August 23, 2019

Vanessa Countryman, Secretary
Securities and Exchange Commission
100 F Street NE
Washington DC

Re: Release 34-86168; File Number SR-CboeEDGA-2019-012; Cboe EDGA Exchange, Inc.; Notice of Filing of a Proposed Rule Change to Introduce a Liquidity Provider Protection on EDGA ("Filing")

Dear Ms. Countryman:

Thank you for the chance to once again comment on the Filing. I'd like to take this chance to discuss points raised in comment letters from a couple of the Filing's proponents.

XTX letters

I'm much more in agreement with what Eric Swanson wrote in 2016[1] ("Bats Swanson") about discriminatory speed bumps than I am with what he wrote in 2019[2] ("XTX Swanson") about them. Bats Swanson was an official of the exchange group that owned EDGA before that group was acquired by Cboe. At the time he expressed considerable skepticism about the Chicago Stock Exchange's ("CHX") proposal for a 350 microsecond speed bump,[3] the first proposal for a discriminatory speed bump in U.S. equity markets floated after IEX's universal speed bump approval. On the other hand, as a proprietary trading firm official, XTX Swanson seems quite bullish about Cboe EDGA's proposal for a similar discriminatory speed bump, a speed bump with an advantage more than 10 times greater than CHX's. Instead of responding to XTX's comment letters myself, let's see what Bats Swanson had to say:

XTX Swanson:

> There will be no illusion of liquidity for end users trading on EDGA: What they see is what they will continue to get.[4]

Bats Swanson:

> Bats is concerned that any benefit of that additional delay in the form of tighter displayed spreads and larger displayed size may in fact prove illusory by providing the liquidity provider time to adjust its displayed quotation.[5]

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[1] Letter from Eric Swanson, EVP, General Counsel and Secretary, BATS Global Markets, to Brent J. Fields, Secretary, SEC, October 25, 2016 ("Bats Swanson Letter"). At the time, of course, Bats owned EDGA.
[2] Letter from Eric Swanson, CEO, XTX Markets LLC (Americas) to Vanessa Countryman, Secretary, SEC, July 17, 2019 ("XTX Swanson Letter 1") and letter from Eric Swanson, CEO, XTX Markets LLC (Americas) to Vanessa Countryman, Secretary, SEC, July 31, 2019 ("XTX Swanson Letter 2").
[3] "Notice of Filing of Proposed Rule Change to Adopt the CHX Liquidity Taking Access Delay"; Release 34-78860, File SR-CHX-2016-16 ("CHX Filing").
[4] XTX Swanson Letter 1, page 8.
[5] Bats Swanson Letter, page 2.

XTX Swanson:

> As a principle it is entirely reasonable to aim for simplicity, but this must be considered alongside the benefits of innovation to long-term investors. Moreover, it is worth noting that as part of its LP2 proposal, EDGA has proposed "to eliminate, or adjust the operation of, certain rarely used order types and instructions that could increase System complexity if offered alongside the proposed delay mechanism." Accordingly, EDGA as part of its LP2 proposal is taking steps to reduce the complexity of its market.[6]

Bats Swanson:

> CHX's proposed LTAD [speed bump] is the first of what will likely be a series of complex order types and/or delay mechanisms following the IEX approval that merit important Commission consideration. Bats urges the Commission to proactively set forth clear standards for exchanges and other market participants with regard to LTAD and access delays and to not address issues potentially raised by such order types on a one-off basis through SRO rule filings.[7]

XTX Swanson:

> It should be extremely rare for an institutional investor, who by its nature is not engaging in latency arbitrage, to send a single order at the exact moment that an external market microstructure event is occurring that would cause that liquidity provider to update its quote.[8]

Bats Swanson:

> Bats believes LTAD raises the following important question under the Firm Quote Rule: at what point is an order to buy or sell a subject security "presented" to the responsible broker or dealer, requiring it to execute that order against its displayed quotation? Is it the time the incoming order is received by the exchange displaying the quotation, or at some later time? If it is not the former, given the immediacy of exchange interactions when orders reach an exchange, it is difficult to understand the interplay between the Firm Quote Rule and automated trading. And if it is the former, any interpretative guidance that would permit the responsible broker-dealer to fade its quote after an order has arrived at the exchange would seem to violate the policy goals of the Firm Quote Rule. It appears the Commission would need to answer this important question should it approve CHX's proposed rule change.[9]

XTX Swanson:

> XTX Markets acknowledges, however, that there is a scenario in which institutional

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[6] XTX Swanson Letter 1, page 6.
[7] Bats Swanson Letter, page 1.
[8] XTX Swanson Letter 2, page 3.
[9] Bats Swanson Letter, page 2.

