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SECURITIES AND EXCHANGE COMMISSION

[Release No. 34-89686; File No. SR-IEX-2019-15]

Self-Regulatory Organizations; Investors Exchange LLC; Order Approving a Proposed Rule Change to Add a New Discretionary Limit Order Type Called D-Limit

August 26, 2020.

I. Introduction

On December 16, 2019, the Investors Exchange LLC ("IEX" or the "Exchange") filed with the Securities and Exchange Commission ("Commission"), pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 ("Exchange Act")[1] and Rule 19b-4 thereunder,[2] a proposed rule change to adopt a new order type, the Discretionary Limit order ("D-Limit"). The proposed rule change was published for comment in the Federal Register on December 30, 2019.[3] On February 12, 2020, the Commission designated a longer period within which to approve the proposed rule change, disapprove the proposed rule change, or institute proceedings to determine whether to disapprove the proposed rule change.[4] On March 27, 2020, the Commission instituted proceedings to determine whether to approve or disapprove the proposed rule change ("OIP").[5] This order approves the proposed rule change.

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1 15 U.S.C. 78s(b)(1).

2 17 CFR 240.19b-4.

3 See Securities Exchange Act Release No. 87814 (December 20, 2019), 84 FR 71997 ("Notice"). Comments on the proposed rule change can be found at https://www.sec.gov/comments/sr-iex-2019-15/sriex201915.htm.

4 See Securities Exchange Act Release No. 88186 (February 12, 2020), 85 FR 9513 (February 19, 2020).

5 See Securities Exchange Act Release No. 88501 (March 27, 2020), 85 FR 18612 (April

II. Description of the Proposed Rule Change

A. Latency Arbitrage

IEX explains that its proposal "is designed to protect liquidity providers, institutional investors as well as market makers, from potential adverse selection by latency arbitrage trading strategies in a fair and nondiscriminatory manner. . . ."[6] IEX uses the term "latency arbitrage" to refer to trading strategies that trade based on the market participant's ability to minimize latencies in seeing, and reacting to, quote and trade data through its use of low-latency systems and technology, as well as connectivity and proprietary market data it purchases from exchanges, which may allow them to react faster to changing market prices than other market participants who have not purchased those same low-latency systems, connectivity, and data sources, which can be relatively expensive.[7]

B. IEX Speed Bump

In the Notice, the Exchange explains how it has designed its market model around "ways to counter or reduce speed advantages that can harm investors by exposing them to execution at stale prices when their orders are traded against by traders with more complete and timely information about market prices."[8] The primary feature of that market model is the IEX "speed bump," which employs physical path latency to introduce an equivalent 350 microseconds of

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2, 2020).

6 Notice, supra note 3, at 71998.

7 See, e.g., Notice, supra note 3, at 72004 and IEX First Response to Comments, Letter from John Ramsay, Chief Market Policy Officer, IEX, dated February 13, 2020, at 2-3 ("IEX First Response to Comments").

8 See Notice, supra note 3, at 71998.

latency between the network access point (the Point-of-Presence, or "POP") and the Exchange's system at its primary data center.[9] The speed bump provides time for IEX to update pegged orders resting on its exchange when the national best bid and offer ("NBBO") changes, so that the resting pegged orders are accurately pegged to current market prices.[10] Without this protection, pegged orders resting on IEX have the potential to be subject to latency arbitrage (i.e., executed at disadvantageous "stale" prices because IEX has not yet been able to update the prices of those resting orders in response to changes in the NBBO) by those market participants that can rapidly aggregate market data feeds and react faster than IEX to NBBO updates.[11] The IEX speed bump by itself currently provides no protection or benefits for displayed orders or non-displayed orders at fixed limit prices.[12]

The speed bump works together with several non-displayed order types on IEX that are "pegged" to a specified price.[13] These order types include the Discretionary Peg ("DPeg") and the Primary Peg ("PPeg").[14] DPeg and PPeg orders can "exercise discretion" to trade at prices

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9 See id. The IEX speed bump applies to all incoming and outgoing messages except for inbound market data from other trading centers and outbound transaction and quote information sent to the applicable securities information processor. In addition, updates to resting pegged orders on IEX are processed within the IEX trading system and do not require separate messages to be transmitted from outside the system.

10 See, e.g., Securities Exchange Act Release No. 78101 (June 17, 2016), 81 FR 41142, 41157 (June 23, 2016) (File No. 10-222) (granting the application of IEX for registration as a national securities exchange).

11 See id.

12 See id. at 41155.

13 See Notice, supra note 3, at 71998 (citing IEX Rule 1.160(t)).

14 See IEX Rule 11.190(b)(10) and 11.190(b)(8), respectively. DPegs are pegged to one minimum price variation, or "tick," below the national best bid ("NBB"), in the case of buy orders, or one tick above the national best offer ("NBO"), in the case of sell orders, unless the submitter of the order has specified a limit price that is less aggressive than this default resting price. PPegs are pegged to one tick below the NBB, for a buy order, and

more aggressive (i.e., higher in the case of a peg order to buy, or lower in the case of a peg order to sell) than their default prices.[15] Specifically, IEX uses a proprietary mathematical calculation, called the crumbling quote indicator ("CQI"), to determine when these pegged order types are eligible to "exercise discretion."[16] As described in the Notice, the CQI is designed to predict whether a particular quote is unstable or "crumbling," meaning that the NBB likely is about to decline or the NBO likely is about to increase.[17]

C. Crumbling Quote Indicator

The Exchange utilizes real time relative quoting activity of certain Protected Quotations and a proprietary mathematical calculation (the "quote instability calculation") to assess the probability of an imminent change to the current Protected NBB to a lower price or Protected NBO to a higher price for a particular security ("quote instability factor").[18] When the quoting activity meets predefined criteria and the quote instability factor calculated is greater than the Exchange's defined quote instability threshold, IEX treats the quote as "unstable," and the CQI is on at that price level for up to two milliseconds (hereafter referred to as the "quote instability determination price level" or the "CQI Price").[19] During all other times, the quote is considered stable, and the CQI is off. When IEX determines, pursuant to the CQI methodology, that the

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one tick above the NBO, for a sell order, but is also available to trade at a price up to the NBB or down to the NBO, unless further restricted by the order's limit price.

15 See Notice, supra note 3, at 71998.

16 See id.

17 See id.

18 See id. The CQI utilizes a fixed formula that is codified in IEX's rulebook and thus is publicly known. See IEX Rule 11.190(g).

19 See id. IEX assesses the stability of the Protected NBB and Protected NBO for each security.

current market for a specific security is unstable – meaning there is a heightened probability of an imminent quote change at the NBB or NBO – IEX's system will prevent DPeg and PPeg orders on that side of the market from exercising discretion and trading at a price that is more aggressive than the DPeg or PPeg order's resting price.[20]

D. D-Limit Order Type

In this proposal, IEX seeks to adopt the D-Limit order type, which would work in conjunction with the CQI by adjusting its limit price when the CQI is on.[21] A D-Limit order could be a displayed or non-displayed limit order that, upon entry and when posting to the IEX order book, is priced to be equal to and ranked at the order's limit price.[22]

Most notably, a D-Limit order (including a displayed D-Limit order) would be adjusted to a less aggressive price during periods of quote instability when the CQI is on. Specifically, if, upon entry of a D-Limit buy (sell) order, the CQI is on and the order has a limit price equal to or higher (lower) than the quote instability determination price level (i.e., the CQI Price), IEX will automatically adjust the price of the D-Limit order to one minimum price variant ("MPV")[23] lower (higher) than the CQI price. Similarly, when unexecuted shares of a D-Limit buy (sell) order are posted to the order book, if a quote instability determination is made and such shares are ranked and displayed (in the case of a displayed order) by IEX at a price equal to or higher

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20 See id. The CQI is thus side specific.

21 IEX proposes to amend IEX Rule 11.190(b)(7), which is currently reserved, to add the D-Limit order type.

22 A non-displayed D-Limit order with a limit price more aggressive than the midpoint of the NBBO ("Midpoint Price") will be subject to the Midpoint Price Constraint and be booked and ranked on the order book at a price equal to the Midpoint Price pursuant to IEX Rule 11.190(h)(2).

23 See IEX Rule 11.210 (specifying a MPV of $0.01 for bids and offers priced equal to or greater than $1.00 per share).

(lower) than the CQI Price, IEX will automatically adjust the price of the resting D-Limit order to one MPV lower (higher) than the CQI Price.[24]

When the price of a D-Limit order is adjusted, the order will receive a new time priority. If multiple D-Limit orders are adjusted at the same time, IEX will maintain their relative time priority. Further, when the price of a D-Limit order is adjusted, the member that entered the order will receive an order message from the Exchange notifying the member of the price adjustment.

A D-Limit order whose price is adjusted by IEX will not revert back to the price at which it was previously ranked and, in the case of a displayed order, displayed. Rather, the order will continue to be ranked and, in the case of a displayed order, displayed at the new price, unless the order becomes subject to another automatic adjustment or if the order is subject to the price sliding provisions of IEX Rule 11.190(h).[25]

III. Discussion and Commission Findings

After careful review, the Commission finds that the Exchange's proposal is consistent with the requirements of the Exchange Act and the rules and regulations thereunder applicable to

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[24] In the Notice, the Exchange provides examples of how D-Limit would operate. See Notice, supra note 3, at 72000-01.

[25] IEX Rule 11.190(h) provides for price sliding in the event of a locked or crossed market, to enforce the Midpoint Price Constraint, to comply with the display or execution requirements for a short sale order not marked short exempt during a Short Sale Period, or to comply with the Limit Up-Limit Down Price Constraint. As set forth in IEX Rule 11.190(h), an order that has been subject to price sliding will be repriced back to its more aggressive limit price when the market condition changes such that the condition necessitating the price sliding is no longer applicable. This is in contrast to the normal operation of a D-Limit order when it adjusts due to the CQI being triggered, at which point the D-Limit order's adjusted price will not reprice.

a national securities exchange.[26] In particular, the Commission finds that the proposed rule change is consistent with Sections 6(b)(5) of the Exchange Act,[27] which requires, among other things, that the rules of a national securities exchange be designed to promote just and equitable principles of trade, to remove impediments to and perfect the mechanism of a free and open market and a national market system and, in general, to protect investors and the public interest, and not be designed to permit unfair discrimination between customers, issuers, brokers, or dealers, and 6(b)(8) of the Exchange Act,[28] which requires that the rules of a national securities exchange not impose any burden on competition that is not necessary or appropriate in furtherance of the purposes of the Exchange Act.

As outlined below, the Commission has carefully reviewed the proposed rule change, comments received, and IEX's response to comments to arrive at these findings. Below the Commission first discusses the existence of latency arbitrage on IEX and the effectiveness of CQI in detecting it. Second, the Commission discusses whether the D-Limit order type will lead to "quote fading" or affect IEX's ability to maintain a protected quotation under Regulation NMS.[29] Third, the Commission discusses whether the D-Limit order type will permit unfair discrimination between customers, issuers, brokers, or dealers. Finally, the Commission discusses whether the D-Limit order type will impose any burden on competition that is not necessary or appropriate in furtherance of the purposes of the Exchange Act.

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26 In approving this proposed rule change, the Commission has considered the proposed rule's impact on efficiency, competition, and capital formation. See 15 U.S.C. 78c(f). The Commission addresses comments about competition below in Section III.E.

27 15 U.S.C. 78f(b)(5).

28 15 U.S.C. 78f(b)(8).

