiguously harmed orders, is substantial:

> Between October 2016 and June 2019, certain Robinhood orders lost a total of approximately $34.1 million in price improvement compared to the price improvement they would have received had they been placed at competing retail broker-dealers, even after netting the approximately $5 per-order commission costs those broker-dealers were charging at the time.[119]

Without any broad generalizations of this segment of the securities industry, these enforcement actions describe a gamut of abuses present in off-exchange market making, such

117. *Id.* at 6.
118. *Id.* at 7.
119. *Id.* at 10.

as data feed arbitrage, insertion of delays, monetization of price impact, trading ahead, and improper order matching, with disclosure violations and lingering questions about execution quality in the background. Despite the regulators' cautiousness to utilize the reach of the duty of best execution to off-exchange market makers in these enforcement actions—even when the conduct in question was an unambiguous breach of this duty—several earlier precedents relying on this legal norm[120] have not been questioned. In fact, the latest enforcement action brought against Virtu Americas reasserts that the duty of best execution extends to off-exchange market makers and not just to customer-facing brokers. Perhaps the regulators' selective use of the best execution standard with respect to off-exchange market makers could be explained by its strictness as a fiduciary duty founded on "the common law agency obligations of undivided loyalty and reasonable care that an agent owes to his principal" and requiring "reasonable efforts to maximize the economic benefit to the client in each transaction."[121] This bar creates potentially far-reaching implications in terms of liability to numerous market participants, but the same factor is a definite advantage for private litigants.

120. *See, e.g.*, KCG Ams. LLC, Securities Act Release No. 9996, Exchange Act Release No. 76,705, 113 SEC Docket 263, 264 (Dec. 21, 2015) (settled proceeding) (finding breaches of the duty of best execution and stating that the firm in question "represented to its broker-dealer customers that it 'recognizes its regulatory obligations to execute its broker-dealer clients' orders in a manner consistent with the requirements of the Best Execution Rule'"); Herzog, Heine, Geduld, LLC, Exchange Act Release No. 54,148, 88 SEC Docket 1300, 1300 (July 14, 2006) (settled proceeding) (finding breaches of the duty of best execution and stating that the firm in question "assumed the duty of best execution by making written and oral statements to correspondent broker-dealer firms to the effect that it would provide best execution to orders routed to Herzog for execution"); E*Trade Capital Mkts. LLC, Letter of Acceptance, Waiver and Consent No. 20080136367-01, at 2–3 (Fin. Indus. Regul. Auth., Inc. Feb. 15, 2012), https://www.finra.org/sites/default/files/fda_documents/2008013636701_FDA_TX98187%20%282019-1562710763217%29.pdf [https://perma.cc/H5XV-TMG9] (finding breaches of the duty of best execution, although it appears that the conduct in question was based on a direct customer-broker relationship).

121. Newton v. Merrill, Lynch, Pierce, Fenner & Smith, Inc., 135 F.3d 266, 270 (3d Cir. 1998).

III.
THE REFORMED MARKET DATA INFRASTRUCTURE

Perhaps one of the most important implications of the SEC's reform of the market data infrastructure in connection with the duty of best execution was the guidance on the use of enhanced data products vis-à-vis basic data products:

> The Commission believes that a broker-dealer that uses low-latency or content-rich consolidated market data, whether self-aggregated or received from a competing consolidator, for its proprietary trading, would also be expected to use those data products when pursuing the best execution of customer orders, particularly those handled within the same aggregation unit that conducts proprietary trading. For example, a broker-dealer should not use a separate, less performant data source for its customer orders than the data source used for proprietary orders that may interact with those customer orders in a manner disadvantageous to those customer orders.[122]

The relevance of private data feeds as a tool of self-interested arbitrage vis-à-vis the SIP data in the process of handling retail order flow is exemplified by the SEC's very own enforcement action brought against a leading off-exchange market maker.[123] While the regulators had based the underlying violation on misleading disclosure without even mentioning the relevance of the duty of best execution in the settlement,[124] the adopting release made this exact step.[125] Yet another key

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122. Market Data Infrastructure Adopting Release, *supra* note 3, at 18,606. The SEC also credited an earlier guidance provided by FINRA. *Id.* at 18,606 n.106. This guidance contained the following pronouncement: "[A] firm that regularly accesses proprietary data feeds, in addition to the consolidated SIP feed, for its proprietary trading, would be expected to also be using these data feeds to determine the best market under prevailing market conditions when handling customer orders to meet its best execution obligations." *Id.* at 18,605 n.94 (quoting FINRA, REGULATORY NOTICE NO. 15-46, *supra* note 16, at 3 n.12) (alteration added).

123. Citadel Sec. LLC, Securities Act Release No. 10,280, Exchange Act Release No. 79,790, 115 SEC Docket 5519 (Jan. 13, 2017) (settled proceeding).

124. *Id.* at 5524.

125. In the proposing release, the SEC also cited the concern about "benchmark reference price arbitrage" expressed by some commenters. Market Data Infrastructure, Exchange Act Release No. 88,216, 85 Fed. Reg.

signal was given by an SEC commissioner in the context of best execution analysis, which also implicates reporting: "Going forward there will be multiple alternative public data feeds, which could allow market participants to cherry-pick the data feed that costs them the least or is most advantageous for best execution analysis and the Commission should endeavor to monitor this potential for investor harm."[126]

One of the key components of the SEC's reform of the market data infrastructure focuses on odd-lots, i.e., sub-100-share orders, which is of great relevance to retail orders and corresponding order flow arrangements. Notably, these measures address (i) the inclusion of odd-lots priced better than or at the NBBO into the widely disseminated "core data," (ii) the inclusion of aggregated odd-lots for the purposes of defining the dimensions of "core data," such as depth-of-book data, determining protected quotations, and calculating the NBBO, while bringing uniformity to the aggregation rules of individual securities exchanges, and (iii) the introduction of the concept of "round lot," which affects certain sub-100-share orders in high priced stocks and their inclusion into the NBBO.[127] Once again, the best execution angle is evident in the SEC's general approach:

16,726, 16,776 & n.521 (proposed Feb. 14, 2020) (to be codified at 17 C.F.R. pts. 240, 242 & 249), https://www.govinfo.gov/content/pkg/FR-2020-03-24/pdf/2020-03760.pdf [https://perma.cc/QT6Q-8579] [hereinafter Market Data Infrastructure Proposing Release]. The very phrase "benchmark reference price arbitrage" had been used by one of the cited commenters in connection with the concept of competing consolidators of market data, while voicing concerns about conflicts of interest posed by the same entity "executing my trades and managing the price that they're benchmarked against" specifically in the context of off-exchange market making. Roundtable on Market Data Products, Market Access Services, and Their Associated Fees, U.S. Sec. & Exch. Comm'n 152 (Oct. 25, 2018) (remarks of Oliver Albers, Global Head of Sales and Strategic Partnerships, Nasdaq), https://www.sec.gov/spotlight/equity-market-structure-roundtables/roundtable-market-data-market-access-102518-transcript.pdf [https://perma.cc/P2GD-GH7H] [hereinafter SEC Roundtable on Market Data Products, Market Access Services, and Their Associated Fees].

126. Commissioner Caroline A. Crenshaw, *Statement on Market Data Infrastructure*, U.S. Sec. & Exch. Comm'n (Dec. 9, 2020), https://www.sec.gov/news/public-statement/crenshaw-statement-market-data-infrastructure-120920 [https://perma.cc/JF77-P9D4].

127. Market Data Infrastructure Adopting Release, *supra* note 3, *passim*.

> [S]ince odd-lot quotes often represent opportunities to trade at prices that are superior to the prices disseminated by the Equity Data Plans [such as the NBBO], the inclusion of more of these quotes in proposed core data would facilitate the best execution analyses of broker-dealers who do not subscribe to proprietary data feeds that include all odd-lot information [and] the ability of investors to use proposed core data to verify that their broker-dealers are providing best execution.[128]

On the other hand, the regulators had reasserted the existing tenet that "odd-lots are subject to best execution requirements [and] broker-dealers are required to seek the most favorable terms reasonably available under the circumstances for such orders,"[129] while stressing that many entities that are subject to the duty of best execution "already utilize proprietary data feeds that include odd-lots and, therefore, already have visibility into odd-lot quotations priced better than the NBBO."[130] This qualification signals the SEC's intention to oil rather than redefine the duty of best execution.

Importantly, one comment letter cited in the SEC's proposing release advocated for the inclusion of odd-lots into the SIP data in light of best execution concerns and specifically analyzed the "historical retail wholesaler execution quality" dataset to demonstrate how distortionary this metric might be and how apparent price improvement by off-exchange market makers could be concealing significant price disimprovement.[131] Furthermore, a likewise-cited empirical study ana-

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128. Market Data Infrastructure Proposing Release, *supra* note 125, at 16,738 (footnotes omitted).

129. Market Data Infrastructure Adopting Release, *supra* note 3, at 18,614; *see also* OFF. OF COMPLIANCE INSPECTIONS & EXAMINATIONS, U.S. SEC. & EXCH. COMM'N, 2020 EXAMINATION PRIORITIES 16–17 (2020), https://www.sec.gov/about/offices/ocie/national-examination-program-priorities-2020.pdf [https://perma.cc/3EVM-CRAN] ("OCIE will examine firms' trading and other activities in 'odd lots,' that is, orders under 100 shares. These orders often represent retail interest and require special treatment by broker-dealers to ensure compliance with applicable laws and regulations, including best execution.").

