

December 14, 2016

Brent J. Fields, Secretary
Securities and Exchange Commission
100 F Street, NE
Washington DC

Re: Release No. 34-78860; File No. SR-CHX-2016-16; Chicago Stock Exchange, Inc.; Notice of Filing of Proposed Rule Change to Adopt the CHX Liquidity Taking Access Delay

Dear Mr. Fields:

Nothing in the Chicago Stock Exchange's ("CHX") October 28, 2016 response to comments¹ ("CHX Response") on the above noted rule filing ("Filing") should persuade the SEC to approve its new rule. Without apology, CHX has in effect proposed a new category of regulatory subsidies for its market makers. The SEC should turn CHX down.

In my first comment on the Filing I offered three reasons to reject a proposed speed bump:²

The SEC should reject speed bumps implemented in software because of the indeterminacies inherent in software-imposed speed bumps.

The SEC should always reject speed bumps explicitly or implicitly favoring any particular class of participants.

The SEC should always reject speed bumps left to an exchange's discretion to implement or withdraw on a security-by-security basis.

Several other commenters on the Filing made one or more of these points at greater length and with greater distinction.³ Apart from my own criticisms, high frequency market makers, exchanges, academics, and a public interest advocacy group came together to oppose the Filing. The SEC should take a moment to consider how unusual it is for a group like this to combine on the same side of a market structure proposal, and to consider what that implies. I doubt whether even a proposal to roast a cocker spaniel for dinner would have the same effect.⁴

The SEC should reject speed bumps implemented in software because of the indeterminacies inherent in software-imposed speed bumps

In the CHX Response, the exchange writes that the indeterminacies of a software-imposed speed bump already exist and are not materially different from those in CHX's proposed speed bump, and concludes that

¹Letter to Brent J. Fields, Secretary, SEC, from James Ongena, Executive Vice President and General Counsel, CHX, October 28, 2016.

²Letter to Brent J. Fields, Secretary, SEC, from R. T. Leuchtkafer, September 29, 2016 ("Leuchtkafer Letter").

³Letter to Brent J. Fields, Secretary, SEC, from Adam Nunes, Hudson River Trading; letter to Brent J. Fields, Secretary, SEC, from John L. Thorton, Hal S. Scott, R. Glenn Hubbard, Committee on Capital Markets Regulation, October 13, 2016; letter to Brent J. Fields, Secretary, SEC, from Adam C. Cooper, Citadel, October 13, 2016; letter to Brent J. Fields, Secretary, SEC, from Tyler Gellasch, Healthy Markets Association, October 13, 2016; letter to Brent J. Fields, Secretary, SEC, from Elizabeth S. King, New York Stock Exchange, October 14, 2016; and letter to Brent J. Fields, Secretary, SEC, from Eric Swanson, Bats Global Markets, October 25, 2016.

⁴ So, yes, in this line we can figure that Professor Eric Budish, Professor James Angel, Interactive Brokers, and Virtu, all generally supportive of the Filing, might be hungry cat lovers.

"delays and queuing are a function of finite network and processing resources, and consequently exist in every market..."⁵

It's true that finite network and processing resources exist in every market, but there are several important, and gloomy, ways to distinguish the Filing.

Outside of IEX's 350 microsecond delay, I'm unaware of any other exchange rule with a hard time threshold like this. Unlike CHX's proposed delay, IEX's delay simulates a geographic delay by using uninterrupted coils of fiber, so from the time a message enters the coil until the time the message exits the coil, so long as the known laws of physics continue to apply, the coil will impose a 350 microsecond delay in every case, wholly independent of front- or back-end congestion. There may well be congestion in front of the coil or behind the coil, but the coil itself will only ever impose a 350 microsecond delay, which is precisely what IEX's rules dictate.

Even if this were not the case, and for some reason IEX's coil introduced delays longer than 350 microseconds, that delay would apply universally to every message sent down the coil to its market. No one will get an advantage on IEX if there's a delay. IEX doesn't sort inbound messages into or away from a speed bumping software queue based on the state of its book or the market, states which might be stale when an inbound message is examined, all depending on how these functions are designed and implemented. The more logic an exchange imposes on its speed bump, the deeper a speed bump is embedded within an exchange system, the more opportunities there are for delays and queuing to result as a "function of finite network and processing resources" (or even software bugs). We don't have any technical specifications for the Filing, so we can't assess just how many new opportunities there are for these delays, but it's obvious there could be many more opportunities than however few - or none at all - there might be in sending a message down a simple coil of fiber.

So far as I know, when exchange networks today experience delays and queuing, for the most part every similarly situated message on its way to an exchange matching engine suffers equally regardless of whether the affected order is marketable or not. Depending on technical implementation details for the Filing, it may well be that there are one or more ways in which *only* the messages for aggressively priced orders under the Filing suffer delays and queuing while messages for non-marketable or resting orders speed along, giving CHX's market makers an even bigger time advantage than 350 microseconds. We don't have any details on how - or whether - CHX will even monitor for these conditions, and if it will monitor for them what steps CHX will take to fix a problem or how quickly, and what notice and compensation, if any, it will give participants incorrectly denied an execution.