29 See 17 CFR 242.611.

A. Protection from Latency Arbitrage

As discussed above, IEX's stated purpose for the D-Limit order type is to protect liquidity providers on IEX from potential adverse selection resulting from latency arbitrage trading strategies, and thereby encourage its members to submit more displayed limit orders to IEX.[30]

Some commenters opposed to the proposal argue that the data and analysis provided by IEX are insufficient for the Commission to determine that IEX's proposal is consistent with the Exchange Act. They question IEX's characterization of latency arbitrage and the data IEX uses to show that it exists, and ask about the performance of the CQI during periods of higher market volatility and for thinly traded stocks.

One commenter asserts that IEX's data "does not demonstrate the existence, or associated impact, of purported 'latency arbitrage' on IEX, or that the [p]roposal is appropriately tailored to address any such problem."[31] The commenter further argues that IEX fails to conduct a thorough analysis of liquidity taking orders executed when the CQI is "on" including whether such orders are from retail or institutional investors, are sweep orders taking out a price level across all exchanges, or are hedging activities.[32] The commenter states that IEX focuses on the length of

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30 See also IEX First Response to Comments, supra note 7, at 1 (stating that "certain microsecond-level latency arbitrage strategies. . . act as a powerful disincentive to the posting of displayed quotes by market participants, which has led to a long-term trend of declining displayed liquidity and less transparency in equities trading").

31 See also Letter from Stephen John Berger, Managing Director, Citadel Securities, dated April 23, 2020, at 5 ("Citadel First Letter"). See also Letter from Stephen John Berger, Managing Director, Citadel Securities, dated August 14, 2020, at 2 ("Citadel Third Letter").

32 See Citadel First Letter, supra note 31, at 5. See also Citadel Third Letter, supra note 31,

time that the CQI is on rather than the trading volume that is affected.[33] In response, IEX states that resting limit orders on IEX "are systematically subjected to adverse impacts of latency arbitrage strategies."[34] In support of its statement, IEX shows that 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.[35] In that very short period of time, however, the Exchange received 33.7% of marketable orders.[36] In other words, the CQI is almost always "off," but during the very short periods of time when it is "on," IEX observes that "certain types of trading strategies are seeking to aggressively target liquidity providers during periods of quote instability."[37]

As for which market participants are seeking to remove resting liquidity when the CQI is on, IEX estimates, based on how it classifies its members' logical order entry ports,[38] that

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at 2.

33 See Citadel First Letter, supra note 31, at 5.

34 See Notice, supra note 3, at 72002.

35 See id. at 72001-02 (based on data from September 2019). On a volume-weighted basis, IEX reports that, during the same period, the CQI was on for 5.9 seconds per day per symbol, or 0.025% of the time during regular market hours. See id.

36 See id. at 72001. Further, 24% of displayed volume on IEX is executed when the CQI is on. See id. at 71999.

37 See id.

38 See id. at 72002. One commenter objects to IEX's classification of it as a "proprietary trading firm" because "over 50% of our trading activity on IEX is on behalf of retail investors." Citadel First Letter, supra note 31, at 4. The commenter clarified in a second comment letter that it "typically enter[s] into back-to-back transactions (one on the external venue and one with the retail broker-dealer)." Letter from Stephen John Berger, Managing Director, Citadel Securities, dated July 2, 2020, at 2 ("Citadel Second Letter"). In other words, the Commission understands that the commenter is not directly routing the customer's order to exchanges, but rather is, for example, buying shares for its own account and selling shares to the customer. An anonymous commenter, describing himself or herself as "someone with very intimate knowledge about the retail and wholesaling process" states that "what Citadel is not clarifying is that retail orders are likely sent to Citadel at random times (initiated by actual retail investors living in

"proprietary trading firms are more likely to trade against IEX resting orders when the CQI is on," while "sessions classified as full-service and agency are more likely to seek to trade against IEX resting orders during the remainder of the day."[39]

IEX states that its data evidences that members that enter liquidity-taking orders when the CQI is on "appear to be able to engage in a form of latency arbitrage by leveraging fast proprietary market data feeds and connectivity along with predictive strategies to chase short-term price momentum and successfully target resting orders at unstable prices."[40]

One commenter states that the CQI is overbroad, and thus the impact of D-Limit orders will be "much broader, affecting all types of liquidity takers" including retail.[41] The commenter reports that 15% of the retail-related liquidity-removing orders it routed to IEX in May 2020 arrived when the CQI was on.[42] The commenter questions whether the CQI may have turned on

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different parts of the world), but Citadel likely chooses to route these orders to IEX during a CQI condition" (emphasis in original). Letter from Anonymous, undated, at 2. The anonymous commenter asserts that "[d]uring that time, Citadel has a free option to hold the order and decide what to do with it" and believes that "clearly they aren't holding this order and waiting for a better price for retail to show up – they are waiting to make as much money for Citadel as possible." Id. The anonymous commenter further asserts that "[n]one of [Citadel's] example has anything to do with retail being harmed." Id. at 3. Further, IEX provides updated data from January to April 2020 for firms that are publicly listed as being members of the FIA Principal Traders Group (which IEX notes is a self-described "association of firms that trade their own capital on exchanges…."), but excluded that commenter from the analysis even though it is a member of the Principal Traders Group. See Letter from John Ramsay, Chief Market Policy Officer, IEX, dated May 10, 2020, at 13 ("IEX Second Response to Comments"). IEX states that its new data, despite excluding that commenter's trading activity, still "precisely matches patterns seen for all firms classified as proprietary…." Id. See also Letter from Anonymous, undated (challenging Citadel's characterization of the potential for harm to retail investors) and Letter from John Ramsay, Chief Market Policy Officer, IEX, dated August 3, 2020, at 5-6 ("IEX Third Response to Comments").

39 Notice, supra note 3, at 72002.

40 Id.

when it was routing portions of a large retail order to multiple exchanges to fill.[43] If those away executions appeared to IEX to sequentially remove liquidity in a "crumbling" manner, then the CQI could have turned on. In that case, had IEX been displaying D-Limit orders, those orders would get repriced before the commenter could remove that interest from IEX at the previously displayed less-aggressive price point unless the commenter accounts for the IEX access delay when routing so that its routing does not cause the CQI to turn on.[44] Thus, the commenter asserts that the CQI detects more than just latency arbitrage and may broadly discriminate against all types of liquidity takers, in particular orders that are routed simultaneously to multiple exchanges to cross the spread and remove liquidity at the bid or offer price.[45]

In light of this, the commenter questions whether D-Limit orders on IEX will require broker-dealers to make changes to their routing strategies, and if so, whether those changes would increase complexity, introduce risks, and be consistent with regulatory requirements applicable to the routing of marketable orders.[46] Specifically, the commenter asserts that

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41 Citadel Second Letter, supra note 38, at 1.

42 See id. at 3-4. The commenter says that "[t]o provide a sense of scale, we executed over 2.5 million retail orders during the month of May 2020 that required more size than was available at the NBBO across all exchanges at the time of routing." Id. at 3. The commenter also states that it is the "leading destination for retail orders, executing approximately 40% of all U.S.-listed retail volume." Citadel Second Letter, supra note 38, at note 6.

43 See id.

44 See id. The commenter provided an example of an "actual retail order that removed displayed liquidity on IEX during the month of May 2020." See id. at 4. While it is unclear if this is a typical example, and the commenter did not provide timestamps or indicate the execution prices received, the scenario shows that the commenter did not receive a full and immediate execution on two venues (CboeEDGX and Nasdaq), as it ended up posting 100 shares on each venue. See id.

45 See Citadel Third Letter, supra note 31, at 1-2.

46 See id. at 5-6. See also Citadel Third Letter, supra note 31, at 4.

"'[a]ccounting' for the IEX speed bump means routing to IEX first and intentionally delaying routing to other exchanges when accessing displayed liquidity" (emphasis omitted).[47] In response, IEX states that how D-Limit orders will interact with intermarket sweep orders depends on how broker-dealers route, which is "precisely the same choice that brokers face in routing to every other type of displayed order that exists in the market today," and the ability to account for geographic and technological differences (like the speed bump, which "is the equivalent of physical distance") when routing is not uniquely affected by the presence of D-Limit orders.[48] As discussed directly below, the Commission has addressed this concern previously and reaffirms its views on the matter now, based on the understanding that intermarket routing can be accomplished in a manner to avoid such an outcome.

D-Limit orders should not necessitate material changes to routing strategies either for single orders or intermarket sweeps. The Commission previously addressed the commenter's concern about routing an order to IEX and accounting for its access delay when the Commission approved IEX's exchange registration. Specifically, the Commission explained that IEX's speed bump is "well within the range of geographic and technological latencies that market participants experience today" such that "latency to and from IEX will be comparable to – and even less than – delays attributable to other markets that currently are included in the NBBO," and the Commission found the delay to be de minimis, i.e., so short as to not frustrate the purposes of Rule 611 by impairing fair and efficient access to IEX's quotation.[49]

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47 Citadel Third Letter, supra note 31, at 4.

48 Letter from John Ramsay, Chief Market Policy Officer, IEX, dated August 20, 2020, at 2-3.

49 See Securities Exchange Act Release No. 78101 (June 17, 2016), 81 FR 41142, 41161 (June 23, 2016). Specifically, after entering through the POP in Secaucus, New Jersey, a user's electronic message sent to the IEX trading system must physically traverse the IEX

In considering the current proposal and concerns raised by the commenter, the same explanation provided to support approval of IEX's exchange registration pertains here. In effect, IEX's physical access delay (from the POP to the matching engine) is understood by market participants as the practical equivalent of treating the location of IEX's matching engine for routing purposes as more than 38 miles further away than its actual geographic location. In the Commission's view, market participants can, and generally do, account for this fact when routing to IEX. Thus, these routing adjustments do not constitute "preferencing" of IEX because the adjustments do not mean a market participant has to arrive and trade first on IEX.[50] Rather, to prevent the CQI from observing away executions and turning "on" before an order sent to IEX can execute on IEX, a broker-dealer need only continue to apply current routing techniques prevalent today. Such techniques, such as smart order routing strategies, are commonplace today and already take into account geographic and technological latencies, as well as exchange access delays, to capture liquidity across multiple venues simultaneously without signaling those

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"coil," which is a box of compactly coiled optical fiber cable equivalent to a prescribed physical distance of 61,625 meters (approximately 38 miles) (which is similar to the distance between the Nasdaq and NYSE data centers in Carteret and Mahwah, respectively). After exiting the coil, the message travels an additional physical distance to the IEX trading system, located in Weehawken, New Jersey. The entirety of that trip takes approximately 350 microseconds.