130. Market Data Infrastructure Proposing Release, *supra* note 125, at 16,748 & n.247.

131. Tyler Gellasch, Exec. Dir., Healthy Mkts. Ass'n, Comment Letter to the SEC on the Market Data and Market Access Roundtable 2–13 (Mar. 5,

lyzed a small sample of high priced stocks, as such stocks are inherently more likely to be impacted by odd-lot transactions, and found a disproportionate amount of trade-throughs specifically in the context of off-exchange trading, which most likely represented the operations of off-exchange market makers that "typically match the protected NBBO."[132] As an extension of this result, the aggregate cost of such trade-throughs also implies corresponding arbitrage opportunities for off-exchange market makers themselves.[133]

The SEC's analysis of the concept of "round lot" extended to its potential impact on the business model of off-exchange market making, considering the scenarios that "it may become more difficult for the retail execution business of wholesalers to provide price improvement and other execution quality metrics at levels similar to those provided under the 100 share round lot definition today," that "retail investors might or might not experience an improvement in execution quality, as measured by execution prices, from these wholesalers," and that, "[t]o make up for lower revenue per order filled in a narrower spread environment, wholesalers may respond by . . . reducing per order costs associated with their internalization programs, such as reducing any payments for order flow or reducing the agreed upon metrics for price improvement."[134]

A leading off-exchange market maker pointed to a nontrivial impact of the concept of "round lot" on this segment of the securities industry, while urging caution with subjecting sub-100-share lots to the trade-through protection of Rule 611 of Regulation NMS:[135] "Protecting the new round lots could also significantly alter the behavior of market makers like Virtu, impacting their approach to internalization and affect-

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2019), https://www.sec.gov/comments/4-729/4729-5020185-182987.pdf [https://perma.cc/8KDY-YFN9], *cited in* Market Data Infrastructure Proposing Release, *supra* note 125, at 16,739 n.163, 16,740 nn.170, 174 & 177.

132. Robert Battalio et al., *Unrecognized Odd Lot Liquidity Supply: A Hidden Trading Cost for High Priced Stocks*, J. TRADING, Winter 2017, at 35, 39, https://doi.org/10.3905/jot.2017.12.1.035, *cited in* Market Data Infrastructure Proposing Release, *supra* note 125, at 16,740 n.172, 16,824 n.915.

133. The plausibility and profitability of such arbitrage is illustrated by Citadel Sec. LLC, Securities Act Release No. 10,280, Exchange Act Release No. 79,790, 115 SEC Docket 5519, 5522–23 (Jan. 13, 2017) (settled proceeding).

134. Market Data Infrastructure Adopting Release, *supra* note 3, at 18,747.

135. For the rule in question, see Order Protection Rule, 17 C.F.R. § 242.611 (2020).

ing their capacity to provide price improvement to retail investors. It could also dramatically alter the flow of orders to the exchanges and other trading venues."[136] However, it is unclear why this commenter had attributed the economic impact of the concept of "round lot" to the extension of Rule 611 rather than to the duty of best execution, for instance, in the context of greater visibility of odd lots and round lots in the consolidated data. Another leading off-exchange market maker had considered this issue as ambiguous:

> [I]t has been argued that protected quote status is not required since best execution requirements would lead broker-dealers to access the better-priced order of fewer than 100 shares. If this is true, then there is no reason to fundamentally revise the scope of the order protection rule, as the outcome should be the same. If, however, revising the scope of the order protection rule does have a practical impact, and could lead to trade-throughs, then presumably the Commission has considered how often this should be expected to occur and the potential impacts on market functioning.[137]

Overarchingly, this issue could be connected to the SEC's reasoning in its adoption of this very rule: "[O]ne of the primary benefits of the Order Protection Rule is to backstop a

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136. Market Data Infrastructure Adopting Release, *supra* note 3, at 18,622 n.346 (quoting Thomas M. Merritt, Deputy Gen. Counsel, Virtu Fin., Inc., Comment Letter to the SEC on the Proposed Rule on the Market Data Infrastructure 5 (May 26, 2020), https://www.sec.gov/comments/s7-03-20/s70320-7229972-217068.pdf [https://perma.cc/JLM5-J7Y3]). Ultimately, the SEC did extend the reach of the trade-through protection to such round lots: "Under the new round lot tiers, retail investors will benefit because a greater portion of their odd-lot sized orders in higher priced stocks will be protected and not traded-through." *Id.* at 18,746. Accordingly, the proposing release's distinction between the "unprotected" NBBO for sub-100-share lots and the "Protected Best Bid and Offer" for 100-share lots was abandoned in light of numerous criticisms by various commenters. *Id.* at 18,622–24. Moreover, the SEC specifically stated that "odd-lots are subject to best execution requirements . . . despite the fact that the odd-lot quotes are not protected quotations pursuant to Rule 611." *Id.* at 18,614.

137. Stephen John Berger, Managing Dir. and Glob. Head of Gov't & Regul. Pol'y, Citadel Sec. LLC, Comment Letter to the SEC on the Proposed Rule on the Market Data Infrastructure 3 n.4 (May 26, 2020), https://www.sec.gov/comments/s7-03-20/s70320-7235178-217088.pdf [https://perma.cc/MR4R-EBHX].

broker's duty of best execution on an order-by-order basis."[138] Moreover, "adoption of Rule 611 in no way lessens a broker-dealer's duty of best execution."[139] Even more so, off-exchange market making is an illustration of the scenario where the *same* entity is subject to both the duty of best execution and Rule 611, which are two distinct and yet overlapping legal norms.[140] On a related note, one commenter predicted that off-exchange market makers would "be hurt tremendously by smaller round lots' narrowing of the spread" as a result of the proposed changes, stated that "there is no doubt that [Rule 611] helps retail investors—who often receive no assurance of best execution—tremendously," and asserted that "[a]llowing market making firms to use the PBBO [the concept of 'Protected Best Bid and Offer' abandoned in the adopting release] (with a wider spread) [would] reduce the benefits RegNMS creates for retail investors."[141]

While the SEC did not make an explicit reference to the reach of the duty of best execution to off-exchange market makers in connection with the odd-lot-related or other changes, it still observed that some of these firms may "already

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138. Regulation NMS, Exchange Act Release No. 51,808, 70 Fed. Reg. 37,496, 37,508 (June 9, 2005) (to be codified at 17 C.F.R. pts. 200, 201, 230, 240, 242, 249 & 270), https://www.gpo.gov/fdsys/pkg/FR-2005-06-29/pdf/05-11802.pdf [https://perma.cc/ZZ9B-5N24].

139. *Id.* at 37,537.

140. Dolgopolov, *Wholesaling Best Execution*, *supra* note 8, at 189–91. For examples of enforcement actions brought against off-exchange market makers for violations of the order protection rule, see Citigroup Glob. Mkts. Inc., Letter of Acceptance, Waiver and Consent No. 2014043783101 (Fin. Indus. Regul. Auth., Inc. Jan. 29, 2021), https://www.finra.org/sites/default/files/fda_documents/2014043783101%20Citigroup%20Global%20Markets%20Inc.%20CRD%207059%20AWC%20jlg.pdf [https://perma.cc/9R6F-UAAP]; KCG Ams. LLC, Letter of Acceptance, Waiver and Consent No. 20090211062-01 (Fin. Indus. Regul. Auth., Inc. June 9, 2015), https://www.finra.org/sites/default/files/fda_documents/2009021106201_FDA_JMX1547%20%282019-1563054567599%29.pdf [https://perma.cc/8REU-FLHM]. Accordingly, the presence of trade-throughs indicates a potential breach of the duty of best execution. Another area of interest is whether formal compliance with the order protection rule, including the use of its various exceptions, could be done in a way that raises best execution issues. Dolgopolov, *Wholesaling Best Execution*, *supra* note 8, at 189–91.

141. Hitesh Mittal, Founder & CEO, BestEx Rsch., Comment Letter to the SEC on the Proposed Rule on the Market Data Infrastructure 8 (May 21, 2020), https://www.sec.gov/comments/s7-03-20/s70320-7224529-216949.pdf [https://perma.cc/ZJN7-Q629].

see and respond to odd-lot quotations inside the NBBO [by using private data feeds] and currently provide execution quality to customers based upon the superior odd-lot quotations."[142] However, putting this omission aside, it is hard to see how the decision to ignore reasonably available odd-lot executions on lit trading venues—presumably superior to the NBBO benchmark tweaked with subpenny price improvement, for instance—would have complied with the existing boundaries of the duty of best execution for off-exchange market makers with access to relevant private data feeds, and the available empirical evidence[143] appears to be problematic in that respect. Moreover, the inclusion of "odd-lot quotations priced greater than or equal to the national best bid and less than or equal to the national best offer, aggregated at each price level at each national securities exchange" as a measure "facilitating best execution"[144] adds little in terms of the best execution obligations of off-exchange market makers that already have access to a range of private data feeds. Viewed from a different angle, the adopted changes in the form of the specific odd-lot aggregation rules and round lots would not have automatically ensured such favorable executions in each case, although this regulatory innovation is aimed at producing an arguably more accurate and potentially tighter—and hence more favorable to retail investors—NBBO benchmark.[145] On a related note, a

142. Market Data Infrastructure Adopting Release, *supra* note 3, at 18,747. Interestingly, the regulators also avoided any discussion of the reach of the duty of best execution to off-exchange market makers in their analysis of the scenario of "a competing consolidator affiliated with a registered broker-dealer that offers execution services to broker-dealer clients" and emphasized the duty of best execution only with respect to customer-facing brokers. *Id.* at 18,675 n.1047.