> investors could see a decline in fill rates, but that scenario simply highlights a difference in how institutional investors should trade EDGA and what to avoid. Specifically, today institutional investors will frequently send an order to sweep the top of book liquidity across multiple exchanges. This strategy may not be an effective way to access EDGA liquidity, unless the orders are staged into the marketplace to account for EDGA's deterministic 4 millisecond delay (routing first to EDGA, waiting for the LP2 delay, and then routing to the other exchanges)....So, while accessing liquidity on EDGA under LP2 may require a different approach, evidence suggests that market participants can adapt their routing strategies and enjoy higher fill rates.[10]

Bats Swanson:

> Bats is concerned that should the Commission address this Firm Quote Rule issue and continue to address issues raised by complex order types and delay mechanisms on an ad hoc basis through SRO rule filings, that the resulting narrowly focused piecemeal interpretations of the provisions of Regulation NMS will cause confusion about what is and is not permissible and further serve to unnecessarily complicate market structure.[11]

XTX Swanson:

> As noted above, XTX Markets supports EDGA' s LP2 proposal. XTX Markets believes it is consistent with the Act and, when implemented, will enable liquidity providers to narrow spreads and display larger sizes for the benefit of end investors.[12]

Bats Swanson:

> ...Bats requests that if the Commission ultimately approves this proposal, it does so on a pilot basis to enable the Commission and market participants to study any changes in and its impact on market quality. For example, it is important that such a pilot demonstrates that any improved, tighter spreads and/or depth of liquidity are just as accessible (as measured by similar fill rates) as other non-delayed quotes/access of competing exchanges. In other words, the CHX pilot must result in not only tighter and larger *quotes*, but in better priced (and larger) *trades*. Any pilot data must support that the benefits of improved market quality for investors must outweigh any newly imposed frustrations for liquidity takers (who are often acting as agents for client orders) or any other negative externalities for the broader national market. Bats believes such a study could better inform the Commission and others allowing them to comprehensively assess the value of such delay mechanisms and their place in today's market structure.[13]

XTX Swanson:

> As previously stated, XTX Markets supports EDGA's LP2 proposal and believes it brings an important innovation to the U.S. equity marketplace that will enable liquidity providers to narrow spreads and display larger sizes for the benefit of end investors.[14]

[10] XTX Swanson Letter 2, pages 3-4.
[11] Bats Swanson Letter, page 2.
[12] XTX Swanson Letter 1, page 10.
[13] Bats Swanson Letter, pages 2-3.
[14] XTX Swanson Letter 2, page 9.

Bats Swanson:

> Finally, we caution the Commission when considering this proposal and future access delay proposals. These proposals are artificially determining winners and losers in the never ending battle of informational time and place advantages. It truly is a zero-sum game: those that gain a speed advantage to the detriment of others will also gain a profit advantage to the detriment of others. The Commission must choose the winners wisely and understand the cost to the losers.[15]

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The real action

Let's interrupt here for some thoughts. The idea that institutional investors might want to change their sweep strategies and stage their orders "into the marketplace to account for EDGA's deterministic 4 millisecond delay (routing first to EDGA, waiting for the LP2 delay, and then routing to the other exchanges)" is troubling. It seems even a proponent of the Filing understands that Cboe EDGA liquidity providers will use the speed bump to cancel their orders on Cboe EDGA when they see trades - their own or someone else's - on other *equities* exchanges. I argued this was the "real action" in my earlier comment on the Filing.[16] Of course, the signals will go both ways. That is, Cboe EDGA participants will look for suspected sweeps-in-flight on the other equities markets and cancel, and, if asset managers actually follow this advice and route to Cboe EDGA first, the other equities markets will look to Cboe EDGA for suspected sweeps-in-flight and cancel. No doubt they do today, but that's no reason to try and incent asset managers to improve the quality of Cboe EDGA's signal.