50 By analogy, routing parts of a large order to multiple exchanges is similar to a group of friends who live in separate locations meeting at a restaurant for a 7:00 pm dinner reservation. Each friend leaves his or her house at a different time, depending on how far away each lives from the restaurant, and all plan to arrive at the same time to make their reservation. While the friend that lives furthest away needs to start the journey first, all arrive together. Routing a large stock order to multiple exchanges is the inverse of that hypothetical, in which the goal is to take liquidity on each exchange as close to simultaneously as possible before other market participants can see and react to those executions. Because of IEX's speed bump, it often will be the "furthest away" venue and so the journey to reach it starts first, but the execution does not need to occur first on IEX and thus preferencing IEX is not required.

executions to the market in a way that would impact prices or available liquidity.[51] If utilized, such routing strategies could avoid triggering the CQI because quotes would not "crumble" in sequence as the various orders are routed to assure coordinated simultaneous executions across venues. The commenter asserts that routing first to IEX would be necessary to avoid triggering the CQI on market sweeps, but that does not mean routing to and arriving at IEX first. Rather, smart order routing that seeks to have orders arrive and execute simultaneously across multiple venues focuses on order arrival and the order transmission time is only a means to an end to achieve that outcome.[52] Accordingly, the commenter has not presented persuasive evidence that all market sweeps necessarily trigger the CQI or that its liquidity-taking activities on IEX will be materially impacted to the detriment of retail investors. While the commenter presented evidence to show some correlation between its trading and the CQI being on, it did not present evidence that its trading caused the CQI to turn on or that such result is inevitable with current best practices in routing among broker-dealers. For instance, in the commenter's example it routed to six exchanges but did so in a way that appears to have obtained an execution on IEX last. If the commenter routed in a way that resulted in its order executing on IEX near-simultaneously with its executions on other markets, then the CQI could not have been triggered by the commenter's routed orders because the various exchange quotes would not have "crumbled" prior to the execution of the order on IEX. The means to route in this manner are

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51 See, e.g., Securities Exchange Act Release No. 84528 (November 2, 2018), 83 FR 58338 (November 19, 2018) (Disclosure of Order Handling Information; Final Rule) and Letter from Daniel Aisen, CEO, Proof Services LLC, dated December 24, 2019, at 5 ("Proof Letter"). See also Securities Exchange Act Release No. 78101, (June 17, 2016), 81 FR 41142, 41153 (June 23, 2016) (File No. 10-222), at note 265 (discussing accounting for the non-variable IEX access delay when routing to IEX).

52 See, e.g., Proof Letter, supra note 51, at 5. See also supra note 50.

common and do not require a broker-dealer to preference any particular exchange over any other exchange, as the point is to achieve simultaneous arrival and executions across multiple exchanges in a coordinated manner.

Rather, "accounting" for IEX's de minimis speed bump when routing orders is just like accounting for any other technological or geographic latency, and doing so is consistent with applicable rules and regulations and does not require inappropriately preferencing IEX. IEX's D-Limit proposal, because it does not introduce any new access delays, does not present any new issues in this respect. While the commenter focuses on the fact that IEX will be able to reprice D-Limit orders when the CQI triggers, market participants that post liquidity on IEX also monitor executions on away markets and could change or cancel their quotes on IEX in response to that same information. In other words, with 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. Accounting for those latencies is possible, using affordable and readily-available technology, and addresses the commenter's concern, which is unrelated to whether IEX has or does not have D-Limit orders.

IEX further asserts that investors will not be negatively impacted when trying to access a quote on IEX that contains a displayed D-Limit order because brokers representing investor orders or trading on their behalf generally are not able to time their orders to arrive with the level of sophistication required to engage in latency arbitrage because they lack the "low-latency tools

to aggregate data from all the markets and react to price changes in microseconds."[53] Further, referencing the commenters that support the proposal, IEX explains that "market participants who rely on the ability to access liquidity through 'intermarket sweep' orders have clearly said they do not believe D-Limit would limit their ability to access liquidity at displayed prices."[54] With respect to hedging activities, IEX argues that market makers hedge throughout the day and "[i]t is not credible to suppose that orders from market markers sent to hedge risks on various markets happen to converge at IEX in the tiny time increments when the CQI signal is on."[55] IEX further states that market makers that rely on the equities markets to hedge have supported the proposal.[56] Finally, IEX states that marketable orders to take liquidity when the CQI is on account for over 20% of displayed volume executions on IEX, but less than 2% of total trading volume of non-displayed interest.[57]

IEX's characterization of latency arbitrage is supported by commenters asserting that latency arbitrage negatively impacts liquidity and price discovery. One commenter believes that "speed advantages… have tilted the playing field in favor of firms specializing in 'latency arbitrage,' reducing the willingness of both long-term investors and market makers to display quotes, to the detriment of price discovery and market efficiency."[58] Another commenter states

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53 See also IEX Second Response to Comments, supra note 38, at 12 (stating that, if the CQI is on for 5 seconds in a day, then an investor's marketable order arriving randomly to IEX would have a 1 in 5,000 chance of arriving when the CQI is on).

54 See id.

55 See id. at 14.

56 See id.

57 See id. at 12.

58 See Letter from Kevin Duggan, Managing Director, Capital Markets, Ontario Teachers' Pension Plan, Benoit Gauvin, Vice-President, CDPQ, and Alex Done, Deputy Comptroller, Office of New York City Comptroller, et al., at 1 ("Joint Letter from 27

that "[t]he disincentive to all market participants to provide displayed quotes in fear of getting 'picked off' when the price of a security is in transition to a new price level continues to plague displayed markets."[59] Similarly, another commenter opines that "[a] growing body of academic research suggests that latency arbitrage strategies are equivalent to zero-sum 'races' between high-frequency traders (HFT) and may actually discourage liquidity provision by both HFT and non-HFT."[60] Other commenters similarly assert that latency arbitrage causes some institutions to

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Asset Managers"). See also Letter from Lev Bagramian, Senior Securities Policy Advisor, Better Markets, Inc., dated May 15, 2020.

59 See, e.g., Letter from Mehmet Kinak, VP & Global Head of Systematic Trading & Market Structure and Jonathan D. Siegel, VP & Senior Legal Counsel - Legislative & Regulatory Affairs, T. Rowe Price, dated February 5, 2020, at 1 ("T. Rowe Letter"); and Letter from Brian Urey, Senior Trader, Allianz Global Investors, dated May 12, 2020 ("Allianz Letter").

60 See and Letter from Marius-Andrei Zoican, Assistant Professor of Finance, University of Toronto-Mississauga, dated January 20, 2020, at 1 ("Zoican Letter"). See also Letter from John Christofilos, Senior VP, Chief Trading Officer, AGF, dated February 11, 2020, at 2 ("AGF Letter") ("It is clear that latency arbitrage affects investors, brokers, and market makers, and as a result, the market is less liquid and more susceptible to volatile price swing."); Letter from Sean Paylor, Trader, AJO, dated February 10, 2020, at 4

avoid posting displayed liquidity on exchanges, which they say can impact liquidity and price discovery.[61]

The comment file on this proposal reflects a dichotomy of views on the issue of latency arbitrage. On the one hand, some commenters question IEX's characterization of latency arbitrage and the performance of IEX's CQI, which is intended to detect it. On the other hand, other commenters, including investment firms with longer-term investment horizons and agency broker-dealers, state that they are adversely impacted by latency arbitrage.

Even though the CQI is mostly off and comes on only when certain market-moving conditions are present, those small increments of time are meaningful on IEX because, as discussed above, a material amount of activity occurs during those moments.[62] In those rare

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("AJO Letter") ("Trading from the back of the queue leads to lower fill rates during periods when the quote is stable and greater adverse selection when it is not ('last man standing' before a price change)."); Letter from Kenneth A. Bertsch, Executive Director, Jeffrey P. Mahoney, General Counsel, Council of Institutional Investors, dated February 11, 2020, at 2 ("CII Letter") ("Long-term investors are at real and substantial risk from speed advantages of a small number of trading firms that specialize in 'latency arbitrage,' which imposes a multi-billion-dollar tax on institutional investors. A recent study sponsored by the Financial Conduct Authority suggested that this activity is endemic, and results in substantial losses to all liquidity providers."); Letter from Philip Berlinski, Co-Chief Operating Officer, Equities, Global Markets, Goldman Sachs & Co. LLC, dated February 26, 2020, at 3 ("Goldman Sachs Letter") ("Adverse selection stemming from latency arbitrage can have a negative effect on the national market system because liquidity providers may be more inclined to provide less liquidity at wider spreads."); and Letter from Sanjana Kapur, Compliance Officer, Equity Compliance, Jefferies LLC, dated February 5, 2020, at 3 (explaining that one of its agency algorithms seeks "the ability to participate in price discovery by displaying your interest without having to bear the cost of adverse selection (getting 'picked off' by arbitrage-based strategies relying primarily on speed)").

61 See, e.g., AGF Letter, supra note 60, at 1; Letter from Joseph Scafidi, Global Heading of Trading, Carlos Oliveira, Heading of Trading Analytics and Market Structure, Brandes Investment Partners, LP, dated February 20, 2020, at 1 ("Brandes Letter"); Letter from Ray Ross, Chief Technology Officer, Clearpool Group, dated January 21, 2020, at 2 ("Clearpool Letter"); Goldman Sachs Letter, supra note 60, at 4; Letter from Gary

moments when market prices are in transition, a race condition exists between liquidity providers who want to reprice their on-exchange displayed liquidity to reflect the changing market prices and the liquidity takers who want to take before those updates can occur.[63] This creates information asymmetries and can lead to other externalities, which can affect the willingness of many market participants to post displayed liquidity because it subjects their orders to adverse selection when prices move and they are not able to see or react as fast to those changing conditions.[64] In turn, this race can have a meaningful effect on all market participants because it can incentivize investors to trade in the dark, either off exchange or through non-displayed exchange order types.[65] The result is that a valuable source of liquidity may instead seek out dark non-exchange trading venues where the speed traders' advantages are moot, but in doing so this liquidity is no longer displayed to and accessible by the market as a whole. Such an outcome does not advance the Exchange Act's goal of promoting fair and orderly securities

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Thompson, Executive Director, Head of Global Trading, Vontobel Asset Management, Inc., dated February 14, 2020, at 1.

62 See supra note 36 and accompanying text.

63 See, e.g., Letter from Joseph Saluzzi, Themis Trading, dated February 6, 2020, at 2 ("[t]hose who have paid top-dollar for high speed data related products, race each other to pick off stale orders from investors who haven't necessarily paid for the same low latency technology.") ("Themis Letter"); Zoican Letter, supra note 60, at 1 (stating that there is a growing body of academic research suggests that latency arbitrage strategies are equivalent to zero-sum 'races' between high-frequency traders).

64 See supra notes 58-61 and accompanying text. See also, e.g., AJO Letter, supra note 60, at 2 ("Instead of offering all market participants equal access at the same speed, the exchanges have created a multi-tiered system, effectively tilting the odds in favor of a small subset of firms that possess the resources to invest in the lowest-latency infrastructure") and Allianz Letter, supra note 59, at 2.

65 See, e.g., Letter from Gregory Davis, Managing Director and Chief Investment Officer, The Vanguard Group, Inc., dated April 23, 2020, at 3 ("Vanguard Letter") ("This high-speed environment discourages all but the fastest market participants from posting their trading interest.").

markets. IEX's D-Limit order type seeks to compete with those other trading venues by incentivizing more displayed liquidity through improved execution quality for liquidity providers.

Furthermore, exchange functionality that protects resting displayed orders against adverse selection resulting from latency arbitrage will improve the execution quality experienced by market participants that post displayed liquidity and are affected by such adverse selection. This improved execution quality could encourage more displayed liquidity, which in turn, would contribute to fair and orderly markets and support the public price discovery process. Specifically, if sufficiently protected against being "picked off" when the conditions for latency arbitrage are present, long term investors will no longer experience those relatively poor executions and thus will have less incentive to avoid posting displayed orders on exchanges. Accordingly, as suggested by some commenters, long term investors could shift a portion of their order flow back onto the exchange as displayed orders. The result would be an increase in displayed liquidity as a more diverse group of long term investors participates in the exchange market, which would in turn facilitate fair competition, economically efficient executions, and an opportunity for long term investors' orders to be executed without the participation of a dealer.[66]

A substantial amount of IEX's overall execution volume is attributable to non-displayed interest. Thus, when the CQI is on, the marketable interest IEX receives is not seeking merely to access liquidity on IEX in the normal course, but rather is seeking specifically to remove a displayed quote on IEX in a manner consistent with what IEX identifies as latency arbitrage.[67] In other words, IEX has demonstrated that the market conditions that trigger activation of the

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66 See 15 U.S.C. 78k–1.