143. Battalio et al., *supra* note 132.

144. Market Data Infrastructure Adopting Release, *supra* note 3, at 18,613.

145. *See id.* at 18,615 ("[T]he best bid and best offer, national best bid and national best offer, and depth of book data shall include odd-lots that when aggregated are equal to or greater than a round lot, and such aggregation shall occur across multiple prices and shall be disseminated at the least aggressive price of all such aggregated odd-lots. . . . [T]his odd-lot aggregation methodology would benefit market participants by promoting tighter spreads in all stocks, especially high priced ones."); *id.* at 18,747 ("The Commission expects that the new definition of a round lot will, at times, make the NBBO narrower for the affected stocks because the new definition will include orders that are at superior prices to the 100 share NBBO at a size less than 100 shares.").

leading retail brokerage firm provided the following criticism of the new definition of "round lot," as originally proposed, in connection with off-exchange market making and price improvement relative to the NBBO:

> Complementary to the advantages of today's consistent quote standards, TD Ameritrade routes orders to market makers who offer frequent and meaningful price improvement. . . . [U]pon review of the Proposal's economic analysis on the potential effects of the new round lot definition, the frequency and amount of price improvement currently available to Firm clients far exceeds those in the Proposal's analysis. Therefore, it is clear the proposed round lot definitions will not necessarily give retail investors an opportunity to receive better prices on their orders.[146]

However, this argument essentially amounts to stating that price improvement statistics provided by off-exchange market makers would look more modest without jeopardizing accuracy. Finally, the very business model of off-exchange market making is based on providing dark liquidity, which may potentially exceed the lit trading interest available at the NBBO, whether with or without odd-lots. This wrinkle demonstrates how the odd-lot modification is economically meaningful by changing the NBBO as a reference point, although that could be effectively readjusted by contractual arrangements between off-exchange market makers and customer-facing brokers, just as suggested by one of the scenarios in the SEC's analysis.[147]

Although this fundamental reform of the market data infrastructure would undoubtedly alter the best execution landscape and its underlying economics, be it compliance, moni-

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146. Joseph Kinahan, Managing Dir., Client Advoc. & Mkt. Structure, TD Ameritrade, Inc., Comment Letter to the SEC on the Proposed Rule on the Market Data Infrastructure 8 (June 1, 2020) (footnote omitted) (citing Market Data Infrastructure Proposing Release, *supra* note 125, at 16,824 tbls.4 & 5), https://www.sec.gov/comments/s7-03-20/s70320-7261549-217687.pdf [https://perma.cc/JG5J-SBV7]. The final rule had addressed some of the additional criticism of this commenter related to the definition of "round lot" by redesigning the applicable tiers to produce larger notional values and removing the concept of the "unprotected" NBBO. *Compare id.* at 7–8, *with* Market Data Infrastructure Adopting Release, *supra* note 3, at 18,616–18.

147. Market Data Infrastructure Adopting Release, *supra* note 3, at 18,747.

toring, cost-benefit analysis of certain market data products, or something else, the very scope and reach of this paramount duty have not changed. On the other hand, the debate in connection with this reform has exposed several weak spots in the existing practices and thus raised a number of implications for the best execution obligations of off-exchange market makers, such as the use of private data feeds, odd-lot executions, and the significance of the order protection rule.

IV.
IEX's D-Limit Order Type

Another case study of the interaction between the duty of best execution and off-exchange market making is the SEC's recent approval of the D-Limit order type proposed by Investors Exchange LLC (IEX).[148] This order type was designed to protect liquidity providers' displayed orders from latency arbitrage through repricing to a less aggressive price for a time period of up to two milliseconds based on IEX's proprietary "crumbling quote indicator" (CQI), which had previously been applied only to certain nondisplayed orders.[149] As an illustration, during September 2019, "the CQI was on for 1.64 seconds per symbol per day on average, which is 0.007% of the time during regular market hours [and] [o]n a volume-weighted basis . . . the CQI was on for 5.9 seconds per day per symbol, or 0.025% of the time during regular market hours."[150] In the context of the same time period, IEX also observed that, "[w]ithout an order type that leverages the protective features of the CQI, 24% of displayed volume on IEX is executed when the CQI is on, compared to only 3% of nondisplayed volume," and that 33.7% of marketable orders arrived when the CQI was on.[151]

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148. Order Approving a Proposed Rule Change by Investors Exchange LLC to Add a New Discretionary Limit Order Type Called D-Limit, Exchange Act Release No. 89,686, 85 Fed. Reg. 54,438 (Aug. 26, 2020), https://www.govinfo.gov/content/pkg/FR-2020-09-01/pdf/2020-19204.pdf [https://perma.cc/MH7S-8H4C] [hereinafter SEC's D-Limit Approval Order].

149. *Id.* at 54,438–39.

150. *Id.* at 54,440 & n.35.

151. Notice of Filing of a Proposed Rule Change by Investors Exchange LLC to Add a New Discretionary Limit Order Type, Exchange Act Release No. 87,814, 84 Fed. Reg. 71,997, 71,999, 72,001 (Dec. 20, 2019), https://

The process of public comment and approval for the D-Limit order type was contentious, culminating in a pending lawsuit by Citadel Securities LLC, a leading off-exchange market maker and one of the main critics of this order type, to set aside the SEC's decision.[152] While Citadel Securities' arguments specifically included concerns about the best execution standard in the context of routing retail orders to IEX,[153] the business practices of this off-exchange market maker itself—and, by implication, industry practices—have been scrutinized. Based on Citadel Securities' statement that, "[w]hen routing retail orders to external venues for execution, consistent with standard market practice, we typically enter into back-to-back transactions (one on the external venue and one with the retail broker-dealer),"[154] IEX noted that it was unclear "whether the prices [Citadel Securities] receives are in all or most cases passed directly back to the ultimate retail customer."[155] Moreover, IEX pointed out that Citadel Securities' execution of odd-lot and certain large orders, which sometimes took as long as fifty milliseconds on average, was substantially longer than IEX's automatic 350-microsecond delay and questioned that "accounting for that delay in planning the routing of orders would be improper given the much larger round-trip latency over which Citadel exercises discretion."[156] In response, Citadel Securities continued to criticize the pro-

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www.govinfo.gov/content/pkg/FR-2019-12-30/pdf/2019-28024.pdf [https://perma.cc/M3VJ-PRBL].

152. Initial Brief for Petitioner Citadel Securities LLC, Citadel Sec. LLC v. SEC, No. 20-1424 (D.C. Cir. Feb. 2, 2021); Petition for Review, Citadel Sec. LLC v. SEC, No. 20-1424 (D.C. Cir. Oct. 16, 2020).

153. Stephen John Berger, Managing Dir. and Glob. Head of Gov't & Regul. Pol'y, Citadel Sec. LLC, Comment Letter to the SEC on IEX's Proposed D-Limit Order Type 4–5 (July 2, 2020), https://www.sec.gov/comments/sr-iex-2019-15/sriex201915-7378994-218874.pdf [https://perma.cc/XZF4-SQP7] [hereinafter Citadel Securities' Second Comment Letter to the SEC on IEX's Proposed D-Limit Order Type].

154. *Id.* at 2.

155. John Ramsay, Chief Mkt. Pol'y Officer, Invs. Exch. LLC, Comment Letter to the SEC on IEX's Proposed D-Limit Order Type 11 n.46 (Aug. 3, 2020), https://www.sec.gov/comments/sr-iex-2019-15/sriex201915-7534417-222147.pdf [https://perma.cc/K23F-EGBG] [hereinafter IEX's Third Comment Letter to the SEC on IEX's Proposed D-Limit Order Type].

156. *Id.* at 12 (citing Citadel Sec. LLC, Q1-2019 FIF Supplemental Retail Execution Quality Statistics (n.d.), https://s3.amazonaws.com/citadel-wordpress-prd102/wp-content/uploads/sites/2/2016/09/09175131/FIF-Rule-

posed order type combined with IEX's delay mechanism. This firm asserted that "'[a]ccounting' for the IEX speedbump means routing to IEX first and intentionally delaying routing to other exchanges when accessing displayed liquidity," questioned "whether intentionally delaying the routing of marketable orders is consistent with the 'fully and promptly' best execution standard [under FINRA Rule 5310]," and maintained that, "[j]ust as 350 microseconds is long enough for IEX to reprice D-Limit quotes before they can be accessed, it is also more than long enough for liquidity providers on other exchanges to reprice displayed quotes."[157]

In its approval order, the SEC even referenced a controversial anonymous comment letter by a self-described "industry expert" making the claims that (i) "retail orders are likely sent to Citadel at random times (initiated by actual retail investors living in different parts of the world), but Citadel likely *chooses* to route these orders to IEX *during* a CQI" and (ii) during the time period corresponding to an average speed of execution for a retail order, "Citadel has a free option to hold the order and decide what to do with it . . . to make as much money for Citadel as possible."[158] The first claim was made in the context of a prior comment letter by Citadel Securities, which was interpreted by the anonymous commenter as stating that "a majority of the order flow sent [by that firm] to IEX represents retail investors and that 50% of their liquidity taking orders on IEX occur when the [CQI] is 'on'" and hence described as "a completely shocking admission by Citadel in their treatment of retail orders [given that such an arrival rate] in that narrow of a time window is mathematically impos-

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605-606-WG-CitadelSecurities_Retail-Execution-Quality-Stats_Q1_2019.pdf [https://perma.cc/JNS4-NHQ3]).

157. Citadel Securities' Third Comment Letter to the SEC on IEX's Proposed D-Limit Order Type, *supra* note 13, at 4–5 (quoting FINRA Rule 5310, *supra* note 15 (Supplementary Material .01 Execution of Marketable Customer Orders)).