For all these reasons any exchange proposal for a speed bump implemented in software should, at minimum, see the strictest regulatory and technical scrutiny, should include detailed implementation specifications, should outline precisely how and when the exchange will surveil its speed bump and remediate and notice any failure, and the SEC should always encourage the exchange to solve its problems through universally applied hardware-based speed bumps or other means, if at all possible.⁶ It's true that

⁵CHX Response, page 15.

⁶For example, CHX might solve its perceived problem by moving servers to New Jersey, or it could move servers into CME's facilities. Software-based solutions that might be more palatable could include Professor Larry Harris's proposal to impose a small, varying speed bump on all messages, or even only on messages to and from CME facilities. In its comment on the filing (letter to Brent J. Fields, Secretary, SEC, from Steve Crutchfield, Head of Market Structure, Chicago Trading Company, November 1, 2016) ("CTC Letter") Chicago Trading Company ("CTC") suggested that CHX might mitigate objections to software-based speed bumps by requiring participants to send post-only orders to one gateway and all other orders to another, the latter featuring a coil long enough for a 350 microsecond delay (CTC Letter at page 4). Though it's more appealing than CHX's proposal, by its very nature this idea

"delays and queuing ... exist in every market" but that's no reason for an exchange to add even more ways its systems can queue and delay, especially when asymmetric queuing and delays will only benefit an already privileged class of market participants.

The SEC should always reject speed bumps explicitly or implicitly favoring any particular class of participants.

As I wrote in my first comment on the Filing, CHX's speed bump will only benefit market participants who subscribe to CME's data feeds and have the capital and sophistication to use them. Retail investors like Mrs. Betty Johanssen of Red Lake, Minnesota, will never benefit; most institutions will never benefit. Other commenters have written about the Filing's asymmetric speed bump and how, because it is asymmetric, the Filing is discriminatory and could enable backing away, SIP quote revenue gaming, or other problems in favoring one class of participants over another. In the CHX Response, CHX disputes that the Filing is unfairly discriminatory:

The Exchange submits that, regardless of whether a delay is symmetric (e.g., IEX Delay) or asymmetric (e.g., LTAD), any intentional delay must discriminate between liquidity providing and liquidity taking orders in order to address latency arbitrage. That is, while the IEX Delay delays all incoming orders, the IEX Delay is asymmetric in that it provides processing advantages to non-displayed pegged orders resting on the IEX book over all other orders, including all liquidity taking orders. LTAD would similarly address latency arbitrage by giving all liquidity providing orders a processing advantage over all liquidity taking orders which, as described above, is necessary to offset a market structure bias currently exploited by latency arbitrageurs.⁷

First, and simplest, as CHX points out, the IEX delay enables IEX - and only IEX - to update prices on undisplayed orders in the hope of defeating latency arbitrage against them; these benefits flow to everyone using IEX, fast or slow, rich or poor. On the other hand, while in theory the Filing gives an advantage to any participant with resting, displayed orders, obviously only someone who can take advantage of a 350 microsecond head-start to reprice an order can use it. CHX must overcome the objection that its Filing gives a disproportionate advantage to these kinds of participants and their displayed orders, and it hasn't done it here. Instead, CHX has been very clear that its main goal is to protect its market makers from adverse selection. The means it proposes here is, *de facto*, to give them a new regulatory subsidy gussied up in the language of investor protection, but without asking any more from them for this novel privilege.

Market makers already get lots of regulatory subsidies. There's only one policy reason to justify these privileges. Regulatory subsidies like rule exemptions, favorable capital requirements over other market participants, favorable pricing, exclusive order types, and more, compensate them for adverse selection. If market makers never suffered from adverse selection they wouldn't be entitled to any of them. Instead, to encourage market makers to maintain two-sided quotes in all market conditions, regulators hand out subsidies. The theory is that whatever market makers lose to adverse selection is offset by all the regulatory handouts they fill their pockets with. The Filing's novelty is that it compensates market makers for adverse

still treats marketable and non-marketable orders differently, and any disruption handling marketable orders will give even greater time advantages to the select group of participants leveraging the speed bump. To police this gateway divide, presumably CHX will need to check inbound messages to enforce compliance, with lots of chances for delays and bugs. And even if CHX can overcome objections by using a solution like this, it should divulge extensive technical implementation details for public scrutiny. As we know, in the recent past some exchanges have divulged implementation details only to their dearest participants, and in this case especially every microsecond will count.

⁷CHX Response, page 8.

selection by helping them avoid it altogether, an appalling policy change that flipflops any justification for their special status and privileges. As a public policy matter the government can't subsidize middlemen to provide orderly markets in difficult conditions and then approve a fast lane to run away from them.

