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August 3, 2020

Ms. Vanessa Countryman
Secretary
U.S. Securities and Exchange Commission
100 F Street, N.E.
Washington, D.C. 20549-0609

Re: File No. SR-IEX-2019-15

Dear Ms. Countryman:

Investors Exchange LLC ("IEX") is writing to respond to a second comment letter[1] from Citadel Securities ("Citadel") concerning IEX's proposal to add a new Discretionary Limit order type ("D-Limit").[2] This proposal, which is described in detail in the D-Limit Filing, is an innovation designed to encourage greater displayed liquidity provision on IEX by providing certain protections to users of the order type from the harmful effects of specific latency arbitrage trading strategies. It would do so by automatically repricing the orders in the discrete moments when IEX's Crumbling Quote Indicator ("CQI") algorithm predicts the national best bid or offer for the relevant security will move in a way adverse to the submitter of the order within the next two milliseconds. These discrete moments, while the CQI is "on", add up, on average, to only seconds of each trading day per NMS security. At all other times, D-Limit orders would react like any other limit orders posted to IEX.[3]

The Problem of Diminishing Displayed Liquidity

Over the past seven months, the D-Limit proposal has attracted widespread commentary from across the industry. IEX and investors, brokers, and market makers have provided qualitative and quantitative evidence—both first-hand and on behalf of institutional and retail clients[4]—that illustrates the deterioration of displayed liquidity and migration of trading to off-exchange venues that have now reached alarming and historic levels.[5] No commenters, including Citadel, have disputed this trend. Overwhelmingly, market participants in their comments on D-Limit have connected this trend to the threat that latency arbitrage poses to displayed orders, based on analysis and their individual trading experiences. These commenters have also stated clearly that D-Limit will help to address this problem.[6]

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[1] Letter from Stephen John Berger, Managing Director, Global Head of Government & Regulatory Policy, Citadel Securities, to Vanessa Countryman, Secretary, SEC, dated July 2, 2020 ("Citadel Letter").
[2] See Securities Exchange Act Release No. 87814 (December 20, 2019), 84 FR 71997 (December 30, 2019) ("D-Limit Filing").
[3] See generally D-Limit Filing, 84 FR at 71999-72001.
[4] See Letter from John Ramsay, Chief Market Policy Officer, IEX, to Vanessa Countryman, Secretary, SEC, dated May 10, 2020 ("Second IEX Response"), at 3-7 (citing statements from multiple participants).
[5] "…5 of the 8 highest TRF market share days ever occurred in the 5 consecutive trading sessions between June 3 and June 9.", NYSE Data Insights, "Market Volume & Off-Exchange Trading: More Than a Retail Story (June 15, 2020), avail. at https://www.nyse.com/data-insights/market-volume-and-off-exchange-trading.
[6] See, e.g., Letter from Thomas Merritt, Deputy General Counsel, Virtu Financial ("Virtu"), to Vanessa Countryman, Secretary, SEC, dated January 16, 2020 ("Virtu Letter): "In particular, the IEX proposal would enable market makers who would otherwise be exposed to the risk of adverse selection to provide narrower spreads and larger quotes." https://www.sec.gov/comments/sr-iex-2019-15/sriex201915-6670178-203870.pdf.

This Proposal represents one exchange's attempt to mitigate the risk associated with posting displayed orders and encourage additional liquidity in a transparent and non-coercive manner. IEX has provided substantial data and analysis showing how D-Limit will benefit liquidity providers, including investors, brokers of all sizes and business models, and market makers–and how it can be expected to benefit takers of liquidity that are not seeking to employ latency arbitrage strategies, by providing them with a new source of displayed liquidity. As a result, D-Limit has been supported by 33 asset managers, 14 pension funds, and investor associations representing well over $13 trillion in assets and over 100 million individual beneficiaries, in addition to a number of broker-dealers and market makers.

IEX's third response letter is submitted in response to Citadel's 11th-hour letter raising unsubstantiated concerns over the purported impact of D-Limit on retail investors. Citadel's letter tries, but fails, to cast doubt on the adequacy of the evidence IEX and others have submitted to support the proposal. The letter also makes two assertions, rebutted below, specific to retail investors who send oversized orders that end up on IEX as part of a multi-exchange "sweep", resulting from Citadel's exercise of discretion when it provides execution services for such orders to retail broker-dealers.

It is crucial to note, however, that nothing in Citadel's latest letter challenges the central premises of the D-Limit Filing, as detailed below:

1. The problem of declining displayed liquidity is real;
2. Specific latency-arbitrage strategies contribute to that problem by targeting displayed orders during specific windows of time, measured in milliseconds;
3. D-Limit offers a voluntary market-based alternative that encourages investors, brokers, and market makers to post liquidity without relying on rebates or exposing those orders to these latency-arbitrage strategies; and
4. D-Limit operates in a transparent and consistent manner for all market participants.

The Proposal is Consistent with the Exchange Act

These four points alone establish that IEX has met its burden of showing the proposal is consistent with the standards set by the Securities Exchange Act of 1934 ("Exchange Act"): the D-Limit proposal will promote just and equitable principles of trade and fair and efficient markets, is consistent with the protection of investors and the public interest, will not unfairly discriminate among participants, and will not impose any inappropriate burden on market competition.

First, the proposal is consistent with **just and equitable principles of trade and fair and efficient markets** because it will help to promote and encourage displayed liquidity and price discovery. Over the past 15 years, a lack of innovation and competition for displayed trading has led to a long-term decline in displayed liquidity on exchanges.[7] Declining displayed liquidity decreases the stability of quotes in general, because less available displayed size leads to greater price volatility for fundamental trading interest.[8] The impact on price stability was evident even before the onset of the COVID-19 pandemic,

[7] Second IEX Response, at 1-3.
[8] Id. at 2.