158. SEC's D-Limit Approval Order, *supra* note 148, at 54,440 n.38 (quoting Anonymous Indus. Expert, Comment Letter to the SEC on IEX's Proposed D-Limit Order Type 2 (n.d.), https://www.sec.gov/comments/sr-iex-2019-15/sriex201915-7182916-216802.pdf [https://perma.cc/BR8Z-JAML] [hereinafter Anonymous Comment Letter to the SEC on IEX's Proposed D-Limit Order Type]) (alterations added).

sible."[159] In reality, Citadel Securities only stated in that comment letter that it is "one of the top 3 takers of liquidity on IEX when the CQI signal is ON [and that] over 50% of [its] trading activity on IEX is on behalf of retail investors," without specifying any split between the CQI- and non-CQI-based volumes.[160] In a later submission, this firm clarified that its "own analysis of the retail orders routed to IEX by Citadel Securities that removed displayed liquidity during the month of May 2020 [showed that] the CQI was ON for approximately 15% of these retail orders" and that, consistent with its treatment and characteristics of large retail orders, "of the retail orders . . . being executed on IEX when the CQI was ON, 98.3% of those orders (accounting for 99.9% of the total volume) were routed to multiple exchanges."[161] Accordingly, instead of treating the relevant arrival rate as an unambiguous indication of abuse of retail orders, it should be considered that the CQI itself may be triggered, as a reverse causal link, by large retail orders under certain scenarios. However, the SEC's ultimate conclusion was that "[t]he CQI formula, by design, identifies only successively crumbling markets . . . and does not, for example, turn on in response to intermarket sweeps

159. Anonymous Comment Letter to the SEC on IEX's Proposed D-Limit Order Type, *supra* note 158, at 2. The anonymous commenter also argued that Citadel Securities itself is likely to engage in CQI-like predictive analytics for deciding whether to internalize or reroute order flow accordingly and that such rerouting may seek to collect rebates on securities exchanges and hence ultimately disadvantage certain retail orders. *Id.*

160. Stephen John Berger, Managing Dir. and Glob. Head of Gov't & Regul. Pol'y, Citadel Sec. LLC, Comment Letter to the SEC on IEX's Proposed D-Limit Order Type 2 (Apr. 23, 2020), https://www.sec.gov/comments/sr-iex-2019-15/sriex201915-7110555-215933.pdf [https://perma.cc/9NHE-AH9L].

161. Citadel Securities' Second Comment Letter to the SEC on IEX's Proposed D-Limit Order Type, *supra* note 153, at 3–4. In response, IEX criticized the relevance of the data sample in question and stressed "the infinitesimally small chance that an order sent by a retail investor to her broker, which routes it to a wholesale broker, which then processes the order and elects to send it to one or more exchanges, would happen to arrive on IEX during a 2-millisecond window of time when the CQI is on." IEX's Third Comment Letter to the SEC on IEX's Proposed D-Limit Order Type, *supra* note 155, at 9, 11. Citadel Securities retorted by emphasizing the scenario "when the execution of the retail investor order is actually what causes the CQI to turn ON in the first place." Citadel Securities' Third Comment Letter to the SEC on IEX's Proposed D-Limit Order Type, *supra* note 13, at 2.

from large orders that execute simultaneously across multiple markets."[162] As a way "to prevent the CQI from observing away executions and turning 'on' before an order sent to IEX can execute on IEX," this feature should be considered in conjunction with the regulators' emphasis on the availability of common routing techniques that "already take into account geographic and technological latencies, as well as exchange access delays, to capture liquidity across multiple venues simultaneously without signaling those executions to the market in a way that would impact prices or available liquidity."[163] On the other hand, the second claim made by the anonymous commenter appears to be in connection with "[t]he average speed of execution for a retail order, [which] according to popular retail broker websites, is between 50 and 400 milliseconds,"[164] and, accordingly, not directly connected to the CQI with its duration of up to two milliseconds. In addition, any processing time attributed to customer-facing brokers rather than off-exchange market makers themselves needs to be taken into account, which could raise its own concerns from the standpoint of compliance with the duty of best execution. Moreover, the allegations of "sitting on an order" were neither discussed in detail nor backed up by any data.

Aside from any speculative inferences about specific market players or opinions on the desirability of the D-Limit order type itself, this debate has implications for the duty of best execution in the context of off-exchange market making. Given the practice of back-to-back transactions of off-exchange market makers with routing broker-dealers and external trading venues, as opposed to pure agency-based routing, it would be contrary to the best execution standard to deprive customers of "better" prices and reasonably available price improvement opportunities in these near-instantaneous transaction pairs, which are undoubtedly driven by a number of considerations, such as fee-rebate structures on various trading venues. In any instance, rerouting of customer orders should avoid opportunistic behavior that jeopardizes execution quality, for instance, by prioritizing rebate collection. Likewise, promptness is one

162. SEC's D-Limit Approval Order, *supra* note 148, at 54,449.

163. *Id.* at 54,441.

164. Anonymous Comment Letter to the SEC on IEX's Proposed D-Limit Order Type, *supra* note 158, at 2.

of the dimensions of the duty of best execution,[165] and routing practices also need to account for various market structure wrinkles, such as delay mechanisms and other novel features and functionalities.[166] More specifically, one of the key concerns expressed during this debate relates to proper routing of large orders across different trading venues that might sweep the market in the context of the duty of best execution,[167] which is of direct relevance to off-exchange market makers for efficiently accessing available liquidity, potentially across different price levels, while handling the routed order flow. Another key implication of this debate is that a self-interested "sitting on an order" to a customer's detriment—whether based on predictive analytics or something else—would undoubtedly violate this duty.[168]

V.
Stress-Testing of Price Improvement Practices

Any scrutiny of the best execution obligations of off-exchange market makers necessarily involves their price improvement practices, which should be treating every order equitably without any systemic redistributions or offsets between different orders or customers. The very feasibility of price improvement relative to the NBBO stems, at least in part, from the ability of these market players to leverage order flow segmentation for enhancing execution quality: "[O]ff-exchange market making continues to rely rather heavily on segmentation of order flow with a preference for retail orders, which creates *some room* for a mutually beneficial relationship

165. *See, e.g.*, Magnum Corp. v. Lehman Bros. Kuhn Loeb, Inc., 794 F.2d 198, 200 (5th Cir. 1986) ("The implicit agreement between customer and stockbroker is that the latter will use reasonable efforts to execute the order promptly at the best obtainable price.").

166. *See also* SEC's D-Limit Approval Order, *supra* note 148, at 54,442 ("[W]ith or without D-Limit orders, if a broker-dealer does not seek to maximize its fill rates while minimizing information leakage by accounting for latencies (*e.g.*, technological, geographic, or access delay) when it routes portions of large orders to multiple venues near-simultaneously, the broker-dealer runs the risk of missing out on executions at displayed prices.").

167. Citadel Securities' Second Comment Letter to the SEC on IEX's Proposed D-Limit Order Type, *supra* note 153, at 5.

168. For a discussion of the hypothetical scenario of an off-exchange market maker sitting on an order, see Dolgopolov, *Wholesaling Best Execution*, *supra* note 8, at 192, 195–96.

whereby better prices may be offered to orders of this type."[169] The phenomenon of segmentation, which is primarily based on the existence of captive order flow arrangements, also confers other advantages on off-exchange market makers and hence increases the size of the economic pie and corresponding opportunities for price improvement. For instance, as observed by one commentator, "Their aggregation of order flow also means they know the direction in which the retail segment is pushing particular names. Thus they are gaining an advantage from seeing the flows coming through their pipes."[170] Some advantages may have an even longer shelf life: "Wholesale market-makers also, over the long term, acquire voluminous amounts of market data, including information about retail order flows, which can be used in future modeling for order-handling, trading, and risk decisions."[171] Importantly, such informational advantages do not necessarily imply that off-exchange market makers engage in illegal "front-running" of individual customer orders.[172]

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169. *Id.* at 155.

170. Chris Hall, *The Incredible Shrinking Market*, TRADERS MAG. (Aug. 20, 2020), https://www.tradersmagazine.com/xtra/the-incredible-shrinking-market/ [https://perma.cc/6MZ3-XKX6] (quoting Larry Tabb, Head of Market Structure Research, Bloomberg Intelligence).

171. U.S. SEC. & EXCH. COMM'N, STAFF REPORT ON ALGORITHMIC TRADING IN U.S. CAPITAL MARKETS 32 (Aug. 5, 2020), https://www.sec.gov/files/Algo_Trading_Report_2020.pdf [https://perma.cc/VXG4-G6P5]. As another example of a potential synergy tied to price improvement, one commentator argued that some off-exchange market makers "don't evaluate theoretical trading opportunities based entirely on cash equity spreads" and those "with prowess in *both* cash equities and equity options [are] providing more 'price improvement' on a per share basis." Paul Rowady, *Now You See Me: What the Bloomberg Opinion Guy Misses About Market Structure Mechanics*, ALPHACUTION (Feb. 22, 2021), https://alphacution.com/now-you-see-me-what-the-bloomberg-opinion-guy-misses-about-market-structure-mechanics/.

172. In that respect, a more substantive allegation from a legal standpoint would be that "[off-exchange] market makers can, in theory, 'front run' orders by, for example, jumping ahead of a customer's stock purchase to buy it themselves, making a small gain if the share price increases." Richard Henderson, *Zero-Fee Trading Helps Citadel Securities Cash in on Retail Boom*, FIN. TIMES (June 21, 2020), https://www.ft.com/content/4a439398-88ab-442a-9927-e743a3ff609b. At the same time, this conventional narrative of illegal front-running remains to be backed up by solid evidence in the context of off-exchange market making, and it is hardly relevant for individual retail orders that are small and inherently non-price moving. On the other hand, there is some potential for such abuse for larger orders or several aggregated

The aggregate amount of price improvement, as well as its allocation, provided to customers by off-exchange market makers is an important piece of the best execution puzzle, which should be measured against reasonable opportunities for obtaining price improvement *elsewhere*, such as midpoint executions on other trading venues.[173] In general, the aggregate amount of price improvement appeared to be rising significantly in 2020, sometimes exceeding at least a billion dollars in the equities space in a given month, although accompanied by considerable fluctuations in price improvement per share, and this trend reflects greater order flows to several off-exchange market makers.[174] Some comparative evidence on the magnitude and distribution of price improvement from a more granular/dynamic pricing grid with no PFOF is offered by the recent empirical study of SIs operating on the French equity market, which concluded that, given the looming broad extension of the tick size regime under MiFID II to SIs, nearly forty percent of trading volume in the sample, representing the bulk of price improvement, would not have complied with this regime.[175] As another informative statistic from the U.S. equity markets, the results of one study from the first six months of

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smaller orders, depending on such factors as the synchronicity of their arrival, their potential batching, and the speed of transmission and execution. Moreover, there is a controversy on whether aggregated information on price triggers for stop-loss orders could be used for front-running by off-exchange market makers, although the actual occurrence of this practice and the exact nature and magnitude of potential damages are uncertain. Michael Braga & Jessica Menton, *Critics Say Robinhood More Aligned with the Wealthy Than Average Investors*, USA TODAY (Feb. 18, 2021, 10:30 AM), https://www.usatoday.com/story/money/2021/02/18/robinhood-stock-wealthy-traders-gamestop-hearing-roaring-kitty/4442330001/ [https://perma.cc/A6UV-UETG]. For a related illustration of improper information-sharing between a market making desk handling institutional order flow and a proprietary trading desk that involved "trades made shortly after, and on the basis of information about, customer trades," although inviting speculation whether front-running might have been involved, see Merrill Lynch, Pierce, Fenner & Smith, Inc., Exchange Act Release No. 63,760, 100 SEC Docket 957, 957–59 (Jan. 25, 2011) (settled proceeding).