This is what the SEC has allowed market makers to do, post more liquidity on exchanges than they're prepared to trade at once, and then cancel as quickly as they can if more than they intend might trade. Here's what the industry has said about it:[17]

@ on cancel rates: if I quote on 8 exchanges and get hit on one, I will update 16 prices. That is main reason for high cnl rates

12:00 PM - 30 Jan 2014

@ problem with fragments mkts is that market makers offer more liquidity than they're prepared to trade in one go.

11:35 AM - 14 Nov 2014

Typically, the industry's justification for the practice is that there's new information in the market and they have every right to adjust their quotes to account for it. In the past I've argued that this practice is spoofing:[18]

> So what is the "new information" these HFT firms use to justify their business models? It's simply that one of their displayed orders has traded. Their argument seems to be that yes, of course, they have *bona fide* orders on all the exchanges they fully intend to trade,

[15] Bats Swanson Letter, page 3.

[16] Letter from R. T. Leuchtkafer to Vanessa Countryman, Secretary, SEC, July 12, 2019, page 12 ("Leuchtkafer 1").

[17] At the time of these tweets Remco Lenterman was a senior executive of IMC and the chairman of the FIA European Principal Traders Association.

[18] Defined as "bidding or offering with the intent to cancel the bid or offer before execution" in Dodd-Frank.

> but whenever someone takes any of that liquidity they're [so] *shocked* by the fact someone wants to take their displayed price and size they must speed to cancel their remaining orders. Of course it's completely predictable, and presumably desirable, someone will take their liquidity - that's why it's displayed in the first place, to attract a contra - so it's not clear at all what's new about the "new information" they receive when they trade at a price they say they're willing to trade at. It is, after all, something they presumably intend to happen, something they advertise to have happen, something they make money from, something they hope a contra will do, something at the heart of their business model. It is the very core of what a *bona fide* order is supposed to be - you want it to trade. But when it happens it is apparently so surprising they must fly to cancel their outstanding quotes?[19]

Those two tweets were from some years ago. Here's something more recent:

We can all admire Dutch frankness.

Another troubling aspect to me is the suggestion the Filing will *reduce* market complexity because Cboe EDGA will eliminate some order types if the Filing is approved.[20] The opposite is likely true. If institutional investors have to start staging their orders in the marketplace to account for discriminatory speed bumps, if the quote fade game is canonized, if the SEC gives its imprimatur to it, navigating the market will become considerably more frustrating and complex than it is today for institutional investors. That's already happened in Canada - more on that in a bit.

As for the XTX Swanson Letter 2 argument against my concern that the Filing will increase market volatility,[21] once again let's see what Bats Swanson wrote. Bats Swanson wrote "[the speed bump] also has the potential to instead distort the market view of available liquidity if such liquidity proves to be ephemeral" and worried about "negative externalities for the broader national market,"[22] externalities which would presumably include increased volatility as a direct consequence of ephemeral liquidity.

Research

XTX Swanson Letter 2 concludes by citing[23] a Bank of Canada study[24] on Canada's own discriminatory speed bump exchange. That study found "no evidence that this [speed bump and inverted fee model] impacted market-wide measures of trading costs or contributed appreciably to segmenting retail order flow away from other Canadian venues with a maker-taker fee structure,"[25] a counterpoint to an earlier

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[19] See letter from R. T. Leuchtkafer to Brent J. Fields, Secretary, SEC, December 14, 2015, page 4 ("Leuchtkafer 2"), available at http://www.sec.gov/comments/sr-bats-2015-101/bats2015101-1.pdf.
[20] XTX Swanson Letter 1, page 6.
[21] XTX Swanson Letter 2, page 7.
[22] Bats Swanson Letter, pages 2-3.
[23] XTX Swanson Letter 2, pages 8-9.
[24] Anderson, Andrews, Devani, Mueller, Walton, "Speed Segmentation on Exchanges: Competition for Slow Flow," Bank of Canada Staff Working Paper 2018-3, January, 2018 ("Anderson").
[25] Anderson, page ii.

academic paper that found significant negative market wide effects to it.[26] In reviewing these two papers, Ontario Securities Commission staff[27] observed that the research differed and reported that the staff were "unable to conclude that the [speed bump and inverted fee structure] have negatively impacted market quality such that regulatory changes need to be made."[28] Separately, OSC staff also surveyed market participants and found that "the key takeaway from the responses is that the introduction of the [speed bump and inverted fee structure] has added complexity into routing decisions."[29]