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which has since powerfully underscored the stress on liquidity as the market has seen record lows in displayed liquidity occurring alongside historic volatility.[9]

A wide breadth of market participants–investors, brokers, and market makers–have provided the SEC with comments describing their own experience, which corroborates what independent studies have found: that displayed orders are subject to substantial losses because of specific predatory latency arbitrage strategies; liquidity providers predictably respond by decreasing the size of displayed orders; and the inevitable result is wider spreads between buy and sell quotes.[10] IEX's own data drawn from months of trading history further corroborates and quantifies these concerns.[11] Public data also shows that, as participants seek to avoid displaying their trading interest, off-exchange trading has continued to rise, reaching historically high levels in the second quarter of 2020, further undermining the price discovery function of public equity markets.[12]

Second, D-Limit is consistent with the **protection of investors and the public interest** because it protects displayed orders from being picked off and traded at stale prices in the narrow sub-millisecond time windows within which these latency-arbitrage strategies are deployed. We have explained how investors, brokers, and market makers are all challenged in protecting themselves from losses from these strategies when they post orders on exchanges. And due to a lack of innovation in protecting displayed orders, the quality of markets generally has suffered. By contrast, D-Limit would address a structural tax paid by all displayed liquidity providers. Currently, the market's principal defense mechanism is to reduce displayed order sizes or to avoid displaying quotes on exchanges altogether—an outcome that reduces fill rates and increases bid-offer spreads, the very effects Citadel claims to oppose.

Third, D-Limit **does not unfairly discriminate among market participants** because it will be equally available to all investors, market makers, and brokers, without requiring the use of any special technology or trading tools. Use of D-Limit is voluntary, and it operates deterministically and under a transparent formula. It does not unfairly discriminate against parties that seek to access displayed quotes because it is narrowly tailored to reprice quotes in the few millisecond-scale time intervals when prices are most unstable and latency-arbitrage strategies are active. IEX data shows that D-Limit orders will not re-price during 99.9% of the trading day even in the most volatile market conditions, and even when repriced, are accessible at all times unless canceled by the sender.[13] The accessibility of D-Limit quotes is further supported by comments from investors, market makers, and brokers that send large volumes of orders both supplying and taking liquidity in the markets each day.[14] It is further supported by statements from

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[9] Id. at 1-3.
[10] See Second IEX Response, at 2 (presenting independent research showing how the structural tax of latency arbitrage causes reductions in displayed liquidity); Id. at 3-7 (summarizing views of commenters).
[11] Id. at 12-14 (presenting IEX's analysis of its own data).
[12] See, e.g., Cboe Global Markets, "Lighting up the Dark: Hidden Trends in Off-Exchange Trading" (July 15, 2020), avail. at https://medium.com/@cboeglobalmarkets/lighting-up-the-dark-hidden-trends-in-off-exchange-trading-31f6c8e09775.
[13] Second IEX Response, at 17.
[14] Citadel criticizes IEX for relying on what Citadel calls "unsubstantiated assertions made in sympathetic comment letters." Citadel Letter, at 3. There have been, indeed, many supportive comment letters, many of which cited substantial evidence. Second IEX Response, at 3-7. Labeling them "sympathetic" does not change the fact that

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the Commission about the ability of brokers to account for sub-millisecond time differences in routing orders.[15]

Fourth, D-Limit **does not burden competition**. In fact, it is "pro-competitive"[16] because it represents one exchange's innovation to meet a defined and urgent market need. We have explained that other exchanges allow displayed order types that can be repriced based on changes in market prices, and that D-Limit quotes are not unique in this respect.[17] D-Limit stands to lower the barrier for competition among market makers and others in posting displayed liquidity, and it will succeed only if market participants find that it is useful in meeting their needs.

Response to Citadel's Claims

In its second comment letter, submitted seven months after the filing and days after the expiration of the previous deadline for Commission action, Citadel does not respond to most of the points IEX made to refute Citadel's previous arguments.[18] Instead, it raises one procedural objection and two narrow and related substantive claims concerning certain orders Citadel routes as principal when exercising discretion as part of its "retail wholesaling" business.

First, Citadel asserts that "IEX has thus far neglected to perform a comprehensive analysis of trading activity occurring today when the CQI is ON," and that "[Citadel] thought it was important for IEX to more carefully analyze the potential impact of the Proposal on retail investors."[19] Citadel then claims to have conducted its own "comprehensive" analysis—though it does not share that analysis with IEX or the Commission, apart from two apparently cherry-picked numbers that mean nothing out of context.[20] The IEX analysis Citadel criticizes is far more extensive and relevant than the two pieces of data Citadel now seeks to introduce.

Second, Citadel claims that D-Limit will have a negative impact on certain large-size retail orders sent by Citadel on behalf of retail investors to "take liquidity" when it routes to all exchanges. Citadel asserts that earlier executions on other exchanges may trigger the CQI signal and cause D-Limit quotes to be repriced before the arrival of the leg of a multi-exchange order sent to IEX. It seeks to support this argument by claiming that the CQI was on for "approximately 15% of these retail orders" in May 2020 "routed to IEX by Citadel Securities that removed displayed liquidity."[21] The upshot, according to Citadel, is that "the negative impacts of the Proposal will … affec[t] all types of liquidity takers (including retail investors) and imped[e] a wide range of ordinary trading activities, including the execution of larger orders that

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these are independent voices providing arguments and evidence that corroborate the analysis IEX has offered to support the D-Limit proposal.

[15] See notes 51-52 and accompanying text, infra.

[16] Letter from Gregory David, Managing Director and Chief Investment Officer, The Vanguard Group, Inc., to Vanessa Countryman, Secretary, SEC, dated April 23, 2020.

[17] Second IEX Response, at 18-19.

[18] See, e.g., Second IEX Response, at 10 (Proposal does not violate Rule 611), at 13 (Proposal shows that proprietary trading firms are responsible for almost all the aggressive taking orders within two milliseconds after the CQI fires), and at 18 (response to Citadel regarding "free rider" allegation).