67 See supra note 7 and accompanying text.

CQI are the same short-term market conditions that the most highly sophisticated latency-sensitive traders detect and seek to trade on. The Commission also finds persuasive comments from asset managers supporting the proposal who argue that the prevalence of such trading strategies impacts their willingness to participate in the on-exchange displayed market where the public price discovery process takes place. IEX responds to those long-standing concerns by now offering a narrowly tailored tool that balances the ability of long-term investors to access displayed liquidity in the ordinary course against the current structural advantages enjoyed by short-term latency arbitrage trading strategies that rely on superior access to the fastest data and connectivity, while also encouraging liquidity providers to post more displayed liquidity.[68] Many commenters state that the proposal would be useful in addressing such concerns without being overbroad.[69] The Commission concludes that this attempt by IEX to promote the ability of long-term investors to post liquidity on its exchange by counterbalancing the existing advantages used in short-term trading strategies is consistent with the Exchange Act.[70] As discussed below, exchanges should be able to innovate to address this concern.

Therefore, because IEX's proposal promotes the interest of long term investors in a narrowly tailored manner that will inure to the benefit of displayed markets, leading to increased

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68 IEX notes in its filing that other exchanges use transaction rebates and volume tiers "to essentially compensate market makers and other liquidity providers for posting aggressive limit orders" that are subjected to the effects of latency arbitrage, but IEX believes "that these pricing schemes can contribute to a number of conflicts of interest and market distortions including, among others, conflicts of interests, excess intermediation and potential adverse selection, market fragmentation, complexity, the proliferation of new order types to enable avoidance of fees, and elevated fees to subsidize rebates" and does not use them. See Notice, supra note 3, at 72002.

69 See, e.g., Allianz Letter, supra note 59; Brandes Letters, supra note 61; and T. Rowe Letter, supra note 59.

70 See infra Sections III.C-E.

displayed liquidity from which all market participants ultimately will benefit, IEX's proposal is consistent with the Exchange Act, including the protection of investors and the public interest.

One commenter questions whether the statistics IEX presented in its filing, which were based on data collected during September 2019, "are representative of other time periods or of different market environments."[71] The commenter considers that period to be normal market conditions and believes that IEX should provide more "representative data" to address how the CQI operates during periods of market volatility.[72] The commenter states that IEX's failure to do so renders IEX's proposal incapable of showing whether the proposed D-Limit order is appropriately tailored to address the issue that IEX seeks to address.[73] The commenter also states that IEX provided aggregated data across all stocks but does not provide data in its filing for different types of stocks, like thinly traded symbols, which may or may not experience the CQI in the same way as more liquid stocks, and thus questions whether IEX's "figures hold true for all categories of symbols, including those which are subject to frequent or routinely-high levels of volatility."[74]

In response to these concerns, IEX provided additional data in its two responses to comments and asserts that the results remain consistent.[75] With respect to longer periods and

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71 Letter from Joan C. Conley, Senior Vice President & Corporate Secretary, Nasdaq, Inc., dated January 21, 2020, at 6 ("First Nasdaq Letter"). See also, e.g., Letter from Jeffrey Bacidore, Ph.D., President, The Bacidore Group, LLC, dated February 13, 2020, at 2-3 ("Bacidore Letter").

72 See First Nasdaq Letter, supra note 71, at 4-7. See also Bacidore Letter, supra note 71, at 2-3.

73 See First Nasdaq Letter, supra note 71, at 4-7. See also Bacidore Letter, supra note 71, at 2-3.

74 See First Nasdaq Letter, supra note 71, at 4-7. See also Bacidore Letter, supra note 71, at 2-3.

75 See IEX First Response to Comments, supra note 7; IEX Second Response to Comments,

periods of higher market-wide volatility, IEX looked at data from the fourth quarter of 2019 and found that, "based on IEX average-weighted volume, the CQI was on for 0.021% of the time during regular market hours, virtually the same as the 0.025% of the time it was on for September 2019."[76] IEX also looked at the period of January to April 2020, which IEX states involved an "unprecedented 'stress test' as a result of market volatility connected to the COVID-19 pandemic," and IEX reports that the CQI was on between 0.026% (for January 2020) and 0.125% (for March 2020) of the time during regular market hours.[77] IEX asserts that, "during one of the most volatile and unprecedented months in the history of the stock market," the CQI was only on for 0.125% of the trading day on average.[78] Further, IEX calculated the percent of displayed volume that traded when the CQI was "on" during that period, and found that it ranged between 22% (for March 2020) to 24.4% (for January 2020).[79] IEX concludes that its updated

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supra note 38.

76 See IEX First Response to Comments, supra note 7, at 15. IEX also examined aggregate CQI data during a December 2018, which IEX asserts was a period of relatively higher market-wide volatility. While IEX found that the CQI was "on" for relatively more time (an average of 0.060% per symbol per trading day during December 2018 compared to 0.025% during September 2019), IEX characterized that relatively higher level as "nonetheless extremely low, corresponding to approximately 15 seconds per day per symbol on average during regular market hours." Id. at 16.

77 IEX Second Response to Comments, supra note 38, at 16. IEX states that the CQI was "on" longer in March 2020 "because of the extraordinary increase in the number of quote changes per stock in that month." Id. at 17.

78 Id. at 16-17. IEX notes that during that period, the market-wide circuit breakers were triggered 4 times in 8 trading days and the VIX volatility index recorded its highest-ever value on March 16. See id.

79 Id. at 17. IEX observes that this proportion remained "remarkably consistent throughout the period" even though the absolute number of trades was much higher in March and April. See id.

data "confirms that the CQI signal performs extremely well and consistently in extreme, and in 'normal' market conditions."[80]

IEX also examined data from the fourth quarter of 2019 on the amount of time that the CQI was on for certain individual stocks that IEX classified as subject to greater volatility, and found that for those stocks, "which tend to also be stocks that are more thinly-traded, the CQI was on less often than for stocks with lower volatility."[81]

With respect to the CQI and thinly traded stocks, IEX examined data from the fourth quarter of 2019 and found that "the CQI was actually significantly less active than for stocks with higher [average daily volume]."[82] IEX explained that, for thinly traded stocks, "the CQI necessarily will fire less often… because there are fewer data points from which to draw in making predictions" and thus "there will be less repricing of the orders, which directly counters the arguments that CQI would have a larger impact in those symbols."[83] IEX concludes that its data shows that D-Limit would not impede access to thinly-traded or other stocks.[84]

A few commenters also request that IEX provide more information on the accuracy of the CQI. One commenter states that IEX's filing provides no data of when CQI "activates mistakenly in circumstances where it should not do so" where it would cause "needless missed executions for liquidity takers."[85] Similarly, another commenter states that IEX should provide more data on the accuracy of the CQI, such as the percentage of time that the CQI accurately

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80 Id.

81 IEX First Response to Comments, supra note 7, at 16.

82 Id. at 15.

83 Id. at 16.

84 Id.

85 See First Nasdaq Letter, supra note 71, at 7.

predicts NBBO changes, the number of times the CQI inaccurately predicted a change, and how the accuracy rate has evolved with each update.[86]

IEX responds to those comments by providing data on CQI performance during the January to April 2020 period, where it found that the CQI "accurately predicted the direction of the next price change (not time bound) in 75.5% of the cases, on a volume-weighted basis."[87] A 75% accuracy rate for the CQI shows that it succeeds, far more often than not, in detecting the conditions for latency arbitrage, and thus it is successful in informing order types designed to mitigate the impact of that latency arbitrage.[88] The CQI is on so infrequently and detects events that are such idiosyncratic anomalies within the current market structure that only a small number of market participants are capable of detecting and acting upon them. As such, the CQI does not result in needless missed executions for most traders, though it will make it more difficult for a few latency arbitrage traders to profit by taking advantage of idiosyncrasies in market structure to trade with stale-priced displayed quotes on IEX, as further discussed below.

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86 See Letter from Joanna Mallers, Secretary, FIA Principal Traders Group, dated January 21, 2020, at 6 ("First FIA PTG Letter").

87 IEX Second Response to Comments, supra note 38, at 21. The CQI's accuracy is substantial.

88 Further, the D-Peg order type, which is designed to protect non-displayed midpoint orders from latency arbitrage and is informed by the CQI, has been popular with the agency brokers and full-service brokers that it is intended to protect. Those market participants carefully monitor their execution quality and thus must regard the CQI as accurate or else they would not be expected to use D-Peg orders. See id. at 15 (noting that "D-Peg alone has executed over 111 billion shares of volume since IEX was approved as an exchange with over 90% of that volume from agency and full-service brokers"). If the CQI were not accurate, then users of D-Peg orders would needlessly miss out on executions and, as a result, would receive poor execution quality and be expected to avoid using the D-Peg order type. Because the D-Peg order type is popular on IEX, its ability – by function of the CQI – to protect the liquidity provider is apparent.

Thus, in response to all of the commenters' concerns discussed in this section about the CQI, and the representativeness of the data that IEX provided in support of its proposal, IEX provided additional data and analysis and concludes that "(i) the fraction of the trading day that the CQI is on is consistent in different time periods; (ii) the CQI is on for less of the trading day for thinly-traded securities compared to all securities; (iii) the CQI is on for less of the trading day for securities that experienced higher volatility than for lower volatility securities; and (iv) during a high volatility period, the period of time the CQI was on continued to be extremely low (about 15 seconds during the trading day)."[89]

IEX has provided a sufficient amount of data and analysis to allow the Commission to consider the full range of issues raised by IEX's proposal. Based upon the overall record, including the data and analysis submitted by IEX described immediately above and the comments received, the Commission finds that the proposal is consistent with the Exchange Act. As explained above, the Commission finds that the proposal promotes the interest of long term investors in a narrowly tailored manner that will inure to the benefit of displayed markets, leading to increased displayed liquidity from which all market participants ultimately will benefit.[90] The Commission finds that the proposed D-Limit order type is narrowly and appropriately tailored to achieve those benefits. As discussed above, some commenters characterize the data IEX provided in its filing as insufficient, and question how the CQI performs during periods of higher market volatility and for thinly traded stocks.[91] However, the

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89 Id.

90 See supra notes 62-70 and accompanying text.

91 See supra notes 32-34 and accompanying text.

Commission is persuaded by the data and analysis IEX provided in its filing and its responses to comments.

Market events over the past several months have provided an environment for IEX to test the consistency of its CQI in periods of significant volatility. IEX did so and shows that the period of market volatility observed in early 2020 did not cause the CQI's behavior to differ markedly from the data IEX provided in its filing. Further, IEX shows that more volatile stocks and thinly traded stocks were not unduly impacted by the CQI. Thus, the Commission concludes that the data IEX provided in its filing on latency arbitrage and the CQI was "representative of other time periods or of different market environments" and IEX's "figures hold true" for different types of stocks that were subject to higher levels of volatility.