Several commenters noted the Filing enables backing away or a last look, and though it's hard to see how it does within the most rigid definitions of these practices, in spirit these commenters are absolutely right. In volatile markets, as futures prices on the CME oscillate, CHX market makers can use their speed bump to cancel and requote and cancel and requote forever, or to completely withdraw, making a joke of their role to, well, make markets. The effect of that would be exacerbate volatility, the opposite of what market maker privileges are intended to do; yes, market makers could quote tighter spreads, except when markets need them the most. This should sound familiar to anyone who's rolled out of bed since the May 6, 2010 flash crash. As the Joint CFTC-SEC Advisory Committee on Emerging Regulatory Issues concluded in its report on that event, "even in the absence of extraordinary market events, limit order books can quickly empty and prices can crash simply due to the speed and numbers of orders flowing into the market and due to the ability to instantly cancel orders." And CHX wants to give these participants a new regulatory subsidy that makes all this easier?

CHX writes its new speed bump regulatory subsidy "will only have a material impact on those liquidity taking orders submitted as part of a latency arbitrage strategy," but this is plainly untrue. The speed bump doesn't only affect latency arbitrage strategies. The speed bump could have a material effect on any marketable order. CHX doesn't limit its use to the specific circumstances it's worried about, to the 350 microseconds after futures prices on the CME have changed, and CHX doesn't propose to surveil its market to make sure participants only update their orders in those moments. Instead, any order for any reason from any source could miss a fill when that order is speed bumped while CHX's market makers are not. Even assuming the best intentions and the best behavior on the part of CHX's market makers, and assuming a rigorous compliance program, relevant CME futures prices change many millions of times a day⁸, so there is likely no time during the trading day when a market maker couldn't point at a CME futures change as the reason for updating or withdrawing its quote. Contrary to CHX's view of it, every marketable order sent to CHX could be discriminated against, all day long, even only by coincidence.

If the SEC leans to approval, the SEC should ask CHX to get much, much more from its market makers. CTC makes a version of this argument.⁹ Interactive Brokers seconds CTC.¹⁰ The devil's in the details, but the public should at least earn a toll from the fast lane, from the wholly new regulatory subsidy CHX proposes, a toll that should buttress rather than flipflop public policy.¹¹ But if the SEC is somehow persuaded by CHX's arguments, at the very least CHX must limit the number of times in a row a market maker can bypass the speed bump without an execution, or must find other ways to cap this extraordinary new privilege.

⁸Relevant futures prices include equity index and sector products, interest rate products, f/x products, and metals, energy, and whatever else might startle CHX's market makers.

⁹CTC Letter, page 6.

¹⁰Letter to Brent J. Fields, Secretary, SEC, from Boris Ilyevsky, Director, Interactive Brokers, November 7, 2016.

¹¹For example, market makers could be asked for much stronger affirmative obligations or could be restrained with negative obligations, or both; there could be a limit to how many times in a row a market maker could cancel and requote in less than 350 microseconds from its last quote; a market maker could "earn" a limited number of head-starts only after it's been adversely selected; etc.

The SEC should always reject speed bumps left to an exchange's discretion to implement or withdraw on a security-by-security basis.

To CHX's credit, it now notes its Filing could enable intra-exchange latency arbitrage if CHX speed bumps some instruments but doesn't speed bump correlated instruments. CHX has offered to pilot a speed bump on every instrument traded on the exchange if the SEC wants CHX to run a pilot.¹² The best way for CHX to underscore that offer is to rewrite its Filing so its speed bump is all-or-none, that is, if it implements a speed bump on any instrument it must speed bump all instruments traded on CHX.

But we need to open this principle up. Not only does a speed bump enable intra-exchange latency arbitrage if it's not all-or-none at an exchange, it might enable inter-exchange latency arbitrage among affiliated exchanges within an exchange group if any one exchange of the group has a speed bump and any one of the others doesn't. In a dystopia of gameable speed bumps, anyone can imagine a speed bump just long enough to advantage firms at one or more of a group's exchanges while it discriminates against another of its exchanges or against other exchange groups. This isn't a worry with CHX, but it could be for other exchanges. In fact, it's easy enough to imagine an exchange group creating a new exchange or buying a struggling exchange just for this purpose.

Empire

With the SEC's encouragement, in the last 15 years U.S. stock exchanges transformed their markets from dealer-driven books to order-driven books. The whole point was to eliminate time and place, information, and regulatory asymmetries that gave privileged intermediaries fat advantages over other market participants. That empire has different names and faces today, but it strikes back nonetheless, arguing for favorable treatment against unruly latency arbitrageurs, real or imagined. The Filing is an unrestricted and undeserved regulatory subsidy the empire can and will use whenever and however it likes. Please say no.

Sincerely,

R. T. Leuchtkafer

¹²CHX Response, pages 15-16. See also Leuchtkafer Letter, which raised the concern.