[19] Citadel Letter, at 2.

[20] Id.

[21] Id. at 3.

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must be routed to multiple exchanges in order to access the requisite liquidity."[22] In the discussion below, we demonstrate that any harm—as asserted by Citadel—results from Citadel's own decisions and is entirely avoidable regardless of whether D-Limit orders exist. Citadel's allegations in reality have nothing to do with retail investors' access to exchange quotes or their ability to receive quality executions, but instead concern how Citadel manages its *own* business in handling retail-related orders as a wholesaler and proprietary trading firm.

Third, Citadel suggests that "approval of the Proposal would leave broker-dealers that route retail orders in an untenable position" in seeking to route large orders without triggering the CQI in compliance with regulatory duties.[23] Citadel insists it either cannot, or should not be expected to, route such orders by accounting for IEX's "speed bump" as part of an order sent to multiple exchanges. Its arguments amount to a collateral attack on IEX's 350-microsecond speed bump and ignore the Commission's approval of this aspect of IEX's design and the industry's adaptation to existing geographical and timing disparities among exchanges. The letter cites no regulatory limitation on these routing decisions. Nor has Citadel explained why the "ordinary trading activities" it describes would not be reasonably able to, or should not reasonably be expected to, route orders to take account for increases in displayed liquidity on IEX if D-Limit is approved.

We respond below to each of these points in turn.

A. Robust Market Analysis and Evidence Substantiate that D-Limit is Reasonably Designed to Address Disincentives to Provide Liquidity on Exchanges Arising from Latency Arbitrage Strategies

Citadel claims that *"IEX has made no attempt to specifically analyze the actual orders that are being executed when the CQI is ON in order to determine, for example, how many are retail orders or portions of larger orders that are being routed to multiple exchanges simultaneously."*[24]

IEX's Analysis of Available Data

Citadel suggests that IEX should have conducted a review of the orders submitted when the CQI is on "to determine, for example, how many are retail orders or portions of larger orders that are being routed to multiple exchanges simultaneously." But, as Citadel well knows, orders sent by brokers to IEX and other exchanges are in general not marked in a way that would allow an exchange to determine whether individual orders are submitted for customers (retail or institutional) or are purely proprietary.[25] This information itself is considered proprietary information. Further, as Citadel also knows, IEX is precluded from providing fuller context based on what information it does have about Citadel's trading on IEX

[22] Id. at 1.
[23] Id. at 5.
[24] Citadel Letter, at 2.
[25] See, e.g., IEX Rule 11.190 (Orders and Modifiers); NYSE Guide, Rule 13 (Orders and Modifiers). A limited exception is that an order may be marked as a retail order if it is sent by a retail firm under a retail liquidity provider program offered by various exchanges, including IEX. See, e.g., IEX Rule 11.232 (Retail Price Improvement Program); NYSE Guide, Rule 7.44 (Retail Liquidity Program). IEX believes that proportionately very few retail orders are sent to exchanges in this way. During May 2020, orders sent to IEX under its program accounted for just 0.027% of orders sent to IEX and 0.21% of IEX volume.

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because, as an exchange, IEX is prohibited from disclosing details about an individual member's trading activity. Thus, information about which of Citadel's orders sent to IEX relate to orders it receives from retail broker-dealers is known only to Citadel. As explained below, Citadel has chosen to offer only a few, selective data points about its trading on IEX to insinuate a conclusion about the impact of D-Limit on retail orders in general, while deliberately choosing *not* to disclose either the actual number of orders it claims were affected by the CQI or contextual information that could reveal whether its limited data points have any relevance to the approval of D-Limit.

IEX instead provided, over a period of seven months, thorough and sensible analyses of the CQI's effect based on data that is available to it. IEX offered statistics calculated from trading data, such as the average number of seconds per stock when the CQI is on, on a volume-weighted basis, and explained the meaning, derivation, and significance of those statistics.[26] IEX further provided data over multiple time periods demonstrating that the overwhelming share of all orders seeking to access displayed quotes while the CQI is on originate from firms designated as proprietary trading firms, with proportionately few originating from other firms.[27] Citadel objected to its designation as "proprietary," so we looked at the same patterns for firms (excluding Citadel) that self-identify as proprietary trading firms and do not purport to trade for customers at all. For this group, the pattern of orders sent in the two milliseconds after the CQI was triggered exactly matched the *same pattern* as the entire group initially identified as proprietary.[28]

Given these analyses and evidence, the review conducted by IEX is more than adequate and far beyond what other exchanges have provided to support changes to their order types, including a recently approved change by the CboeEDGX Exchange with a feature designed to offer protection to resting orders.[29] As described below, nothing that Citadel has alleged about its routing of large retail orders suggests the need for a different type of review. If large orders for customers, whether retail or institutional, were arriving in large numbers while the CQI is on, that fact would be apparent from the data on orders sent by firms designated as agency and full-service brokers. To the contrary, the phenomenon of large volumes of orders arriving when the CQI is on is peculiar to proprietary trading firms (with and without Citadel).[30] To suggest that orders sent by proprietary trading firms may contain a hidden volume of retail or other customer orders, when the data shows that firms designated as agency and full service broker-dealers show no such propensity to trade while the CQI is on, defies common sense.

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[26] See Second IEX Response, at 16-18.
[27] See Second IEX Response, at 12 (33.7% of marketable orders arrive in the 2 milliseconds after the CQI fires, with nearly *90%* of those from proprietary firms).
[28] Id. at 13-14.
[29] See Securities Exchange Act Release No. 88309 (March 2, 2020), describing a "Quote Depletion Protection" feature intended to be "[s]imilar to crumbling quote features offered for Discretionary Peg Orders entered on IEX"; Securities Exchange Act Release No. 89007 (June 4, 2020), 85 FR 35454 (June 10, 2020) (Notice of Filing of Amendment No. 1 and Order Granting Accelerated Approval).
[30] Second IEX Response, at 13-14.