173. For a discussion of midpoint executions in the context of price improvement, see Dolgopolov, *Wholesaling Best Execution*, *supra* note 8, at 183 & n.109.

174. Paul Rowady, *Wholesale Market Makers: Adding Price Improvement to the PFOF Analysis*, ALPHACUTION (Oct. 9, 2020), https://alphacution.com/wholesale-market-makers-adding-price-improvement-to-the-pfof-analysis/.

175. Lucas, *supra* note 32, at 4.

2020 suggest that the aggregate amount of price improvement by a group of off-exchange market makers is 3.5 times larger than the aggregate amount of PFOF for the sample in question.[176] Perhaps this study signals that the economic pie is being sliced increasingly more in favor of customers relative to customer-facing brokers, representing roughly an 80/20 split, which should also be analyzed in conjunction with the phenomenon of zero-commission trades. The recent enforcement action brought against Robinhood also indicates that "an 80/20 split of the value between price improvement and payment for order flow" was typical as of 2016,[177] which implies that this standard has been somewhat stable *despite* the widespread adoption of zero-commission trades. Yet, the very fact that the customer-facing broker in question and off-exchange market makers had negotiated "a 20/80 split of the value"[178] to give access to that firm's lucrative order flow raises the question whether the latter had complied with their own best execution obligations by entering into captive order flow arrangements that essentially deprived customers of industry-standard price improvement—for many orders, even when the benefit of zero-commission trades is taken into account. From the standpoint of compliance, disclosure of such splits, as well as additional details of the economics of order flow arrangements, may be desirable.

From another perspective, metrics related to price improvement could be gamed or distorted, and the benchmark selection itself, including the NBBO, could invite opportunistic behavior in light of some degree of flexibility in terms of timing, information sources, reference transactions, or other factors. For instance, one analysis has demonstrated how reported price improvement for odd-lots could disguise price disimprovement.[179] Moreover, in a key enforcement action, the SEC penalized an off-exchange market maker for self-interested arbitrage between the official and private data feeds

176. Larry Tabb (@ltabb), TWITTER (Aug. 13, 2020, 7:31 AM), https://twitter.com/ltabb/status/1293887815835684864.

177. Robinhood Fin., LLC, Securities Act Release No. 10,906, Exchange Act Release No. 60,694, at 6 (Dec. 17, 2020) (settled proceeding), https://www.sec.gov/litigation/admin/2020/33-10906.pdf [https://perma.cc/3K7M-YDXQ].

178. *Id.*

179. Gellasch, *supra* note 131, at 2–13.

in the process of handling retail order flow, pointing out that orders "often received price improvement, but this amount often was not sufficient to equal the price difference that had triggered the [underlying] strategy" thus disadvantaging "a substantial number of smaller orders."[180] Likewise, certain regulatory changes relating to the applicable benchmark may expose distortions in the magnitude of price improvement or perhaps even show its lack:

> The price improvement metrics reported by retail broker-dealers do not take into account odd-lot quotes priced better than the NBBO. Even if a retail investor receives a better execution price from the new round lot definition, it might not show up as price improvement in retail wholesaler price improvement metrics if the NBBO also narrowed as a result of the new round lot size and now reflects odd-lot quotes that are priced better than the NBBO based on the current round lot size.[181]

Overall, just like in the case of several other dimensions of best execution, addressing price improvement requires objective and data-intensive compliance, reporting, and external monitoring. Yet, going beyond individual firms, the issue of price improvement is also dependent on market structure changes. For instance, extending the tick size regime to off-exchange market makers to cover price improvement and executions by analogy to the European regulatory regime[182] perhaps could yield additional transparency and objectivity of

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180. Citadel Sec. LLC, Securities Act Release No. 10,280, Exchange Act Release No. 79,790, 115 SEC Docket 5519, 5523 (Jan. 13, 2017) (settled proceeding).

181. Market Data Infrastructure Adopting Release, *supra* note 3, at 18,747 n.1881.

182. For a discussion of this feature of the European regulatory regime, see *supra* notes 36–39 and accompanying text. This approach is different from the so-called "trade-at" rule proposal, which would prioritize *previously displayed* orders on lit trading venues and restrict mere price matching or de minimis price improvement. For a discussion and criticism of the trade-at rule, see 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]; Larry Tabb, *Trade-At: Reducing Competition, Increasing Complexity and Channeling Profits to Intermediaries*, TABB F. (Dec. 4, 2014), https://tabbforum.com/opinions/trade-at-reducing-competition-increas-

price improvement practices on an order-by-order basis, which has relevance for the duty of best execution. At the same time, for that innovation to work, the existing tick size regime would have to be refined, and it should be noted that several securities exchanges have advocated for such improvements.[183] In fact, one of such proposals emphasized the goal of "promot[ing] competition between on- and off-exchange venues" and provided the following rationale, which implicitly touches on best execution-related issues: "Artificially wide penny spreads may cause broker-dealers to choose off-exchange trading centers to receive more granular price-improved executions. . . . [O]ff-exchange venues that trade in a principal capacity have the latitude to execute orders in finer price increments, and have experienced significant growth . . . ."[184]

VI.
The Feasibility of a Common Methodology for Calculating Damages in Best Execution Class Actions

It is notable that the duty of best execution in connection with off-exchange market making has been molded by enforcement actions rather than private lawsuits, which reflects the rarity of best execution class actions more generally. In fact, *Klein v. TD Ameritrade Holding Corporation*[185] was the very

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ing-complexity-and-channeling-profits-to-intermediaries/ (subscription required).

183. For several recent proposals, see Cboe Glob. Mkts., Inc., Cboe's Vision: Equity Market Structure Reform 4–5 (Jan. 2020), http://www.cboe.com/aboutcboe/government-relations/pdf/cboes-vision-equity-market-structure-reform-2020.pdf [https://perma.cc/8STY-UMAJ]; Nasdaq, Inc., Intelligent Ticks: A Blueprint for a Better Tomorrow (Dec. 2019), https://www.nasdaq.com/docs/2019/12/16/Intelligent-Ticks.pdf [https://perma.cc/H7LH-SVZF].

184. Cboe Glob. Mkts., Inc., *supra* note 183, at 4–5. The availability of a more granular pricing grid to lit trading venues by itself would make them more competitive vis-à-vis off-exchange market makers, for instance, in terms of price improvement amounts, despite the remaining option for the latter to undercut the former. On the other hand, the extension of the tick size regime to off-exchange market makers in terms of execution and price improvement would advantage lit trading venues decisively compared to the current state of affairs.

185. Klein v. TD Ameritrade Holding Corp., 327 F.R.D. 283 (D. Neb. 2018), *appeal docketed*, No. 18-3689 (8th Cir. Dec. 18, 2018).

first best execution lawsuit that overcame the class certification hurdle. The essence of the lawsuit was summarized as follows:

> The plaintiff contends that defendant's order routing practices involve use of computer algorithms to send its customers' equity orders to venues that pay the defendant the most money, without regard to whether the venues would provide the best possible execution of those orders. The plaintiff further alleges defendant failed to disclose the practice to its customers. The plaintiff contends the practices are inconsistent with the defendant's duty of best execution [and] that the purported class suffers economic loss due to orders for securities trades being unfilled, underfilled, filled at a suboptimal price, and/or filled in a manner that adversely affects the order's performance post-execution.[186]

While the lawsuit was directed against a customer-facing broker, the complaint alluded to the fact that TD Ameritrade was routing portions of its customers' marketable and non-marketable orders to several off-exchange market makers.[187]

One of the pivotal issues decided in favor of the plaintiffs in *TD Ameritrade* was whether a "common class-wide methodology," capturing such concepts as "common proof," "common evidence," and "common basis," for calculating damages for breaches of the duty of best execution would even be feasi-

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186. *Id.* at 286–87.