B. Prior Commission Consideration of the CQI

One commenter expressed concern that the use of CQI by IEX "shifts the exchange's role from a platform designed to facilitate price discovery into an active participant in the price discovery function."[92]

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92 Letter from Adam Nunes, Head of Business Development, Hudson River Trading LLC, dated January 21, 2020, at 2 ("HRT Letter"). See also Citadel First Letter, supra note at 31, at 11. One commenter argues that IEX will be exercising actual discretion over the execution of a D-Limit order and thus will be engaging in traditional broker-dealer activities in offering the D-Limit order type informed by the CQI, because "its predictive nature and potential for error makes it difficult to distinguish from typical broker-dealer order routing and execution algorithms (which are also codified)." See First FIA PTG Letter, supra note 86, at 5-6. The Commission previously addressed the CQI and IEX's discretionary order type functionality and determined that it does not result in IEX engaging in traditional broker-dealer activities. See, e.g., Securities Exchange Act Release No. 78101 (June 17, 2016), 81 FR 41142, 41153 (June 23, 2016) (File No. 10-222) (granting the application of IEX for registration as a national securities exchange). Such also is the case with IEX's D-Limit proposal, as D-Limit orders will not allow IEX to exercise any discretion on any particular order by deviating from the CQI and D-Limit functionality, which is hardcoded in the IEX rulebook. While broker-dealer algorithms also are codified, broker-dealers do not have to align their algorithms with Section 6 of

The Commission disagrees with the commenter's characterization of the CQI functionality. The CQI does not place IEX into the role of an active participant in the price discovery function, nor is IEX making investment pricing decisions through the CQI. As the Commission previously addressed in connection with IEX's exchange registration, IEX's discretionary orders are "unique in the way that the discretion functionality will be turned 'on' or 'off' depending on IEX's quote stability determination."[93] Among other things, IEX has "encoded in its rule the totality of the discretionary feature" and therefore the "hardcoded conditionality" of the discretionary feature does not provide IEX "with actual discretion or the ability to exercise individualized judgment when executing an order."[94] Though the Commission was discussing the DPeg order type in the IEX exchange registration context, the Commission recognizes that D-Limit will use the exact same CQI functionality that underlies the DPeg. And, as the Commission has previously stated, the CQI, which uses a "pre-determined, objective set of conditions that are detailed in IEX's [rules]" and which any market participant can thus recreate on its own, will allow users to submit D-Limit orders and have them operate as designed and as reflected in IEX's rules. In so doing, users of D-Limit orders can better achieve their goals when their orders operate efficiently. Further, as discussed below, D-Limit orders and any associated liquidity-provision and price discovery benefits will be available to all users.

C. Quote Accessibility and Impact on Displayed Markets

Discretionary order types informed by the CQI, discussed above, are not new for IEX.

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the Exchange Act nor do they need to file all applicable rules with the Commission as IEX does for the CQI and its order types.

93 Securities Exchange Act Release No 78101, (June 17, 2016), 81 FR 41142, 41153 (June 23, 2016) (File No. 10-222).

94 Id.

What is novel in this proposal is that (1) the proposed D-Limit order could be displayed and (2) the CQI functionality would be used to "exercise discretion" to move the order to a less aggressive price.[95]

Several commenters assert that the D-Limit Order type, if displayed, would result in what the commenters refer to as "quote fading" or "phantom liquidity" on IEX if market participants have difficulty accessing the D-Limit order liquidity that is displayed on IEX, and some question whether the D-Limit order type would be consistent with the requirements of Regulation NMS.

1. Quote Fading and Phantom Liquidity

Quote fading and phantom liquidity both refer, from the perspective of the liquidity taker, to the ability to execute against a displayed quote. The ability of any market participant to successfully execute against any particular displayed quote is subject to a number of factors and is not guaranteed on any market, as at any time any market participant can be seeking to execute against an order that is being repriced, changed, cancelled, or executed by a different market participant.

Some commenters express concern that displayed D-Limit orders might result in more "quote fading" or "phantom liquidity" and thus negatively impact market participants seeking to take liquidity. One commenter describes its concern "about quote accessibility as a result of a

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95 Non-displayed D-Limit orders would not raise any new or novel issues not previously considered in connection with IEX's non-displayed discretionary order types. See, e.g., Securities Exchange Act Release No. 78101 (June 17, 2016), 81 FR 41142 (June 23, 2016) (File No. 10–222) (In the Matter of the Application of: Investors' Exchange, LLC for Registration as a National Securities Exchange; Findings, Opinion, and Order of the Commission). See also Letter from R. T. Leuchtkafer, dated August 3, 2020, at 2-3 ("Leuchtkafer Letter") (pointing out that IEX currently reprices displayed orders in certain scenarios, including to comply with other regulatory requirements, in situations that do not involve the CQI).

displayed limit order being repriced based on IEX's crumbling quote indicator" and recommends that consideration be given "to the impact on an order attempting to seek liquidity from a posted D-Limit Order" when the CQI causes the D-Limit order to reprice because "the IEX protected quote that broker-dealers are attempting to access would no longer be at the price that they are trying to execute against. . . ."[96] That commenter further asserts that even if the extent of quote fading caused by the use of D-Limit Orders is not "meaningful," there is no "de minimis threshold to the Firm Quote Rule" and therefore D-Limit orders "could further erode the integrity of a displayed quotation."[97] Another commenter raises the same concern, stating that D-Limit quotes would be "nothing more than a 'maybe' quote or indication of interest."[98] Likewise, another commenter articulates this concern by asserting that firms "would be blind as to how to make informed trading decisions" because there will be no indicator in the market data feeds that will reveal when IEX's quote includes a D-Limit order, which the commenter characterizes as an

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96 Letter from Ellen Greene, Managing Director, Equity and Options Market Structure, SIFMA, dated February 5, 2020, at 1-2 ("SIFMA Letter"). See also Letter from Andrew Stevens, General Counsel, IMC, dated January 22, 2020, at 2 ("IMC Letter") (characterizing D-Limit as a "perilous gimmick that creates a safe zone for illusory orders" that would allow "systematic quote fading").

97 See SIFMA Letter, supra note 96, at 3. Cf. Goldman Sachs Letter, supra note 60, at 2-3 (arguing that, with respect to firm quote requirements, "D-Limit Orders are no different from the operation of peg order types" and thus comply with the requirements of Rule 602 of Regulation NMS). The possibility that a displayed quotation can change before someone can access it does not, by itself, mean that the quote is not firm for purposes of Rule 602. For example, the liquidity provider that posted the order might have changed or cancelled it.

98 See Letter from Mary M. Dunbar, DLA Piper LLP (US), dated March 10, 2020, at 2-3 ("DLA Piper Letter"). D-Limit orders are not equivalent to an indication of interest, because indications of interest normally require a subsequent and manual "firm up" instruction by the submitting member in order to execute against incoming trading interest. See, e.g., Securities Exchange Act Release No. 83663 (July 18, 2018), 83 FR 38768, 38847-48 (August 7, 2018) (Regulation of NMS Stock Alternative Trading Systems; Final Rule) (discussing IOIs).

order type that is subject to fading.[99] More specifically, a different commenter opines that specific types of market participants – institutional and retail traders – will be harmed by the quote fading concerns presented by D-Limit orders when those traders experience declining fill rates as they sweep the market by sending a portion of a larger order to IEX but are unable to access D-Limit orders that are being repriced by IEX.[100]

In contrast, other commenters, including institutional investors and asset managers that trade equities, do not believe D-Limit orders will less accessible. For example, one commenter says that it is "confident that D-Limit orders will be as accessible to our orders and those representing other institutional asset managers as any other liquidity is available today from other venues."[101] Other commenters opine that D-Limit orders could be more accessible than liquidity on other venues.[102] Another commenter asserts that quote fading "is not a new phenomenon" and says that they "experience quote fading every day on every other exchange" as latency arbitragers commonly trade ahead of their liquidity seeking orders.[103] The commenter explains that, in its trading experience, "latency arbitragers are front-running our liquidity-seeking child orders and taking the posted liquidity we seek before our orders arrive." The

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99 See First Nasdaq Letter, supra note 71, at 2-3.

100 See First FIA PTG Letter, supra note 86, at 3-4.

101 Letter from David Brooks, Director of Trading, The London Company of Virginia LLC, dated February 20, 2020, at 2 ("The London Company Letter").

102 See Joint Letter from 27 Asset Managers, supra note 58 (noting that "other exchanges with protected quotations sell multiple speeds of technology and data, which may make their quotations less accessible to those who do not purchase the same tier of access from the exchange. So, in practical terms, we believe that IEX D-Limit meets the current standards of a protected quote and these quotes will likely be more accessible to traditional investors than quotes on other exchanges.").

103 AJO Letter, supra note 60, at 4.

commenter regards this as "unnecessary intermediation" and argues it "is not an example of price discovery, it is a form of predatory trading that increases investor costs" and is "also the very behavior that D-Limit seeks to combat."[104] Further, one commenter believes that institutional investors would not be harmed by displayed D-Limit orders "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.'"[105] Another commenter agreed, noting that institutional traders "almost always initiate orders during stable markets, so they should have little trouble accessing displayed D-Limit quotes" and when they do trade using "reactive" strategies "there is such a dramatic gap in speed between the elite proprietary trading firms and even the relatively fast agency brokers, that by the time these reactive agency tactics are able to act, any favorable opportunities have already been exploited by their faster counterparts" and "they would have likely been too late either way."[106]

Responding to the concerns about quote fading and phantom liquidity, IEX asserts that "an exchange quote is accessible only to the degree that the participant is able to send a message that can execute against the quote before someone else accesses it or the quote is cancelled before the taker's order arrives."[107] On that point, IEX argues that the commenters raising concerns over quote fading are implying that the D-Limit repricing "will deprive investors or

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104 Id.

105 T. Rowe Letter, supra note 59, at 2. The commenter believes that D-Limit orders would help liquidity providers defend themselves against "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." Id.

106 Proof Letter, supra note 51, at 5.

107 See IEX First Response to Comments, supra note 7, at 7.

their agents of prices they otherwise would be able to access."[108] IEX does not believe that to be the case, and explains that "exchange quotes are not equally accessible to all participants" but rather "are only reliably accessible to participants using the fastest trading strategies and the fastest market information."[109]

For example, with respect to situations in which the NBB or NBO is in transition, IEX believes that "quotes on exchanges that remain at the soon-to-be stale price will either be accessed first by a fast market participant, or they will be canceled before they can be executed by anyone" and thus concludes that "[i]n either event, quotes on other exchanges will not be accessible in these moments to institutional investors, which are not seeking to trade in these moments."[110] IEX instead focuses on the prospect that if the D-Limit functionality "gives liquidity providers more incentive to provide displayed liquidity, then any investor seeking to trade in the 99.96% of the day when the CQI is off will have more opportunities to access liquidity on IEX, without the need to buy new low-latency tools."[111]

Some commenters question whether similar order types, if adopted by other exchanges, could collectively result in quote fading or have other negative market-wide effects. One commenter believes that the market-wide impact "may be profound for symbols that are subject to routinely-high levels of price volatility" or "during times of market duress," and that such impact would be "amplified" if other exchanges adopt something similar.[112] Another commenter

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108 See id.