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Impact on Providing and Taking Liquidity

In describing the need to encourage displayed liquidity through D-Limit, the D-Limit Filing disclosed that in September 2019, 24% of all displayed volume on IEX traded in the few seconds of the day when the CQI was on.[31] Citadel's letter attempts to use this figure to show that D-Limit will somehow *harm* displayed trading on IEX, stating that "it is undisputed that a significant percentage of total liquidity taking activity will be negatively impacted by the Proposal."[32] But this statistic illustrates the concentration and potential "toxicity" of trading activity in very narrow windows of time, and how that phenomenon discourages liquidity providers. Citadel asserts that IEX's discussion of this 24% of its displayed trading is evidence that IEX has *inadequately* analyzed the potential impact of D-Limit. This is wrong, as shown by the quantitative and qualitative evidence, submitted by IEX and numerous commenters, that corroborates the pernicious effects of outsized arbitrage trading during these brief windows.[33]

To understand the significance of this 24% statistic, it is important to consider the question from the standpoint of participants when they are providing liquidity, when they are seeking to access liquidity while the CQI is off, and when they are seeking to access liquidity in the seconds when the CQI is on.

In terms of providing liquidity, numerous investors, brokers, and market makers who, by their own accounts, are harmed by latency arbitrage strategies have stated that they would be more willing to provide displayed liquidity on IEX if D-Limit were approved. By addressing the toxicity that impacts 24% of our existing displayed volume, IEX can substantially increase the overall amount of displayed quoting and trading on IEX, in addition to the number of firms willing to display orders, to the overall benefit of the equity markets.

For liquidity takers while the CQI is "off", T. Rowe Price best explained the position of institutional investors and others seeking to trade based on fundamental factors, not to gain millisecond-level price advantages. Its comment letter stated:

> *"More importantly, institutional order routing is even less impacted by D-Limit since institutional order 'taking' strategies are driven by a fundamental demand for liquidity and are not intentionally seeking to trade while the CQI is 'on'. Said more plainly, institutional orders on IEX typically occur before IEX's systems predict a quote change is imminent - consequently, these orders will be able to access the liquidity they see before the CQI changes to 'on.' Rather, D-Limit seeks to limit reactive strategies used by a small subset of proprietary trading firms that invest in high speed infrastructure to predict price changes, leverage small latency advantages, and opportunistically trade against stale quotes."*[34]

[31] D-Limit Filing, 84 FR at 71999.
[32] Citadel Letter at 7.
[33] IEX Second Response, at 1-7.
[34] Letter from Mehmet Kinak, VP and Global Head of Systematic Trading & Market Structure and Jonathan D. Siegel, VP and Senior Legal Counsel, T. Rowe Price, to Vanessa Countryman, Secretary, SEC, dated February 5, 2020 ("T. Rowe Price Letter").

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Among IEX members that trade for clients, Goldman Sachs, Virtu, Raymond James, Jefferies, RBC Capital Markets, and other brokers have forcefully supported D-Limit without expressing concern about their ability to access D-Limit quotes.[35] Citadel's concern about limitations on its ability to take liquidity for retail orders during these tiny windows appears to be idiosyncratic. Goldman Sachs, for example, explained how D-Limit is similar to existing exchange order types that can be repriced based on overall market price updates, and concluded that "*D-Limit will be as accessible as any other quote.*"[36] Each of these firms understands exactly how and when they trade on exchanges and do so in large volumes every day. Further, D-Limit stands to provide a new liquidity source for these and other brokers when they need to enter or exit positions—making it easier, not harder, to access displayed quotes for clients.

With regard to taking liquidity while the CQI is on, only a few participants, including Citadel, have claimed that D-Limit quotes will be less accessible to them. It is true that D-Limit will restrict the ability of a subset of proprietary traders to use latency strategies to target D-Limit quotes in the milliseconds when the CQI is on. IEX firmly believes that this impact is fully justified and far outweighed by the benefits to all types of participants, including the many that have written to support the proposal, that are seeking to provide liquidity and to obtain it at all times other than in these brief moments. Exchanges, in all the choices they make, are necessarily in the business of trying to balance the interests of various participants. The Commission has stated that the interests of long-term investors and short-term traders often will coincide, but when their interests conflict, "the Commission believes that its clear responsibility is to uphold the interests of long-term investors."[37] To approve D-Limit, the Commission only needs to determine that IEX has reasonably accounted for all the relevant considerations, including the interests of long-term investors, in designing its proposal.

Examining Citadel's Example

In seeking to support its concerns about IEX's supposed inattention to liquidity taking while the CQI is on, Citadel points to a single example from its supposedly "comprehensive" market analysis. In this example, Citadel claims to have sent a marketable buy order that was larger than the total size (2,000 shares) of displayed offer quotes on six exchanges, including IEX. Its "execution timeline" reflects that, in the case of two of the exchanges (CboeEDGX and Nasdaq), it accessed 400 and 500 shares, respectively. But separate entries show that it had to trade an additional 100 shares at each of those markets by adding liquidity,[38] presumably because its initial orders for 500 and 600 shares sent to those markets were not able to access the full amount of liquidity shown.[39]

Therefore, however many orders Citadel may have routed to access liquidity on all exchanges (a number that is unknown), surprisingly, the one example it cites is one in which it actually failed to access the size

[35] See comment file at https://www.sec.gov/comments/sr-iex-2019-15/sriex201915.htm.
[36] Letter from Philip Berlinski, Co-Chief Operating Officer, Equities, Global Markets, Goldman, Sachs & Co., LLC, to Vanessa Countryman, Secretary, SEC, dated February 26, 2020.
[37] Securities Exchange Act Release No. 51808 (June 9, 2005), 70 FR 37496, 37500 (June 29, 2005), https://www.sec.gov/rules/final/34-51808fr.pdf.
[38] Citadel Letter, at 4.
[39] Citadel's table mentions 100 shares "added and traded" at each of those markets, reflecting that the attempt to access 100 shares displayed by each market was unsuccessful, and orders for 100 shares were then sent adding liquidity, which were executed on those markets when other participants accessed those separate orders.