187. Amended Complaint para. 48, at 16, paras. 53–54, at 18–19, para. 65, at 24, Klein v. TD Ameritrade Holding Corp., 327 F.R.D. 283 (D. Neb. 2018) (No. 8:14-cv-00396). As an even better illustration, a later best execution class action, which is currently at an earlier procedural stage, is centered around captive order flow arrangements between a leading retail broker and a leading off-exchange market maker. Second Amended Class Action Complaint for Violations of Federal Securities Laws *passim*, Crago v. Charles Schwab & Co., No. 3:16-cv-03938-RS (N.D. Cal. Aug. 14, 2017). While brought against the retail broker in question, the complaint extensively scrutinizes and attacks the practices of the off-exchange market maker in question, including routing practices and relationships with affiliated trading venues. *Id. passim.* Moreover, in connection with the allegations, the defendant retail broker denied that the off-exchange market maker in question had "disclaimed either its contractual duty to provide best execution or its regulatory responsibility to do so under FINRA Rule 5310(a)(1)." Defendants' Motion to Dismiss the Second Amended Complaint at 9, Crago v. Charles Schwab & Co., No. 3:16-cv-03938 (N.D. Cal. Sept. 6, 2017).

ble.[188] Demonstrating this case's novelty and reevaluating the applicable area of law, the court recognized such feasibility. Overall, the court described the proposed methodology as "the product of reliable scientific principles that are relevant and reliable as applied to the facts of the case," while acknowledging that certain further refinements, such as several exceptions, exemptions, and exclusions, in part based on the defendants' expert's criticism, would "eliminate the potential for identifying and including unavoidable harm or harm due to variables other than best execution or payment for order flow in damages determinations."[189] More specifically, the court credited the proposed methodology as "a feasible algorithmic method to identify best execution failures in the form of slippage (i.e., executions at an inferior price), adverse selection (i.e., executions associated with unfavorable price moves), and opportunity cost (i.e., unfilled orders that could have filled with proper routing practices) and to measure corresponding economic harm across the class."[190] The court rejected the position that "a common class-wide methodology is not feasible" on the following grounds:

> That position does not reflect the economic reality and the existing practices of the market—an industry

188. *TD Ameritrade*, 327 F.R.D. 283 *passim*. By contrast, the court did not consider reliance to be a complex element of the case: "Like a securities dealer's failure to disclose its policy of overcharging investors, defendants' execution of investors' trades at the NBBO price, when better prices may have been available from alternative services, constitutes a potentially fraudulent common course of conduct from which reliance can be presumed." *Id.* at 294–95 (quoting Newton v. Merrill Lynch, Pierce, Fenner & Smith, Inc., 259 F.3d 154, 177 (3d Cir. 2001)). However, the allegations in a somewhat similar case, also a best execution class action, had been defeated on the issue of reliance. Schwab v. E*TRADE Fin. Corp., 258 F. Supp. 3d 418 (S.D.N.Y. 2017), *aff'd*, 752 F. App'x 56 (2d Cir. 2018). The issue of reliance is also likely to be pivotal for any class action involving disclaimers of the duty of best execution or execution quality more generally, as discussed in *supra* notes 71–74 and accompanying text.

189. *TD Ameritrade*, 327 F.R.D. at 295. Haim Bodek, the plaintiffs' expert, had agreed that such refinements should be considered as additions to the existing computer code. *Id.* at 290. The court also noted that "Dr. [Shane] Corwin [another plaintiffs' expert] explained that a full list of exclusions necessary to yield precise damage figures would require discovery that was not provided to the plaintiff [such as information about] TD Ameritrade's trading systems themselves." *Id.*

190. *Id.* at 296 n.6.

> employing systems that algorithmically process orders and make routing decisions on an order-by-order basis. The record shows that the trades analyzed by the plaintiff's experts were routed by the defendant pursuant to an algorithm. The methodology of analysis proposed by the plaintiff is the same method the defendant uses to route orders in the first place. The plaintiff has shown that the SEC, FINRA and the Department of Justice use similar methods to analyze execution quality.[191]

Furthermore, the court declined to evaluate individual trading strategies and circumstances beyond the actual instructions communicated to TD Ameritrade with respect to each individual order:

> The court places little weight on Dr. Kleidon's [the defendants' expert's] testimony that individual trading strategy must be considered, rather the court agrees with Bodek's [the plaintiffs' expert's] conclusion that trading strategy is not a relevant factor in a best execution analysis. The inquiry is whether the customer was harmed by a failure to provide best execution on a specific order. Other trades are not relevant. The allegations are that the defendant's order routing policies are uniform policies and treat each customer the same way. The class claims all relate to an alleged systematic failure to comply with the best-execution duty.[192]

Reflecting the process-based nature of the duty of best execution, the court zeroed in on the essence of the allegations as targeting a "systematic failure to comply with the best-execution duty"[193] and "uniform order-routing policies [that] did not fulfill the duty of best-execution and harmed customers [with] the harm [arising] from the process by which each client's trade was executed, not its outcome."[194] While an indi-

191. *Id.* at 295–96.

192. *Id.* at 296.

193. *Id.*

194. *Id.* at 297 n.7 (citing Brian J. Wanamaker, Student Note, *Class Actions and Rule 10b-5: A Critique of* Newton v. Merrill Lynch, 80 WASH. U. L.Q. 997, 1020 (2002), https://openscholarship.wustl.edu/cgi/viewcontent.cgi?article=1351&context=law_lawreview [https://perma.cc/A25U-YJ6D]).

vidual transaction may fail to obtain the "best" price despite proper policies and procedures, the systematic nature of the alleged abuse is additive and hence measurable with some degree of accuracy in a series of transactions under certain parameters, especially given the traditional "reasonably available" hurdle for the duty of best execution. A fully developed methodology for calculating damages could address the precision issues with the procedure-outcome distinction via certain exclusions.

Overarchingly, the court rejected the defendants' contention that "proof of economic loss and reliance will require extensive individualized inquiries into evidence specific to each class member and each of their orders"[195] and overruled the magistrate judge's conclusion that "there are certain aspects necessary to evaluate economic loss in a best execution case that simply cannot be captured through algorithmic analysis [such as] an individual's state of mind or investment strategy."[196] However, this position has been rearticulated during the pending appellate process. The argument advanced by the defendants is that a common methodology is simply impossible: "A computer algorithm cannot identify . . . the myriad unusual market conditions or determine customers' trading strategies, both of which must be considered to determine whether the routing of a particular order harmed the customer [or] transform unavoidably individualized evidence into common evidence, let alone predominating common evidence."[197] On the other hand, some of the factors stressed by the defendants appear to equate to the perceived complexity of the required methodology rather than its infeasibility, such as taking into account the characteristics of "each order placed by that customer (*e.g.*, what security was ordered; what type of order the

195. *Id.* at 287.

196. *Id.* (quoting Klein v. TD Ameritrade Holding Corp., No. 8:14CV396, 2018 U.S. Dist. LEXIS 157501, at *16 (D. Neb. July 12, 2018) (alterations added)). In reaching that conclusion, the magistrate judge heavily relied on a prior ruling that denied class certification in a best execution lawsuit, pointing to the requirement of "proof of the circumstances surrounding each trade, the available alternative prices, and *the state of mind of each investor at the time the trade was requested*." *TD Ameritrade*, 2018 U.S. Dist. LEXIS 157501, at *10–11, 16 (citing and quoting Newton v. Merrill Lynch, Pierce, Fenner & Smith, Inc., 259 F.3d 154, 187 (3d Cir. 2001)) (emphasis added).

197. Defendants-Appellants' Brief at 6, 25, Klein v. TD Ameritrade Holding Corp., No. 18-3689 (8th Cir. Mar. 1, 2019).

customer placed; whether shares of that security were available elsewhere and, if so, at what price(s); whether orders elsewhere would have filled at those prices; etc.)"[198] or "reconstruct[ing], at the moment of each and every trade, the *entire stock market with its dozens of market makers, exchanges and alternative trading systems*."[199] Additionally, the defendants argued that "some necessary exclusions could not be identified and coded in any predetermined way"[200] and that "[the plaintiffs' expert's] list of circumstances precluding economic loss that have to be built into his algorithm is necessarily incomplete."[201] This argument appears to suggest that only a mathematically precise taxonomy of exclusions built into the applicable methodology would have been acceptable, which is at odds with inherent limitations of methodologies for calculating damages in class actions more generally. Furthermore, the defendants resorted to the erroneous allegation that the plaintiffs had admitted that "review of all of [TD Ameritrade's] customers' orders [based on additional discovery] will reveal yet-unknown factors relevant to determining whether those trades incurred losses" and that "[the plaintiffs' expert's] proposed algorithm is 'incomplete' and cannot be finished without review of all customers' orders."[202] Even in the referenced passages, the plaintiffs had rejected the need for any "manual review" of all orders, without any indication that such a review would be required to improve the methodology, and emphasized that such discovery would pertain to "the merits of whether or not TD Ameritrade seeks best execution of customers' orders *through its routing algorithms*."[203]

Some lessons for *TD Ameritrade* could be drawn from the fraud-on-the-market doctrine,[204] which is common in securi-

198. *Id.* at 32–33.

199. Defendants-Appellants' Reply Brief at 21, Klein v. TD Ameritrade Holding Corp., No. 18-3689 (8th Cir. May 23, 2019).

200. Defendants-Appellants' Brief at 18, *TD Ameritrade*, No. 18-3689.

201. *Id.* at 44.

202. Defendants-Appellants' Reply Brief at 15, 19, *TD Ameritrade*, No. 18-3689 (citing Plaintiff-Appellee's Brief at 26, 41–42 & n.12, 44, 45 n.16, Klein v. TD Ameritrade Holding Corp., No. 18-3689 (8th Cir. May 2, 2019)).

203. Plaintiff-Appellee's Brief at 41–42 & n.12, *TD Ameritrade*, No. 18-3689 (emphasis added).

204. The relevance of the analogy to the fraud-on-the-market doctrine for calculating damages, as illustrated by "every classic stock drop class action," was pointed out by Nicholas Porritt, the plaintiff's counsel, during the oral

ties fraud class actions involving the dissemination of misrepresentations or certain omissions in an "efficient" market.[205] One close analogy involves the calculation of a "value line," as a *hypothetical* price trajectory absent the underlying fraud, which is to be mapped against an observed "price line" in the context of the fraud-on-the-market doctrine.[206] Given the complexity of the process of price discovery as an aggregation of various firm-specific, industry-specific, economy-wide, and other factors, as well as a potentially incremental nature of the dissemination of false information and the absorption of true information by the market, tracing a value line necessarily becomes a difficult exercise dependent on the underlying assumptions and methodology. Accordingly, demanding an absolute precision is neither reasonable nor traditionally expected in the courtroom under these circumstances. In fact, both courts and commentators have discussed the precision limits for and various approaches to determining the "value line" in the context of the fraud-on-the-market doctrine.[207] It

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argument. Oral Argument at 26:05–:45, Klein v. TD Ameritrade Holding Corp., No. 18-3689 (8th Cir. Sept. 23, 2020), http://media-oa.ca8.uscourts.gov/OAaudio/2020/9/183689.MP3 [https://perma.cc/3HJQ-7HJ2].