109 See id.

110 See id. at 8.

111 See id. at 7-8.

112 See First Nasdaq Letter, supra note 71, at 3. But see IEX Second Response to Comments, supra note 38 (discussing data from January to April 2020 to show that the CQI does not behave profoundly differently during periods of exceptional price volatility

states that approval of this proposal would "open a Pandora's box, as other exchanges introduce similar order types, leading to more and more liquidity 'fading' in a correlated manner, an effect which could be most pronounced in times of market stress."[113] Likewise, another commenter states that "it is important to consider that most of the liquidity on IEX is 'dark'/non-displayed. . . if one or more exchanges with significant lit liquidity were to offer the same D-Limit Order or similar order types, this functionality would exacerbate the number of inaccessible quotes in the marketplace."[114]

IEX's D-Limit order type, if displayed, would not impair access to IEX's quotation because IEX is not introducing any additional access delay. Further, IEX would only rarely reprice the order in response to a very targeted and specific pre-defined signal that suggests a high potential for latency arbitrage. When the CQI is off, which, as discussed above, is virtually the entire regular trading hours session, a D-Limit order is simply a regular limit order and thus will be as equally accessible as any other limit order on IEX. For the small part of the day when the CQI is on, market participants that are not engaging in latency arbitrage trading strategies are unlikely to be seeking to trade with a D-Limit order precisely when it is in the process of being repriced by IEX because IEX's data shows that latency arbitrage trading (as signaled by the CQI) is very highly concentrated and reactive in nature.[115] Conversely, dozens of commenters that

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and market duress).

113 See Bacidore Letter, supra note 71, at 3.

114 See SIFMA Letter, supra note 96, at 4. See also DLA Piper Letter, supra note 98, at 5; Citadel First Letter, supra note at 31, at 10. To the extent that another exchange seeks to adopt its own speed bump, crumbling quote indicator, and D-Limit order type, the Commission would carefully analyze it and the comments received thereon, and consider whether the new proposal is narrowly tailored to achieve its stated objectives and consistent with the Exchange Act and the rules and regulations thereunder.

115 See, e.g., IEX Second Response to Comments, supra note 38, at 13-14.

represent institutional traders and investors say that they do not trade in this manner and are unable to compete with the small number of firms that purchase the necessary systems, connectivity, and exchange proprietary market data to target their trading to those precise periods when crumbling quotes cause the CQI to turn "on."[116] Exchanges should be able to innovate to address this competitive imbalance in a manner that is consistent with the Exchange Act.

Given how narrowly tailored the CQI is and how infrequently it activates, IEX's D-Limit order type will not result in the average market participant experiencing significant quote fading when trying to take liquidity on IEX, though, as discussed above, it will by design effect speed traders engaging in latency arbitrage. By protecting liquidity providers in a narrowly tailored way, IEX may attract additional liquidity through D-Limit orders, including from new types of market participants, which will promote more displayed liquidity that will be available to all market participants.[117] Therefore, the Commission finds that the D-Limit order type is consistent with Section 6(b)(5) of the Exchange Act in that it is designed to promote just and equitable principles of trade, to remove impediments to and perfect the mechanism of a free and open market and a national market system and, in general, to protect investors and the public interest.

2. Automated Quotes and Rule 611

In general, Rule 611 under Regulation NMS protects the best "automated" quotations of exchanges by obligating other trading centers to honor those "protected" quotations by not executing trades at inferior prices, or "trading through" such best automated quotations.[118] Only

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116 See, e.g., T. Rowe Letter, supra note 59, at 2 (noting that "institutional order 'taking' strategies are driven by a fundamental demand for liquidity and are not intentionally seeking to trade while the CQI is 'on.'").

117 See also supra note 68-70 and accompanying text. See also infra note 138 and accompanying text.

118 See 17 CFR 242.611. "Trading through" refers to the purchase (sale) of NMS stock at a

an exchange that is an "automated trading center" displaying an "automated quotation" is entitled to this protection.[119] Among other things, an "automated quotation" must be immediately and automatically executable.[120]

Several commenters argue that D-Limit orders will not be "automated quotations" under Regulation NMS, and thus they should not be "protected" quotations under Rule 611 of Regulation NMS.[121] They argue that the D-Limit functionality, combined with the IEX speed bump and IEX's ability to bypass it to adjust the price of displayed D-Limit orders when the CQI is on, is inconsistent with the requirements for immediate and automatic execution required for automated quotations to be protected under Rule 611.[122]

Other commenters disagree and argue that D-Limit orders would qualify as protected

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price lower (higher) than the best bid (offer).

119 See 17 CFR 242.600(b)(4) (defining "automated trading center") and 17 CFR 242.600(b)(3) (defining "automated quotation")

120 See 17 CFR 242.600(b)(3).

121 See, e.g., First Nasdaq Letter, supra note 71, at 9; HRT Letter, supra note 92, at 4; SIFMA Letter, supra note 96, at 3; and IMC Letter, supra note 96, at 2.

122 See, e.g., SIFMA Letter, supra note 96, at 3; Citadel First Letter, supra note 31, at 7; DLA Piper Letter, supra note 98, at 4; Letter from Kristen Malinconico, US Chamber of Commerce, Center for Capital Markets Competitiveness, dated April 23, 2020, at 1; Letter from John L. Thornton, Co-Chair, Hal S. Scott, President, and R. Glenn Hubbard, Co-Chair, Committee on Capital Markets Regulation, dated April 23, 2020, at 1-2 ("Committee on Capital Market Regulation Letter"); Bacidore Letter, supra note 71, at 2; First FIA PTG Letter, supra note 86, at 7; HRT Letter, supra note 92, at 4; First Nasdaq Letter, supra note 71, at 10-11. Another commenter argues that "the combination of the 'Discretionary Limit' order type and the IEX speed bump will impair fair and efficient access to IEX displayed quotes, meaning that the intentional access delay can no longer be considered de minimis under the Commission's Automated Quotations Interpretive Guidance in the context of this specific order type. Therefore, displayed quotes using the 'Discretionary Limit' order type will not qualify as 'automated quotations' for purposes of Rule 611." See First FIA PTG Letter, supra note 86, at 6-7. See also HRT Letter, supra note 92, at 2-3; DLA Piper Letter supra note 98, at 4-5.

quotations under Regulation NMS. For example, one commenter notes that the Commission, when it approved IEX's exchange registration, already concluded that IEX is an automated trading center with protected quotations.[123] The commenter asserts that "[t]he introduction of the D-Limit Order does not alter that analysis" and that"[t]here is no delay embedded within D-Limit Orders."[124] The commenter concludes that "D-Limit Orders are no different" and "are as accessible as any other quote."[125]

The Commission previously determined that IEX can maintain a protected quotation when it approved IEX's exchange registration.[126] Because IEX is not introducing any new delay or modifying its speed bump in connection with D-Limit orders, IEX's quote can continue to be an "automated quotation" that is "protected" under Rule 611 even if it contains a D-Limit order.[127]

D. Unfair Discrimination

Section 6(b)(5) of the Exchange Act requires, among other things, that rules of the Exchange may not be designed to permit unfair discrimination between customers, issuers, brokers, or dealers.[128] Several commenters argue that the D-Limit order type will unfairly discriminate against liquidity takers in favor of liquidity providers. One commenter asserts that

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123 See Goldman Sachs Letter, supra note 60, at 2.

124 Id.

125 Id. See also IEX Second Response to Comments, supra note 38, at 10.

126 See Securities Exchange Act Release No 78102, (June 17, 2016), 81 FR 40785, 41162 (June 23, 2016) (File No. S7-03-16). See also Securities Exchange Act Release No. 78102 (June 17, 2016) (File No. S7-03-16) (Commission Interpretation Regarding Automated Quotations Under Regulation NMS). See also 17 CFR 242.600(b)(4) (defining "automated quotations").

127 See also supra Section III.A (discussing the CQI).

128 15 U.S.C. 78f(b)(5).

D-Limit orders are "specifically designed to advantage liquidity providers, and to allow them to avoid unfavorable executions," but "displayed quotations on IEX will be more difficult to access for liquidity takers when the market is moving in their favor" to the extent that IEX's quote is composed of D-Limit orders that get repriced.[129] Another commenter similarly believes that D-Limit orders will unfairly discriminate against liquidity takers, "particularly for orders that are sent to more than one venue for execution, such as intermarket sweep orders," if market participants need to modify their routing practices.[130]

One commenter critiques IEX's argument that the CQI is "on" only for a limited duration by referring to IEX's data that shows "a very significant portion of total trading activity will be affected, as 33.7% of marketable orders are received and 24% of displayed volume is executed during these periods."[131] Similarly, another commenter points to commentary from an IEX officer saying that "[i]n November 2019, just 3 member firms at IEX were responsible for 55% of all the lit taking volume while the [CQI] Signal was 'on,' even though those firms accounted

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129 First FIA PTG Letter, supra note 86, at 4. See also First Nasdaq Letter, supra note 71, at 7; DLA Piper Letter, supra note 98, at 6. Another commenter believes that D-Limit orders will discriminate between fast and slow liquidity takers, and says that liquidity takers that do not engage in latency arbitrage will be forced to protect against financial harm from the D-Limit functionality by building technology to mimic or predict the CQI functionality. See DLA Piper Letter, supra note 98, at 6. The commenter argues that doing so would be "a prohibitively expensive option for many of them and completely impractical if other markets adopted similar rules." Id. As further explained below, the repricing of D-limit orders will be applied only in rare and discrete moments of time when the CQI is triggered, which significantly reduces the possibility of D-Limit being applied to the detriment of liquidity takers not engaged in latency arbitrage strategies. Furthermore, as noted above, several commenters who engage in liquidity-taking trading activity – but do not employ latency arbitrage – state that they have been harmed by latency-arbitrage strategies, and do not believe the CQI will inhibit their ability to access IEX's quote. See supra notes 103-104.

130 Citadel First Letter, supra note 31, at 7-8.

131 Id. at 7.

for only 13% of the total volume on IEX."[132] The commenter asserts that "[b]ased upon such statistics, the Commission should consider whether latency arbitrage on IEX is actually the serious and widespread problem that IEX asserts it to be" and urges the Commission to "consider whether it would be fair for IEX to discriminate against 45% of its lit taking volume to address a perceived problem with only three firms."[133]

Other commenters believe that D-Limit orders will not be unfairly discriminatory. For example, one commenter believes that D-Limit orders will "equally benefit long-term investors, their brokers, and market makers alike" and notes that "[a]ny market participant can use D-Limit, regardless of their sophistication or technological capability, and any speed or information advantage they may or may not have."[134] Another commenter explains that D-Limit will "provide any Member with narrowly targeted protection… but without the need for the Member to have any geographical or informational advantages or its own predictive analytical capabilities."[135] Some commenters suggest that the D-Limit order type will benefit all market

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132 First Nasdaq Letter, supra note 71, at 7.

133 Id. IEX responds by suggesting that the commenter "misread[s]" that data and asserts that "aggressive taking orders while the CQI is on are strongly correlated to latency arbitrage strategies, not just those from the top three takers." IEX First Response to Comments, supra note 7, at 14. As discussed above, the Commission concludes that latency arbitrage is occurring on IEX and it is a problem for liquidity providers on IEX. As further discussed above, the Commission concludes that IEX's D-Limit proposal appropriately balances competition among orders and the interests of long term and short term traders in a manner that meets the needs of long term investors thorough a narrowly tailored order type that will promote liquidity for all market participants.

134 T. Rowe Price Letter, supra note 59, at 2. See also CII Letter, supra note 60, at 2; The London Company Letter, supra note 101, at 2; Joint Letter from 27 Asset Managers, supra note 58, at 2; Vanguard Letter, supra note 65, at 3.