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displayed on all markets. Rather than making the point that Citadel intended, the example shows that displayed liquidity on other exchanges is already not certain to be accessible. D-Limit would not change that fact or exacerbate that problem. Instead, D-Limit would encourage a larger and more diverse group of participants to provide liquidity, which stands to benefit fundamental buyers and sellers of securities both when they are providing liquidity, and when they are seeking to take it.

B. Response to Citadel's Claims Regarding its Routing of Retail Orders

Citadel states that *"we performed our own analysis of the retail orders routed to IEX by Citadel Securities that removed displayed liquidity during the month of May 2020. We found that the CQI was ON for approximately 15% of these retail orders…."* In context, it appears that Citadel is not in fact focusing on all retail orders trading when the CQI is on, but rather a limited and opaque subset of orders that: (i) are marketable at the time received; (ii) Citadel has decided not to internalize; (iii) Citadel has decided not to execute away from an exchange; and (iv) are "oversized" relative to the total quoted size displayed on all exchanges.[40] This very narrow set of parameters appears to represent a subset of a subset of a subset of all the orders Citadel receives from retail broker-dealers. And since Citadel fails to supply the obvious statistic–what volume or number of orders did it actually send to "remov[e] displayed liquidity"–its 15% statistic does little to illuminate Citadel's current experience on IEX. And it does nothing to call into question the potential impact of D-Limit on retail investors, retail brokers, or even on Citadel's own business. It appears to be nothing more than a cherry-picked number intended to insinuate a problem, but that has no relevance to whether D-Limit should be approved.

Citadel offers one additional number, purportedly to *"*provide a sense of scale*"* (not the scale of its trading on IEX when the CQI is on, but rather the scale of Citadel's own business). Citadel states that it executed over 2.5 million retail orders during May 2020 that required more size than was available across all exchanges. Again, this gives no context on how many of these orders were not internalized (as described below), or routed off-exchange, or resulted in "oversized" orders routed by Citadel, or actually sent to IEX, or sent as part of a multi-exchange "sweep"[41]. The 2.5 million figure tells the Commission only that Citadel handles a very large volume of retail order flow, which is already known and entirely irrelevant to D-Limit's consistency with the Exchange Act.

Citadel's allegations about its experience in routing individual oversized orders originating from retail investors are therefore highly misleading. Citadel does not even provide any context in its letter as to how and when orders it receives as a retail wholesaler may be sent to exchanges. This context regarding how retail orders reach a public exchange is important to evaluating Citadel's claims about the impact D-Limit might have on the routing of retail orders. Specifically, Citadel's letter fails to address the relative

[40] On its face, the quoted language suggests that 15% of all Citadel's orders to remove displayed liquidity occurred when the CQI was on. But its explanation for why the CQI was on for "these retail orders" is that it is sometimes required to route orders to multiple exchanges when "the client order is sufficiently large that the smart order router must access all displayed liquidity priced at the far touch across all exchanges." Citadel Letter at note 11. It goes on to explain that it believes the CQI is triggered in this type of circumstance because IEX can observe the activity on other exchanges before IEX receives its part of the order. Citadel does not clarify whether it sends orders to access displayed quotes on IEX in any other circumstance. Id. at 3-4.
[41] Id. at 3.

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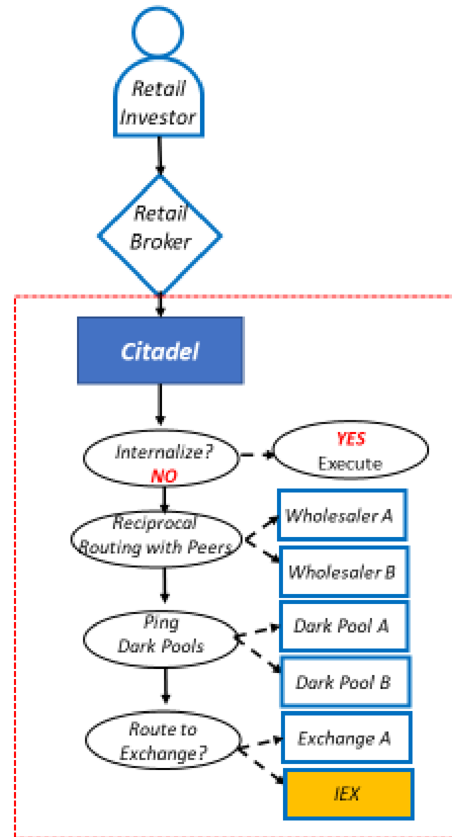
impact of D-Limit, on the one hand, and the discretionary decisions of wholesalers, brokers, and investors, on the other.[42]

Execution of Retail Orders on Exchanges



Citadel is a wholesale broker. As such, its clients are retail broker-dealers, not retail investors. A wholesale broker provides execution services, and sometimes payments, to the retail broker-dealer in order to be assured of receiving a portion of its retail investor order flow. As illustrated in the chart to the right, retail investors submit orders to their retail brokers, who decide when to pass the orders along to one or more wholesale brokers, such as Citadel. Each wholesale broker may have different processes for handling these orders, involving a series of internal decisions, typically made electronically. These decisions may include:

- Whether to internalize the order, meaning that it buys from or sells to retail investors as principal from its own inventory or crosses the order with other orders it receives.
- Whether to route to other wholesalers.
- Whether to route to dark pools or other non-exchange trading venues.
- Whether to route to an exchange, such as IEX.[43]

A wholesale broker's decision whether to internalize an order is perhaps the most critical decision in this process, because it determines the extent to which the order may interact with orders placed by other participants, i.e., whether it can interact with orders on an exchange or other trading platforms. By all accounts, internalizing orders is more profitable to the dealer than other

[42] Because Citadel is a private company whose business is not described in publicly-filed reports, and because Citadel has not provided this context in its filings before the Commission, this response necessarily relies on general information sources concerning retail wholesaling and descriptive statements from the SEC concerning Citadel's business. See generally, CFA Institute, "Dark Pools, Internalization, and Equity Market Quality" (October 2012) ("CFA Report"); Dogopolov, "Wholesaling Best Execution: How Entangled are Off-Exchange Market Makers", Virginia Law & Business Review (Fall 2016); In the Matter of Citadel Securities LLC, Securities Exchange Act Release No.79790 (January 13, 2017).