205. For the author's summary of the fraud-on-the-market doctrine, see Stanislav Dolgopolov, *Risks and Hedges of Providing Liquidity in Complex Securities: The Impact of Insider Trading on Options Market Makers*, 15 FORDHAM J. CORP. & FIN. L. 387, 428–34 (2010), https://ir.lawnet.fordham.edu/cgi/viewcontent.cgi?article=1105&context=jcfl [https://perma.cc/2N6N-R8ER].

206. For cases referencing the relevance of the concepts of "price line" and "value line" specifically in connection with class certification of actions based on the fraud-on-the-market doctrine, see *In re* Sadia, S.A. Sec. Litig., 269 F.R.D. 298, 318–21 (S.D.N.Y. 2010); Swack v. Credit Suisse First Boston, 230 F.R.D. 250, 271 (D. Mass. 2005); *In re* Caremark Int'l Sec. Litig., No. 94 C 4751, 1996 U.S. Dist. LEXIS 8751, at *20–22 (N.D. Ill. June 21, 1996); *In re* Clearly Canadian Sec. Litig., 875 F. Supp. 1410, 1416 (N.D. Cal. 1995). For a further discussion of the concept of "value line," also known as "but-for price line" and "true price line," and corresponding inflation factors, which need not be constant, in securities litigation, see Kevin L. Gold et al., *Federal Securities Acts and Areas of Expert Analysis*, *in* LITIGATION SERVICES HANDBOOK: THE ROLE OF THE FINANCIAL EXPERT 27•1, 27•12–17 (Roman L. Weil et al. eds., 6th ed. 2017).

207. For a mix of sources, see Newby v. Enron Corp. (*In re* Enron Corp. Sec. Derivative & "ERISA" Litig.), 529 F. Supp. 2d 644, 765 (S.D. Tex. 2006); *In re* Cendant Corp. Sec. Litig., 109 F. Supp. 2d 235, 264–65, 267, 270 (D.N.J. 2000); RMED Int'l, Inc. v. Sloan's Supermarkets, Inc., No. 94 Civ. 5587, 2000 U.S. Dist. LEXIS 3742, at *12–36 (S.D.N.Y. Mar. 24, 2000); Ravens v. Iftikar, 174 F.R.D. 651, 668–75 (N.D. Cal. 1997); *In re* Seagate Tech. II Sec. Litig.,

still rings true that "finance theory and economic models used to calculate value lines are not exact science,"[208] which, however, has not precluded the use of class actions based on the fraud-on-the-market doctrine. With quite a bit of similarity to the circumstances of *TD Ameritrade*, in a case based on the fraud-on-the-market doctrine, the court accepted an expert's "method—albeit one sketched out in rough terms and apparently dependent upon conducting extensive discovery in the case—for measuring the degree of inflation in the market price" at the class certification stage.[209] Overarchingly, in the process of measuring damages, calculating a hypothetical "but-for" price in the scenario of false information disseminated to the market is quite analogous to the scenario of failures to provide best execution.

The ultimate outcome of *TD Ameritrade*, which hinges on the judicial recognition of a feasible methodology, will be important for future best execution class actions,[210] in part because they may directly involve off-exchange market makers. Notably, this particular case also touched on public policy

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843 F. Supp. 1341, 1347–50, 1368–69 (N.D. Cal. 1994); Edward S. Adams & David E. Runkle, *Solving a Profound Flaw in Fraud-on-the-Market Theory: Utilizing a Derivative of Arbitrage Pricing Theory to Measure Rule 10b-5 Damages*, 145 U. PA. L. REV. 1097 *passim* (1997), https://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=3486&context=penn_law_review [https://perma.cc/LF8D-TXRS]; William W. Bratton & Michael L. Wachter, *The Political Economy of Fraud on the Market*, 160 U. PA. L. REV. 69, 88–93 (2011), https://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1037&context=penn_law_review [https://perma.cc/5PY3-72DW]; Bradford Cornell & R. Gregory Morgan, *Using Finance Theory to Measure Damages in Fraud on the Market Cases*, 37 UCLA L. REV. 883 *passim* (1990).

208. *Newby*, 529 F. Supp. 2d at 765.

209. *Swack*, 230 F.R.D. at 272. Similarly, relying on a leading precedent, another fraud-on-the-market case upheld class certification even though "the Plaintiffs' damages model failed to account for variations in inflation over time": "*Comcast* does not suggest that damage calculations must be so precise at [the class certification stage]. To the contrary, *Comcast* explicitly states that '[c]alculations need not be exact.'" Waggoner v. Barclays PLC, 875 F.3d 79, 106 (2d Cir. 2017) (quoting Comcast Corp. v. Behrend, 569 U.S. 27, 35 (2013)).

210. For an illustration of a pending best execution class action against a customer-facing broker, which is essentially based on the facts articulated in the enforcement action brought by the SEC against Robinhood, see Class Action Complaint, Lemon v. Robinhood Fin. LLC, No. 4:20-cv-09328 (N.D. Cal. Dec. 23, 2020), https://www.classaction.org/media/lemon-v-robinhood-financial-llc-et-al.pdf [https://perma.cc/MFK4-VSKP].

grounds for allowing such class actions. For instance, an industry group even made the far-reaching argument that "FINRA, with oversight by the SEC, is best suited to enforce the duty of best execution."[211] In response, a public interest organization forcefully asserted that "[the referenced] enforcement actions [by the SEC and FINRA] resulted in virtually no recovery for victims; moreover, the fines imposed represented only a fraction of the huge potential revenues available to brokers who violate their duty to seek best execution, rendering these actions ineffective as deterrents."[212] In addition to the conclusion that "SEC and FINRA enforcement alone will not meaningfully deter wrongdoing,"[213] it is worth deliberating on the signaling value of *TD Ameritrade* for securities fraud class actions more generally.

CONCLUSION

At the end of the day, while not always explicitly recognized, the duty of best execution remains a complex multifaceted issue for off-exchange market makers as one of the pillars of the U.S. equity markets.[214] With the sheer degree of

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211. Brief for the Securities Industry and Financial Markets Association as Amicus Curiae in Support of Appellants and Reversal at 7, Klein v. TD Ameritrade Holding Corp., No. 18-3689 (8th Cir. Mar. 6, 2019), https://www.sifma.org/wp-content/uploads/2019/03/TD-Ameritrade-3.6.2019.pdf [https://perma.cc/CA7E-ZW9H].

212. Brief Amicus Curiae, by Consent, of Better Markets, Inc. in Support of the Plaintiff-Appellee and Affirmance at 18, Klein v. TD Ameritrade Holding Corp., No. 18-3689 (8th Cir. May 8, 2019), https://bettermarkets.com/sites/default/files/Better%20Markets%20Amicus%20Brief%20Ford%20v.%20TD%20Ameritrade.pdf [https://perma.cc/6BNH-GZYG].

213. *Id.* at 19.

214. The business model 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, PFOF arrangements, automated execution, provision of dark liquidity based on matching the NBBO with potential price improvement, and order size guarantees was in place by the early 1990's. 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). The durability of this model as employed in off-exchange market making today is impressive regardless of the respective weights of various economic, regulatory, technological, and competitive factors. Another fact attesting to this model's success is that just one off-exchange market maker, which also serves as an on-exchange designated market maker and has

discretion exercised by these market players while handling customer orders, the multitude of moving parts includes execution policies and procedures, routing practices, execution quality, the structure of PFOF arrangements, the nature of trading strategies that involve the routed order flow, and the interaction of off-exchange market making with other lines of business. In turn, this standard itself is shaped by market structure features, as illustrated by different approaches to PFOF, permitted agency functions, tick size constraints, and quoting obligations employed by the European and U.S. regulatory regimes.

The reach of the duty of best execution to off-exchange market makers could be a fertile ground for reexamining the securities industry's past and current practices and proactive fine-tuning of compliance efforts. For instance, the phenomenon of PFOF arrangements and the corresponding conflicts of interest have been debated for decades without ever going away and perhaps becoming even more relevant in light of the novel—and likely distortionary—phenomenon of zero-commission trades. More generally, given the economic value represented by the sheer magnitude of PFOF,[215] some uncertainty remains with respect to the split between the win-win aggregation of desirable orders with the corresponding ability of off-exchange market makers to offer more advantageous execution and the win-lose abuse of order flow, for instance, by gaming the reference price, using arbitrage as de facto interpositioning, or engaging in self-interested routing tactics, as illustrated by the recent enforcement actions. As a counterforce, several leading off-exchange market makers themselves are

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hedge fund affiliations, "commands 27% of equity volume market share in the U.S. [and is] particularly dominant in retail order flow, with 46% of the market" as of early 2021. Tom Maloney & Sally Bakewell, *Citadel Securities Reaps Record $6.7 Billion on Volatility*, BLOOMBERG (Jan. 22, 2021, 1:18 PM), https://www.bloomberg.com/news/articles/2021-01-22/citadel-securities-reaps-record-6-7-billion-year-on-volatility.