135 Letter from Tyler Gellasch, Executive Director, Healthy Markets Transparency and Trust, dated February 14, 2020, at 7-8 ("Healthy Markets First Letter"). See also Leuchtkafer Letter, supra note 95, at 2-3.

participants in that it has the potential to increase the depth of displayed liquidity and narrow spreads in some stocks,[136] contribute to price discovery,[137] and encourage more market participants, particularly long term investors, to submit displayed liquidity on IEX.[138]

In response to these comments, IEX agrees that the D-Limit order type will benefit liquidity providers "by protecting their orders during discrete moments when latency arbitrage strategies are most aggressive" but argues that such benefit is not unfair because, in turn, liquidity takers will benefit from "an increased supply of liquidity from a more diverse group of participants" and will attract "more stable liquidity that is not driven by sub-millisecond price moves, whether they are 'making' or 'taking' liquidity."[139] IEX emphasizes that the D-Limit order type "is not intended to ensure that trades are profitable" but rather is designed to promote displayed liquidity.[140]

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136 See, e.g., Letter from Thomas M. Merritt, Deputy General Counsel, Virtu Financial, LLC, dated January 16, 2020, at 2; and Letter from Eric Swanson, CEO, XTX Markets LLC (Americas), dated January 17, 2020, at 5.

137 See, e.g., Letter from Peter D. Stutsman, Global Head of Equity Trading, Capital Group, dated March 16, 2020, at 2; Letter from Curtis F. Bradbury, Chief Operating Officer, Stephens Inc., dated February 28, 2020, at 2; and Letter from David Cannizzo, Managing Director, Head of Electronic Trading & Market Structure, and Rich Delayo, Director, Electronic Trading & Market Structure, Raymond James & Associates, Inc., dated February 24, 2020 ("Raymond James Letter"), at 2; Allianz Letter, supra note 59.

138 See, e.g., Joint Letter from 27 Asset Managers, supra note 58; Clearpool Letter, supra note 61, at 2; Themis Letter, supra note 63, at 3; CII Letter, supra note 60, at 4; Zoican Letter, supra note 60, at 2; and Vanguard Letter, supra note 65, at 2.

139 IEX Second Response to Comments, supra note 38, at 20. See also Allianz Letter, supra note 59 (asserting that latency arbitrage "hurts the interests of our clients and the performance of their investments" not just when they post liquidity but also when they take liquidity because they "have to pay more (when buying) or sell for less as there is less displayed liquidity at the best bid and offer prices").

140 IEX Second Response to Comments, supra note 38, at 20. IEX also notes that "there are trade-offs between using D-Limit, as opposed to a pegged or standard limit order, including in cases where a firm's priority is obtaining a faster execution rather than avoiding adverse selection." Id. at 21. Further, IEX asserts that "unlike the 'asymmetric

IEX's proposal identifies a legitimate disadvantage in latency arbitrage, which many market participants say they face when posting displayed liquidity on exchanges. As further explained above, the proposed D-Limit order type (operating in conjunction with the CQI) is designed to operate in a manner that protects investors and the public interest because it is narrowly tailored to address this concern.[141] Additionally, a large number of market participants (including a diverse group of agency brokers, institutional traders, asset managers, and pension funds that collectively manage trillions of dollars' worth of investor assets) commented on this proposal to confirm that aggressive liquidity taking activity during CQI events is of such concern and impact on them, and the investors on whose behalf they invest, that it affects their trading and can dissuade them from posting liquidity.

The Commission has critically reviewed and considered the data and analysis that IEX provides in its submissions to show that non-pegged limit orders on IEX are systematically subjected to adverse impacts of latency arbitrage strategies. IEX has provided extensive information in its filing and the letters it submitted in response to comments. Further, because the CQI formula is codified in IEX's rulebook, it is fully transparent and commenters had the opportunity not only to review IEX's material and critique it, but to submit their own trading data and analysis to the Commission on the existence of latency arbitrage, the effectiveness of the CQI in detecting it, and the efficacy of IEX's discretionary order types in combating it, though no commenter did so.

IEX's receipt of a significant percentage of marketable orders in a short period of time

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advantages' that other exchanges routinely sell today (different connectivity, market data, trading protocols) for millions of dollars, IEX is offering D-Limit to all of its members equally and at no additional cost compared to any other limit order." Id. at 5.

141 See supra Section III.A.

during crumbling quote events negatively affects market participants that post displayed liquidity on IEX. As discussed above, IEX states that though the CQI was, on average, on for only 0.007% of the trading day for each security, IEX received 33.7% of marketable orders and executed 24% of displayed volume during this short time period.[142] Subsequently, during the very volatile period of January to April 2020, IEX reports that the CQI was on between 0.026% (for January 2020) and 0.125% (for March 2020) of the time during regular market hours[143] and the percent of displayed volume that traded when the CQI was "on" during that period ranged between 22% (for March 2020) to 24.4% (for January 2020).[144] The displayed volume figures reflect the fact that relatively little of IEX's overall transaction volume currently involves the execution of displayed orders.[145] The effects of latency arbitrage therefore appear more pronounced for liquidity providers that display interest on IEX. Further, IEX has shown that the CQI performs consistently over calm markets and periods of more volatile trading, so its application to D-Limit orders is well understood.

Based on the Commission's understanding of broker-dealers, as also reflected in the comment letters from institutional traders, most broker-dealers have not purchased the fastest connectivity and market data from multiple individual exchanges that are necessary to be able to trade at the precise moments in time identified by the CQI. In the race to access a "stale" quote,

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142 See id. at 72001-02.

143 See IEX Second Response to Comments, supra note 38, at 16. IEX states that the CQI was "on" longer in March 2020 "because of the extraordinary increase in the number of quote changes per stock in that month." Id. at 17.

144 See id. IEX observes that this proportion remained "remarkably consistent throughout the period" even though the absolute number of trades was much higher in March and April. See id.

145 IEX states in its filing that only 13% of traded volume was from displayed limit orders. See Notice, supra note 3, at 72002.

speed is paramount, and the systems, connectivity, and data needed to achieve the necessary speed to take advantage of the information asymmetries that underlie latency arbitrage are expensive and uncommon among broker-dealers.

The CQI formula, by design, identifies only successively crumbling markets. As shown by the data above, it is not overbroad and does not, for example, turn on in response to intermarket sweeps from large orders that execute simultaneously across multiple markets. Thus, D-Limit orders will not reprice in response to normal market conditions and regular liquidity sweeps, and thus will not harm long-term investors who take liquidity. Rather, the unique crumbling market conditions that the CQI identifies are rare, and can only be recognized and acted on by the most sophisticated broker-dealers whose ability to profit from these moments comes at the expense of the institutional investors who do not or cannot reasonably compete. IEX has proposed an order type to offset the speed advantage that some traders have in a manner that is not overbroad in its application.[146]

Accordingly, the Commission concludes that IEX has identified and quantified a latency arbitrage concern that adversely impacts a diverse set of participants on its exchange, many of which are sophisticated about market structure and have commented on how they have seen first-hand the impact as they trade in the markets on behalf of others, including public investors. In addressing the adverse impacts of latency arbitrage, the Commission acknowledges that D-Limit orders will provide a benefit to liquidity providers but not liquidity takers, and will negatively impact liquidity takers that employ latency arbitrage strategies. For the reasons discussed below, the Commission finds that neither the benefit provided to liquidity providers nor the negative

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146 See supra Section III.A.

effects on liquidity takers employing certain strategies is unfairly discriminatory under the Exchange Act.

IEX has narrowly tailored the functionality of D-Limit orders to address a very specific trading dynamic that takes place during an exceptionally small fraction of the trading day (for any one CQI event and collectively for all CQI events across different types of stocks and under different market conditions). Disparate capabilities with respect to systems, connectivity, and market data between liquidity providers and liquidity takers using latency arbitrage strategies disadvantage the ability of liquidity providers to update potentially stale quotes. While displayed D-Limit orders may impact a large number of marketable orders that seek to access a stale D-Limit quote precisely when IEX is in the process of repricing it, that is the specific harm against which IEX is seeking to protect liquidity providers – the combination of a large number of marketable orders all collectively targeting those infrequently occurring precise moments when disparate access to low-latency systems, connectivity, and data sources favors a few short term traders at the expense of long term traders.[147]

IEX's D-Limit order attempts to address that advantage through a narrowly tailored order type that carries out the liquidity provider's instructions by exercising discretion infrequently to update the D-Limit order's limit price using predetermined, transparent, and rule-based automated standards.[148] Further, IEX will allow all traders to use D-Limit orders on the same

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147 In addition, non-displayed D-Limit orders will not affect liquidity takers that cannot see non-displayed orders and thus would not purposefully and knowingly route to IEX to trade with them.

148 As discussed above, IEX's rules set forth the precise predetermined mathematical formula that IEX uses to determine whether a "crumbling quote" situation exists and the D-Limit order abides by those rules based on system logic in an entirely automated manner. Neither IEX nor the member submitting the order has any actual discretion or ability to exercise individualized judgment when using a D-Limit order. When the CQI

terms and without additional charge to protect their limit orders from targeted latency arbitrage. D-Limit orders consequently have the potential to encourage more types of market participants to post more displayed liquidity on an exchange, and may contribute to price discovery and displayed depth to the benefit of all market participants.

Thus, the proposal is not unfairly discriminatory because it makes available a benefit that any liquidity provider can readily access and provides a narrowly focused protection that is calibrated to impact only the small number of liquidity takers that engage in latency arbitrage in order to incentivize liquidity providers to post orders for the benefit of all market participants. While protecting against latency arbitrage with this order type will affect a large number of marketable orders received in small increments of time, those orders dissuade many liquidity providers from posting limit orders on exchanges. Consequently, D-Limit orders should benefit all market participants by incentivizing more firms to post limit orders and thereby contribute to liquidity that all market participants can access. Finally, as discussed above, D-Limit orders will encourage long term investors to participate in the displayed exchange market by protecting them against one particular strategy employed by short term traders. It is not unfairly discriminatory for an exchange to address that advantage in a narrowly tailored manner that promotes investor protection and the public interest. Accordingly, the Commission concludes that IEX's proposal is not designed to permit unfair discrimination between customers, issuers,

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is off (on average approximately 99% of the regular trading day), a D-Limit order will behave like any other limit order. When the CQI is on, IEX will only reprice the specific side (bid or offer) at issue and will only move the price to a less aggressive price that is only one MPV away (lower for a bid or higher for an offer) from the CQI price and IEX will not provide the user with any optionality to do otherwise. Further, when a D-Limit order reprices, it will receive a new timestamp, and thus will not receive any priority advantage over other orders.

brokers, or dealers.

The Commission is mindful that, in considering the IEX proposal, some commenters compare it to a recent proposal from CboeEDGA to adopt an access delay of up to 4 milliseconds for all liquidity taking orders during which liquidity providers could continue to access their orders without delay.[149] One commenter states that IEX's D-Limit proposal is similar to the CboeEDGA proposal in that liquidity takers would be disadvantaged in favor of liquidity providers, and liquidity providers on the host exchange could be advantaged vis-à-vis liquidity providers on other exchanges that do not offer similar protections.[150] One commenter questions the data provided by both exchanges as to the existence of a problem, its purported impact, or the benefits of the proposed solution.[151] The commenter also questions why IEX is providing a benefit "to sophisticated proprietary trading firms acting as liquidity providers without a corresponding obligation." As noted above, any user will be able to submit D-Limit orders.[152] Two other commenters assert that the concerns raised about the CboeEDGA proposal

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149 See Securities Exchange Act Release No. 88261 (Feb. 21, 2020), 85 FR 11426 (Feb, 27, 2020) (CboeEDGA-2019-012) (order disapproving proposed rule change to introduce a liquidity provider delay mechanism) ("CboeEDGA Order").