[43] Citadel's letter (at p. 2) acknowledges, for example, that the "retail" orders it discusses "are orders received from retail broker-dealers *that Citadel Securities* has, *in whole or in part*, *determined to route* to *one or more external venues* for execution." This single sentence accounts for a) the lack of control over timing or venue exercised by retail investors and brokers, b) the substantial discretion over timing and venue exercised by Citadel Securities, c) the decision not to route to "external venues" (i.e., internalization), and d) the use of non-exchange external venues. Plainly, Citadel is not a passive conduit between a retail order and its execution on IEX or another exchange.

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means of execution, for various reasons.[44] In contrast, routing to exchanges, sometimes called "retail exhaust", may be more costly to the dealer, in part because exchanges typically charge the highest permitted fees to access their quotes.[45]

Individual wholesale brokers will differ in their internal processes. What is clear from a basic understanding of retail trade execution, however, is 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. What is equally clear is that the wholesaler exercises substantial control and discretion as to whether and precisely when any order may arrive at any single exchange.[46]

Further, it should be obvious that a latency difference of 350 microseconds—the speed bump to which Citadel objects—is de minimis compared to the total execution time from the retail investor's perspective, including Citadel's overall processing time and any natural variations in the time required to complete each step in the process. Referring back to the previous chart, these differences include:

- The location and connectivity speed of the retail investor
- The location and connectivity speed of the retail broker
- The latency involved in the retail broker's internal process
- The location and connectivity speed of the wholesale broker
- The latency involved in the wholesale broker's internal process

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[44] "Because retail investors are typically less well-informed than professional or institutional investors, retail order flow is very desirable to wholesale market makers. Their information advantage means that they can preference those retail orders that are on the wrong side of the market (that is, against the direction of expected market movements in the short-term and hence profitable to the market maker) and route any other orders to other market centers." CFA Report, at 16.

[45] Ironically, Citadel offered a very critical analysis of internalization and its market impacts in a 2004 letter to the SEC commenting on Regulation NMS. This letter stated in part:

> Internalization is one of the greatest threats to price discovery in the financial markets. Broker-dealers internalize the orders most advantageous to the broker-dealer (usually retail orders) and expose less advantageous orders to the market…As more and more brokers engage in the practice of internalization, bid-ask spreads in the public markets will continue to be wider than they otherwise would, quoted liquidity will continue to fall and the role and value of the public markets will be greatly diminished…Furthermore, as bid-ask spreads widen in response to internalization, aggressive broker-dealers will be able to internalize an ever increasing portion of their order flow, sending only the most challenging of orders into the market place for execution - and only further worsening the situation corroding the value of the market. In the long run, unfettered internalization will result in substantially poor executions for all retail and institutional investors…We believe that the potential long-term impact of internalization is so corrosive to our national market system that the Commission should take every possible step to curtail this business practice.

See https://www.sec.gov/rules/proposed/s71004/s71004-436.pdf.

[46] Citadel describes its execution of these orders as being done "back to back in accordance with standard market practice". When a dealer, holding an order for a client, executes the order as principal, and contemporaneously executes a matching order with the client, the method of execution is usually referred to as "riskless principal". It is not clear from its use of the term "back-to-back" whether the method of execution Citadel describes would qualify as riskless principal, which is a designation that has specific regulatory implications. It is also not clear from its letter whether the prices it receives are in all or most cases passed directly back to the ultimate retail customer.

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- The location, latency and connectivity speed of the counterparties to which the wholesale broker is exposing the order
- The location and connectivity speed of the trading venue that the wholesale broker is routing to.

Statistics that Citadel publishes as part of the Financial Information Forum's supplemental reporting under SEC Rules 605 and 606 provide additional insight on this question. These statistics include the average execution times (from the time of receipt to execution) for the handling by a "market center", including Citadel, of retail and other "held" orders. Those statistics indicate Citadel's time to fill odd lot orders in some stocks is *10 milliseconds* and the time to process larger orders (over 5,000 shares) can range up to *50 milliseconds,* which is 142 times longer than IEX's 350 microsecond speed bump.[47] That delay—attributable to Citadel's own exercise of *discretion* over whether to internalize, trade on a non-exchange venue, or trade on an exchange—dwarfs IEX's *automatic* 350 microsecond delay. Citadel has no evidentiary or legal basis on which to argue that it is impractical for a wholesaler to account for 350 microseconds in routing to IEX, or 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.

This description of retail wholesaling is not intended as a critique of that model but is instead simply meant to provide necessary context regarding the timing and discretion over order routing that is missing from the Citadel Letter.

In fact, Citadel's allegations about the impact on retail orders are also undercut by the support for D-Limit from Virtu, another major retail wholesaling firm and agent for institutional clients. Far from raising concerns about the impact of D-Limit on retail investors, Virtu concluded that D-Limit "will result in a fairer more competitive market, where order flow from disparate sources can interact. The ultimate beneficiaries are long-term investors for whom the secondary market provides a reliable means of price formation."[48]

In sum, Citadel has provided no data or evidence to suggest, let alone establish, that retail investors will be in any way negatively impacted by D-Limit. The truth about the orders and volumes it routes to IEX, and when it does do, is known only to Citadel, and the selective data points referenced in its letter fail to provide meaningful information about how its own business in handling orders from retail brokers could be impacted. Its argument about the impact of D-Limit is based entirely on the existence of IEX's 350 microsecond speed bump. But this time difference is miniscule to the point of irrelevance considering the time involved in a wholesaler's exercise of discretion in handling all the orders it receives before any of those orders ever find their way to an exchange.