215. For a discussion of the magnitude of PFOF, see Paul Rowady, *From Citadel Securities to Tastyworks: The New Economics of Liquidity, Part 1*, ALPHACUTION (July 9, 2020), https://alphacution.com/from-citadel-securities-to-tastyworks-the-new-economics-of-liquidity-part-1/ (subscription required); Frank Chaparro, *Robinhood Made More Than $600 Million from Payment for Order Flow Revenue in 2020*, THE BLOCK (Feb. 1, 2021, 5:15 PM), https://www.theblockcrypto.com/post/93321/robinhood-payment-for-order-flow-2020 [https://perma.cc/LKQ6-9JF4].

now vocal about their adherence to the best execution standard, for instance, in connection with the need to use proprietary market data products to meet this standard.[216] This development could be favorably compared to the situation only a few years ago when some firms in this segment of the securities industry were making cautious or ambiguous statements about their best execution obligations in connection with order flow arrangements or, on especially shaky grounds, disclaiming them altogether.[217]

As a postscript-like episode, the GameStop-Robinhood debacle in early 2021 has exposed the relevance of the best execution obligations of off-exchange market makers for the renewed scrutiny of the equities space.[218] While some stakeholders focused on "whether the multi-factor best execution

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216. *See, e.g.*, SEC Roundtable on Market Data Products, Market Access Services, and Their Associated Fees, *supra* note 125, at 27, 73 (remarks of Douglas Cifu, Cofounder and Chief Executive Officer, Virtu Financial, Inc.) ("Given the realities of the modern electronic market, no market participant that desires to route an order effectively and consistent with its best execution obligations either as a principal or an agent can do so without paying for full depth of book market data from 11 exchanges and connectivity from them all. While the SIP is useful and necessary for some parts of our business, we and every other modern market participant are compelled to purchase proprietary data feeds and exchange connectivity. . . . [I]n the absence of really understanding the marketplace and having full depth of book, I find it difficult to imagine that you can be competitive and I find it difficult to imagine that you could satisfy your best execution obligations."); *id.* at 193–94 (remarks of Jamil Nazarali, Global Head of Business Development, Citadel Securities LLC) ("[T]here's been a lot of discussion about whether using the direct feeds is a commercial decision or something that's important for your best ex requirements. And I will say that our customers demand the best prices and it's not a commercial decision for us. If we didn't use direct feeds, if we didn't give our customers the best available price in the market – which, by the way, you need all of those things that I just talked about – we wouldn't be in business.").

217. For a discussion of such statements, see Dolgopolov, *Wholesaling Best Execution*, *supra* note 8, at 169–70, 176.

218. On a related note, while describing "the textbook theory" that off-exchange market makers prefer to interact with retail order flow, given its favorable characteristics, such as relatively balanced "buy" and "sell" flows, one commentator pointed out that, "[e]ven in one of the wildest melt-ups in stock-market memory, the absolute epitome of insane one-way retail buying, actual retail flow was pretty balanced." Matt Levine, *GameStop Stock Game Got Stomped*, BLOOMBERG (Jan. 29, 2021, 12:06 PM), https://www.bloomberg.com/opinion/articles/2021-01-29/reddit-traders-on-robinhood-are-on-both-sides-of-gamestop.

standard should apply to the most active retail broker-dealers" and whether the phenomenon of PFOF "causes an inevitable conflict-of-interest between the retail broker-dealer's duties to seek best execution for its customers and its duties to shareholders and others to maximize revenues,"[219] others specifically posed "the question of whether regulators are sufficiently applying and enforcing the duty of best execution upon the market makers to whom retail brokers route orders" and pointed to potential breaches of this duty in the context of the high incidence of odd-lot transactions.[220] Moreover, one pending class action brought against several customer-facing brokers, including Robinhood, and Citadel Securities LLC as an off-exchange market maker in connection with this episode advances a claim based on breaches of the duty of best execution for "failing to respond at all to customers' placing timely trades—and outright blocking customers from trading a security."[221] However, a much-anticipated appellate decision rejected the feasibility of a common methodology for calculating damages in best execution class actions, in part based on the imposed requirement to demonstrate each investor's state of mind,[222] although this very issue is likely to remerge again in private litigation. As another telltale sign, during the heated

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219. Letter from Dennis M. Kelleher, President & Chief. Exec. Officer, et al., Better Mkts., Inc., to Janet Yellen, Sec'y, U.S. Dep't of the Treasury & Chair, Fin. Stability Oversight Council, et al. 3–4 (Feb. 3, 2021), https://bettermarkets.com/sites/default/files/Better%20Markets%20Letter%20to%20FSOC%20Regarding%20Gamestop%202-3-2021.pdf [https://perma.cc/87KR-QWCT].

220. Letter from Tyler Gellasch, Exec. Dir., Healthy Mkts. Ass'n, to Maxine Waters, Chairwoman, Comm. on Fin. Servs., U.S. House of Reps., et al. 8, 13–15 (Feb. 17, 2021), https://healthymarkets.org/wp-content/uploads/2021/02/Letter-to-HFSC-Hearing-2-17-21.pdf [https://perma.cc/A34Q-V574].

221. Complaint and Demand for Jury para. 29, at 6, Daniels v. Robinhood Fin., LLC, No. 1:21-cv-00290 (D. Colo. Jan. 28, 2021). In a somewhat similar lawsuit, Robinhood's defense to the essentially same claim was that the duty of best execution applies only to orders accepted by a broker and that the firm had a contractual right to restrict trading in certain securities. Robinhood Financial LLC, Robinhood Securities, LLC and Robinhood Markets, Inc.'s Memorandum of Law in Opposition to Plaintiff's *Ex Parte* Application for a Temporary Restraining Order and Order Showing Cause for a Preliminary Injunction at 22–25, Cobos v. Robinhood Fin. LLC, No. 2:21-cv-00843 (C.D. Cal. Feb. 8, 2021).

222. Ford v. TD Ameritrade Holding Corp., 995 F.3d 616 (8th Cir. 2021).

congressional hearing, the following emphatic statement was made on behalf of a leading off-exchange market maker: "Citadel Securities owes a duty of best execution for every order that comes from Robinhood. And I will tell you that I'm incredibly proud of how seriously my team takes that duty of best execution."[223]

At the same time, compliance with the best execution standard by off-exchange market makers by itself cannot address broader—and complex—problems related to market fragmentation beyond control of any individual market player, including a proper balance between competition among marketplaces and competition among orders and, likewise, a proper balance between lit and dark liquidity.[224] As a recent illustration, several commentators expressed the concern, oftentimes from the standpoint of institutional investors, about the inaccessibility of retail orders stemming from captive order flow arrangements between off-exchange market makers and customer-facing brokers and the implications for price discovery and competition among orders.[225] Resolving these con-

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223. *Game Stopped? Who Wins and Loses When Short Sellers, Social Media, and Retail Investors Collide: Hearings Before the H. Comm. on Fin. Servs.*, 117th Cong., at 3:30:57–:31:18 (forthcoming) (statement of Kenneth Griffin, Chief Executive Officer, Citadel LLC), https://www.youtube.com/watch?v=RFEuNHVPc_k.

224. For instance, off-exchange market making and the recent rise in the share of dark liquidity are certainly interrelated: "The individual-investing boom has led to historically high levels of 'dark' trading, in which stocks are bought and sold on opaque private venues, rather than public exchanges. That is because online brokers typically funnel small investors' trades to electronic trading firms that execute the incoming orders." Alexander Osipovich, *Individuals Reshape Stock Market*, WALL ST. J., Sept. 1, 2020, at B9.

225. *See, e.g.*, Hall, *supra* note 170 ("Some may look at volumes and think we're in a robust and plentiful market, but many institutions would say it's difficult to find liquidity right now. That bifurcation is frustrating because you ideally want a market where everyone can engage with each other. And with all those retail trades being executed via wholesale market-makers, we also need to ask: what's the effect on price discovery and overall accessible liquidity?" (quoting Mett Kinak, Global Head of Systematic Trading and Market Structure, T. Rowe Price)); Bob Pisani, *Robinhood-GameStop Hearing Will Scrutinize How Brokerages Get Paid for Trades*, CNBC (Feb. 18, 2021, 12:59 PM), https://www.cnbc.com/2021/02/18/payment-for-order-flow-the-controversial-wall-street-practice-to-draw-scrutiny-at-robinhood-hearing.html [https://perma.cc/CW3C-SFQT] ("Growing retail investor interest is a welcome development. But all of this trading in private dark venues means liquidity is becoming less accessible for institutional investors and the price

cerns requires different regulatory tools, such as a mandatory exposure of the routed order flow to competition on lit trading venues,[226] and additional debates on their merits. The tradeoff between segmentation and consolidation of different types of order flow, the balance between intermediation and direct interaction of retail orders, and the corresponding impact on any benchmark for measuring price improvement remain open issues.

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discovery process is becoming degraded." (quoting Michael Blaugrund, Chief Operating Officer, New York Stock Exchange)); Ivy Schmerken, *Equity Market Structure Wrestles with "Inaccessible Liquidity," FlexAdvantage Blog*, FLEXTRADE (Nov. 16, 2020), https://flextrade.com/equity-market-structure-wrestles-with-inaccessible-liquidity/ [https://perma.cc/K28C-ZD5R] ("I'm concerned about off-exchange liquidity. I don't know how you can actually guarantee you are getting true price discovery when you have 25% of the volume in some names that we don't have access to." (quoting Melissa Hinmon, Director of Equity Trading, Glenmede Investment Management L.P.)). For an illustration of an interaction of institutional orders and the non-internalized portion of retail orders rerouted by an off-exchange market maker within an affiliated dark pool, see Virtu Ams. LLC [Virtu MatchIt ATS], Material Amendment to Form ATS-N (Form ATS-N/MA) (Oct. 9, 2020), https://www.sec.gov/Archives/edgar/data/1457716/000145771620000028/0001457716-20-000028-index.htm.

226. *See, e.g.*, HAIM BODEK, THE PROBLEM OF HFT: COLLECTED WRITINGS ON HIGH FREQUENCY TRADING & STOCK MARKET STRUCTURE REFORM 69 (2013) ("One straightforward and proven solution would be to require trades that are negotiated off-exchange to be exposed to the electronic crowd on-exchange for competitive price improvement, a practice which benefits retail customers and enhances the liquidity made available to the public marketplace.").