150 See First FIA PTG Letter, supra note 86, at 4. See also IMC Letter, supra note 96, at 2 and Letter from Joanna Mallers, Secretary, FIA Principal Traders Group, dated April 23, 2020, at 1 ("Second FIA PTG Letter"). The Commission addresses concerns about competitive disadvantages in the next section.

151 See Citadel First Letter, supra note at 31, at 5-6. The commenter further states that a D-Limit order will "lose much of its value if IEX is alone at the NBBO and therefore routed to first, as the CQI signal will not provide added protection in this situation" and therefore may "not generally be expected to narrow prevailing market-wide spreads." Id. at 6. As the Commission discusses above, D-Limit orders are intended to incentivize investors to display limit orders in general and at any price. Even if D-Limit orders are not used to narrow the best displayed quotes, to the extent they add displayed liquidity at the best displayed quotes liquidity takers would still benefit as they would have access to more liquidity at the best prices.

152 See Citadel First Letter, supra note at 31, at 9. The consideration of benefits provided to

are similar to the concerns that these commenters raise for this proposal, notably the quote fading, unfair discrimination, burden on competition, and narrowly tailored concerns discussed above.[153]

Another commenter notes that, unlike CboeEDGA's proposal, the D-Limit order will not provide market participants with an "option" to change their order but rather will reprice 100% of the time when the CQI triggers, which process is both "transparent and certain."[154]

Another commenter that opposed CboeEDGA's proposal and supports IEX's proposal distinguishes the two proposals by explaining that D-Limit is "non-discriminatory" in that any market participant can use it without "technological investment that is generally outside the reach for most institutional investors and their brokers."[155] The commenter also explains that IEX's proposal is "deterministic and transparent" and presents less of a quote fading concern for institutional investors since the CQI is narrowly tailored.[156]

The two proposals differ substantially.[157] Specifically, IEX, unlike CboeEDGA,

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registered market makers in return for obligations to the market recognizes that market makers are typically afforded special privileges by exchanges, including preferential priority and margin treatment, in return for their undertaking quoting and other obligations. D-Limit orders will be available for use by any market participant and will not entitle the user to any additional benefits.

153 See First Nasdaq Letter, supra note 71, at 11; Citadel First Letter, supra note at 31, at 2. See also HRT Letter, supra note 92, at 3; Committee on Capital Market Regulation Letter, supra note 122, at 2. Cf. SIFMA Letter, supra note 96, at 3.

154 Healthy Markets First Letter, supra note 135, at 2. See also T. Rowe Letter, supra note 59, at 2.

155 T. Rowe Letter, supra note 59, at 2.

156 See id.

157 The CboeEDGA proposal would have broadly imposed a non-tailored access delay constantly and consistently during trading hours to all liquidity taking messages, but liquidity providers would have been able to access their displayed orders (e.g., to change or cancel them) without being subject to the delay.

presented substantial evidence of latency arbitrage occurring on its market and has narrowly tailored D-Limit orders to specifically protect against it. In the CboeEDGA disapproval order, the Commission stated that CboeEDGA did not "provide specific analysis as to why it is appropriate to apply the 4 millisecond delay to all incoming executable orders that would remove liquidity from the EDGA Book from all market participants as opposed to tailoring a response to target the trading of a relatively small number of market participants who engage in latency arbitrage."[158] Second, CboeEDGA did not address the impact on relatively slower liquidity providers, who might be unable to cancel or modify their quotes during the 4 millisecond delay and thus "would continue to face the risk of adverse selection" and would be unable to benefit from the CboeEDGA delay.[159] Finally, CboeEDGA did not "provide[] specific analysis or demonstrate[] that the proposed rule change would not permit unfair discrimination against liquidity taking orders that are not related to latency arbitrage as they would be treated in the same manner as orders engaged in latency arbitrage that the Exchange seeks to target in its effort to protect EDGA liquidity providers."[160]

In contrast, as further explained above, IEX provides data and analysis that demonstrate a harm caused by latency arbitrage strategies employed by liquidity takers with significant technological advantages over liquidity providers and those liquidity takers that do not engage in latency arbitrage trading strategies.[161] Because IEX will reprice all D-Limit orders without further action from the user, all users will benefit equally regardless of their technological

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158 CboeEDGA Order, supra note 149, at 11436.

159 Id. at 11436.

160 Id. at 11435.

161 See supra note 40 and accompanying text and Section II.A.

capabilities and ability to take action within a prescribed period. Likewise, D-Limit orders will be repriced only in rare and discrete moments of time when the CQI is triggered, which would significantly reduce the possibility of D-Limit being applied to the detriment of liquidity takers not engaged in latency arbitrage strategies. Thus, IEX's D-Limit proposal does not raise the same issues as those raised by the CboeEDGA proposal because D-Limit is narrowly tailored to be triggered only at precise and specific moments in time during which resting orders may be exposed specifically to latency arbitrage.[162]

E. Burden on Competition

Finally, the Exchange's proposal is consistent with Section 6(b)(8) of the Exchange Act,[163] which requires that the rules of a national securities exchange not impose any burden on competition that is not necessary or appropriate in furtherance of the purposes of the Exchange Act. Several commenters question whether D-Limit orders will impose a burden on competition that is inconsistent with the Exchange Act.[164] One commenter argues that D-Limit orders "are designed to take advantage of the fact that other market participants are subject to the IEX speed bump when updating prices, whereas D-Limit orders are not."[165] Another commenter claims that the D-Limit order type "advantages liquidity providers on IEX over liquidity providers on other

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162 See also IEX First Response to Comments, supra note 7, at 7-9; Clearpool Letter, supra note 61, at 2-3; and Healthy Markets First Letter, supra note 135 (each contrasting D-Limit with the CboeEDGA proposal).

163 15 U.S.C. 78f(b)(8).

164 See 15 U.S.C. 78f(b)(8) (requiring that the rules of a national securities exchange not impose any burden on competition that is not necessary or appropriate in furtherance of the purposes of the Exchange Act).

165 See HRT Letter, supra note 92, at 3. The commenter stated that "[e]xchanges should not have the ability to make investment pricing decisions such as pricing orders using price predictions" and argues that the resulting "competition will not be on fair terms as exchanges have inherently better access to the matching engine…." Id. at 2.

venues, as IEX liquidity providers can free-ride on the pricing heuristics and risk taking capabilities of others by posting prices equal to the NBBO and relying on IEX to observe away executions and reprice D-Limit orders to frequently avoid unfavorable executions."[166]

Other commenters that support the proposal say it is a narrowly tailored competitive response that facilitates the ability of natural liquidity providers to protect themselves from microsecond liquidity arbitrage, and therefore it furthers competition.[167] For example, one commenter believes that "the D-Limit order type is pro-competitive" because it offers market participants that do not buy the fastest market data "a potential way to mitigate the risk of posting liquidity without participating in a costly high-speed race to minimize latency."[168]

In response to the comments, IEX asserts that "[t]he asymmetry involved in the latency arbitrage strategies that are the focus of D-Limit favors the few participants that can take liquidity using the most sophisticated tools, in contrast to both market makers and brokers acting for investors that provide liquidity by posting displayed quotes."[169] In particular, IEX argues that brokers representing investors "must cope with the latency caused by geographic dispersion of exchanges, the additional latency caused by systems configurations required to comply with regulatory and risk parameters in their capacity as agent, and the need to route orders in different

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166 Citadel First Letter, supra note 31, at 10. See also First FIA PTG Letter, supra note 86, at 4.

167 See, e.g., Allianz Letter, supra note 59. But see Letter from Joan C. Conley, Senior Vice President & Corporate Secretary, Nasdaq, Inc., dated March 26, 2020, at 2 ("Some broker-dealers choose to compete with proprietary trading firms, and purchase data and connectivity products that allow them to do so, while others choose not to do so.").

168 Vanguard Letter, supra note 65, at 3 (further noting that "[o]rganizations that do not pay for data products that provide unparalleled speed advantages are discouraged from posting liquidity on exchanges because they may receive unfavorable executions"). See also Allianz Letter, supra note 59; Raymond James Letter, supra note 137.

169 IEX First Response to Comments, supra note 7, at 3.

ways to meet the needs of their various clients" and, as a result, they are "destined to lose out to firms that can prioritize speed over all other factors."[170] IEX concludes that the resulting "imbalance in market competition between those who provide liquidity, versus those who take it, necessarily reduces the incentives to provide displayed quotes and therefore reduces liquidity available to investors."[171] Further, IEX argues that because every D-Limit order will "be required to specify a limit price, which may or may not be equal to the NBBO," these orders should "contribute meaningfully to price discovery, as commenters have stated."[172]

As discussed at length above, the D-Limit order type is narrowly tailored to accomplish its objectives by mitigating the effects of latency arbitrage for long-term investors while incentivizing more displayed liquidity on the Exchange. Presently, as noted by several commenters with institutional trading experience, many market participants are reluctant to post displayed liquidity because of their prior experience with having that interest be adversely selected by latency arbitrage traders with whom they cannot reasonably compete.[173] To take advantage of their low-latency systems and technology, latency arbitrage traders purchase connectivity and proprietary market data from exchanges, which they utilize to react faster to changing market prices than other market participants. Those other market participants might not be able to afford those same low-latency systems, or purchase high-end connectivity and market data from multiple individual exchanges to protect themselves. The resulting competitive imbalance between latency arbitrage traders and others can make those other market participants

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170 Id.

171 Id.

172 IEX Second Response to Comments, supra note 38, at 21.

173 See supra note 116 and accompanying text.

reluctant to post displayed limit orders on exchanges. The lack of displayed liquidity can, in turn, harm price discovery and lead to greater off-exchange trading, which can negatively impact markets and market participants. Exchanges should be able to innovate to address this competitive imbalance in a manner that is consistent with the Exchange Act.

IEX's proposal seeks to better balance the interests of liquidity providers and long-term investors seeking liquidity with those of short-term investors utilizing latency arbitrage strategies. The D-Limit functionality will help mitigate the effects of latency arbitrage on liquidity providers and, as explained above, will likely lead to more displayed liquidity on the Exchange, which benefits all market participants through additional liquidity and enhanced public price discovery.[174] Further, because it is so narrowly tailored, liquidity takers who are not employing latency arbitrage strategies are unlikely to be seeking to remove a D-Limit order when it is being repriced, and thus D-Limit orders will not impose a burden on liquidity.

Accordingly, the Commission finds that D-Limit orders will not impose any burden on competition that is not necessary or appropriate in furtherance of the purposes of the Exchange Act. The D-Limit order type is IEX's competitive response to mitigate current competitive imbalances between liquidity providers and latency arbitrage liquidity takers. It is designed to encourage market participants to post more priced limit orders, including displayed orders, on IEX, and thereby promotes just and equitable principles of trade, removes impediments to and perfects the mechanism of a free and open market and a national market, and, in general, protects investors and the public interest.

IV. Conclusion

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[174] See supra Section III.A.

IT IS THEREFORE ORDERED, pursuant to Section 19(b)(2) of the Exchange Act,[175] that the proposed rule change (SR-IEX-2019-15) be, and it hereby is, approved.

By the Commission.

Vanessa A. Countryman,

Secretary.

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175 15 U.S.C. 78s(b)(2).