C. Citadel's Ability to Route to IEX and Other Venues

Citadel also implies (but does not say outright) that it would be unable to avoid this unsubstantiated impact on retail investor orders. It states that "the portions of [multi-exchange] retail orders sent to IEX would be unable to access displayed D-Limit quotes, leading to a decline in fill rates," with "[a]ny

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[47] Q1- 2019 FIF Supplemental Retail Execution Quality Statistics, Citadel Securities LLC, avail. at https://s3.amazonaws.com/citadel-wordpress-prd102/wp-content/uploads/sites/2/2016/09/09175131/FIF-Rule-605-606-WG-CitadelSecurities_Retail-Execution-Quality-Stats_Q1_2019.pdf.
[48] Virtu Letter, at 2.

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unfilled portion then … re-routed to other exchanges to secure the necessary liquidity, with prices likely worsening as other market participants react to the fact that the rest of the large order has already been executed and publicly reported."[49]

Again, the meager factual support offered in Citadel's letter cannot substantiate this claim, which does not reflect the way sophisticated actors such as Citadel navigate today's fragmented and speed-driven marketplace. Citadel posits that this potential issue of accessing displayed liquidity necessarily results from sweeps of displayed liquidity on all exchanges, based on the practice of sending orders "simultaneously" to "multiple exchanges." It then says it would face an untenable choice if, to avoid this result on behalf of the retail investor, it was required to route to IEX first to account for its 350-microsecond speed bump, and it questions whether doing so would be permissible under best execution requirements and existing regulations.[50]

Previous Statements by the SEC on Broker Routing

The crux of Citadel's assertion is that in routing to exchanges, it will be disadvantaged if IEX reprices a D-Limit quote while an order from Citadel is "traversing" the 350-microsecond speed bump. But the Commission rejected this objection four years ago, in approving IEX's exchange application. Then, too, Citadel and a few other commenters raised substantially the same argument that they would experience lower fill rates or worse executions when routing orders to multiple exchanges. (Citadel also argued at the time that retail investors would be disadvantaged, an argument that was not joined by other commenters).[51] The Commission sided with commenters who expressed the view that the IEX speed bump was not different than the latency differences that existed (and still exist) among exchanges, stating in its approval order, "Because the POP/coil delay is not variable, market participants should be able to account for it when routing as they could any other known latency."[52]

Further, Citadel misleadingly suggests this question of relative latency is unique to IEX and will always be the same, both of which are untrue. The NYSE American Exchange previously employed a speed bump modeled on IEX's. Until recently, the Chicago Stock Exchange traded some securities from a data center near Chicago, representing a distance orders of magnitude longer than that separating Citadel and IEX, including the speed bump. As exchanges make future operational changes and new exchanges are introduced, all brokers that trade actively in the markets need to adapt to those changes as part of their business. Citadel is no different.

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[49] Citadel Letter, at 4.

[50] Citadel complains that the proposal is simply a mechanism for liquidity providers "to avoid a market-wide sweep that is executing against all of the displayed liquidity at a given price level and, therefore, moving market prices against the liquidity provider on a short-term basis." Citadel Letter at 7. But it would be easy for Citadel to execute market sweeps (to the same extent others can) by simply taking account of the speedbump.

[51] Securities Exchange Act Release No. 78101 (June 17, 2016), 81 FR 41142, 41160-41162 (June 23, 2016) ("Approval Order").

[52] Approval Order, note 265. In response to a specific comment about the potential for "liquidity fade" of IEX quotes as a result of the speed bump, the Commission further stated that "market participants who adjust their routing strategies to account for IEX's access delay (which the commenter acknowledged market participants may do) should be able to mitigate the "fade" that they encounter when routing orders to IEX by calibrating the timing of their routed orders so that the orders destined for IEX arrive there 350 microseconds before the orders sent to other venues." Id.

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Comments by Other Participants

Market participants' practice of and capability to account for timing differences in accessing the markets is clear from other comments supporting D-Limit. Letters from a multitude of institutional investors and many brokers that trade for them, including Goldman Sachs, Jefferies, RBC Capital Markets, Raymond James, Robert W. Baird & Co., Clearpool, and Virtu all make clear that they already have the ability to successfully navigate the issue Citadel complains about.[53]

Because institutional orders by their nature are often large in size, it would be expected that the dozens of institutional firms who wrote in support of D-Limit will collectively have a much greater proportion of "oversized" orders relative to those referenced in Citadel's letter. The support from these firms also reflects an understanding that D-Limit stands to increase the overall level of displayed liquidity in the market, which will help to facilitate the execution of larger orders.[54] When Citadel decides to route an oversized order to the exchanges, it is in the same position as these other firms.

"Simultaneous" Routing

Citadel suggests that its concerns about inaccessibility of D-Limit quotes arise "[w]hen routing a large retail order *simultaneously* to multiple exchanges, including IEX."[55] It goes on to imply that it could not route "simultaneously" if it had to adjust its routing to IEX by 350 microseconds to account for the speed bump. Further, it questions the implications to market participants of routing to account for this latency difference and whether doing so would be consistent with best execution or other regulatory requirements.

Citadel provides no basis for asserting that any regulations or interpretations prevent it from accounting for the IEX speed bump, or any other latency differences, existing or future, among exchanges. In fact, there is no basis for its assertion, for multiple reasons:

- As noted above, the Commission has specifically said firms *can* account for these differences, in ruling that the IEX speed bump does not affect the conclusion that IEX quotes are considered "automated quotations", on a par with all other exchanges. As the Commission stated, "Because the [speed bump] is not variable, market participants should be able to account for it as they could any other known latency."
- Even if a broker were to conclude that it must send orders "simultaneously" to all markets, there is no basis to think that "simultaneous" means the broker cannot take account of sub-millisecond differences, particularly when routing to quotations, like those of IEX, that the Commission has affirmatively ruled must be treated as "automated quotations" under the rules. Further, since the purpose of an intermarket sweep order is to obtain all available liquidity to the extent possible,

[53] See comment file at https://www.sec.gov/comments/sr-iex-2019-15/sriex201915.htm.
[54] See, e.g., T. Rowe Price Letter: "We believe that D-Limit is designed to encourage greater use of displayed orders…": Letter from Peter D, Stutsman, Global Head of Trading, The Capital Group Companies, Inc., to Vanessa Countryman, Secretary, SEC, dated March 16, 2020: "D-Limit is an innovation that is designed to ensure the equitable treatment of orders in the lit market, increase posting of displayed liquidity…".

[55] Citadel Letter, at 4 (emphasis supplied).

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the time of arrival matters more than the time the order is sent. Citadel points to no statement from the SEC or FINRA to the contrary.

- In fact, routing so as to maximize liquidity would seem to be *most* consistent with best execution principles. Most of IEX's liquidity today is non-displayed, in the form of orders that provide an opportunity to trade at the mid-point of the best bid and offer quotes, and therefore often offer a substantially better price than if the broker had to "cross the spread" and pay the offer price (or sell at the bid price). Those non-displayed orders are *today* subject to the CQI, so the opportunity to obtain the better price for an investor would seem to argue strongly in favor of accounting for the speed bump *today* when routing to IEX.
- Oddly, in the one example Citadel cites, it states that it routed "near-simultaneously" to all exchanges. Does this mean it believes time differences of something less than 350 microseconds are permissible, or that only lagging routes to IEX is impermissible?

By all accounts, Citadel is one of the most sophisticated trading firms in the world and uses the most advanced technology. As seen from the discussion and illustration above, it controls all steps in handling a retail investor order, including the decision of whether to send the order to an exchange, or all exchanges, and *when* to send that order. Clearly, the idea that Citadel cannot reasonably account for a 350-microsecond delay when it decides to route to IEX is simply not credible.

Citadel is not being asked to give any impermissible preference to IEX.

Citadel suggests that it would be called upon to preference IEX quotes to address its (still unsubstantiated) claims about the potential to fail to access quotes on IEX if D-Limit is approved. Citadel claims that accounting for the speedbump in its routing would "preference IEX despite other considerations, such as transaction fees."[56] Again, Citadel cites no source of law or professional regulation that these order-routing strategies would offend. From the previous discussion, it is clear that no firm would be called upon to "favor" IEX over other markets to account for D-Limit orders in any event. Instead, they would simply need to consider IEX on an equal basis with other exchanges, accounting for the unique factors affecting each exchange, including the amount of displayed liquidity available for individual stocks on each market and the time necessary to execute on that exchange.[57] If D-Limit succeeds in attracting more displayed liquidity—which, after all, is a decision to be made by the markets, not IEX or Citadel—it is natural to expect that brokers would take this into account when determining when and how to interact with that liquidity.

Citadel Ignores Concerns about Diminishing Displayed Liquidity

While Citadel uses misleading data, without context, to make assertions about the potential impact of D-Limit on retail orders, it ignores the core concern D-Limit is designed to address: the decline in displayed liquidity and the contributing influence of the "liquidity tax" from arbitrage strategies. IEX has thoroughly demonstrated and explained this phenomenon, dozens of letters from investors and their brokers corroborate that showing, and Citadel's letter says nothing to undermine it. It also gives zero

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[56] Citadel Letter, at 5.

[57] In this regard, Citadel's complaint that firms could be compelled to access IEX despite considerations such as transaction fees makes little sense, given that IEX charges substantially lower access fees (10 times less to take liquidity than the largest displayed exchanges).

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weight to the benefit to market participants of having an additional means and incentive to contribute to price discovery, and it does not offer any alternatives. If an exchange cannot innovate to increase incentives for a wide range of market participants to provide displayed quotes, then displayed liquidity and price transparency can be expected to continue to atrophy.

Citadel criticizes IEX for, it says, not assessing the impacts of D-Limit on the basis of increased displayed liquidity at IEX.[58] If liquidity at IEX proportionally shifts from dark to displayed, that change can only be to the benefit of all liquidity takers, and is exactly the sort of benefit to markets that the D-Limit proposal is meant to foster. The result would be fewer circumstances in which individual orders, institutional or retail, exceed total liquidity available on exchanges. And the opportunity for a more diverse pool of liquidity providers—more market makers and more institutional investors—offers the potential for more stable, and less fleeting, liquidity.

The test for whether an innovation is approved cannot be whether any one participant or small group of participants, no matter how large or influential, objects. If that were the rule, all meaningful innovation would be largely blocked, and the ability of markets to adapt through competition to meet the needs of participants, both large and small, in preference to regulatory intervention, would be eviscerated. The test is instead whether substantial evidence supports the conclusion that the proposal is consistent with Exchange Act principles.

Nothing in Citadel's latest letter shows (or even raises reasonable doubts) that D-Limit is inconsistent with the Exchange Act. First, it ignores the primary basis for the Commission's consideration of D-Limit: the decline in displayed liquidity attributable in part to latency arbitrage. Second, Citadel's letter offers data points that are selective, uncontextualized, and ultimately irrelevant to the approval of this order type. Third, its arguments about broker routing are not specific to IEX or D-Limit, and fail to establish that brokers cannot route to maximize the capture of liquidity on multiple exchanges when they need to do so. Last, the objections of a single market participant cannot outweigh or refute the facts and views expressed by scores of institutional investors and other participants, representing over 100 million individual investors, who are seeking access to this option.

We believe the Commission has more than enough information to approve our rule filing, and we respectfully request that it do so promptly.

Sincerely,

John Ramsay
Chief Market Policy Officer, IEX

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[58] Citadel Letter, at 6.

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