I won't try to reconcile how those two earnest research efforts came to different conclusions. The Bank of Canada paper speculates it might be because that paper used more robust data.[30] It's also possible, at least in part, that it's because the two efforts covered different timeframes: the Bank of Canada paper covered about five months from July 2015 through most of December 2015 (excluding a one month period around the speed bumped exchange's implementation) while the academic paper covered the year from March 2015 until March 2016. There were differences in volatility in their respective sample periods, particularly in the post-implementation data. As I understand it, the Bank of Canada's post-implementation data covered the period from October 15, 2015 through December 24, 2015, during which the VIXC varied from 17 to 23, while the academic paper's post-implementation period ranged from September 21, 2015 through March 21, 2016, during which the VIXC varied from 17 to 30.[31] The studies aren't blind to volatility but higher volatility might have changed behavior in some meaningful way. There are also methodological differences.

What is clear is that the research is not settled. As a coda, the academic study examined quote fade behavior and found that "low-latency liquidity providers ... use the delay-exempt limit orders to 'fade away' from incoming market orders, i.e. cancel their orders ... after observing executions on other venues"[32] while OSC staff observed the Bank of Canada study did not examine quote fading because quote fading was what the exchange was explicitly designed to allow.[33] We can all admire Canadian frankness.

Red Lake

One final point about XTX Swanson Letter 2. It notes that "And today, two-thirds of the passive liquidity on EDGA is from agency brokers on behalf of their *investor customers* [emphasis added], not professional liquidity providers" and references a recent blog post on Cboe's web site.[34] That's not the way I read the posting. The blog post says "On our EDGA Equities Exchange – one of the industry's leading inverted markets – two-thirds of volume on the make side is attributed to agency brokers." I assume all those agency make side orders are the "investor customers" referenced in XTX Swanson Letter 2. As we know, though, proprietary trading firms often enough send orders via third party firms for a variety of reasons, including to leverage a third party's exchange volume discounts, or to leverage their technological sophistication, or just to avoid registering with small, marginal exchanges. To the Cboe EDGA executing broker those are agency orders, but they don't represent investor customers like Mrs. Betty Johanssen of Red Lake, Minnesota. Cboe EDGA might have addressed this matter in its Filing with statistics about its resting orders but it didn't. It did say however that "market makers ['professional liquidity providers'] are the most likely to benefit" from its proposal. Perhaps the Consolidated Audit Trail will arrive in time to explore the question.

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[26] Chen, Foley, Goldstein, Ruf, "The Value of a Millisecond: Harnessing Information in Fast, Fragmented Markets," November, 2017 ("Chen"), discussed in Leuchtkafer 1.
[27] Ontario Securities Commission Staff Notice 21-712 ("OSC Notice")..
[28] OSC Notice, page 5.
[29] OSC Notice, page 4.
[30] Anderson, pages 13-14.
[31] Weekly closing values.
[32] Chen, page 3.
[33] OSC Notice, page 3.
[34] XTX Swanson Letter 2, page 2.

CTC letter

CTC outlined several well-expressed concerns both in its comments on the Filing[35] and on the CHX Filing before it.[36] My understanding on these points is because of my impression that unlike many proprietary trading firms CTC adds persistent liquidity to markets by carrying considerable risk overnight, that as a large options market maker it surely suffers from marketplace snipers, and that it must bear costs and effort to avoid those snipers. Those costs go into the pricing of its persistent liquidity and are an unproductive tax on it.

The bulk of CTC's most recent letter discusses the harm done to market makers by the speed arms race in today's markets, particularly the harm done to registered market makers. But we must recognize that several of those market makers - and historically quite a few of them - are little more than gussied up versions of the snipers CTC justifiably complains about. The snipers, in fact, may be just another algorithm within the same holding company that's making markets through other algorithms in the holding company, with packs of former OCIE and Trading and Markets lawyers on hand to steer the firm through questions over just how much directional trading the firm can do, where, and on what timeframes, and not jeopardize its market maker standing and already valuable regulatory subsidies and privileges (subsidies and privileges designed solely to compensate market makers for adverse selection, of course). A discriminatory speed bump won't remove a deadweight loss, it's one more lucrative subsidy to the very firms that might pick CTC off today. Those firms won't use their new subsidy to give better prices on persistent liquidity. Those firms will use any new subsidy just to improve margins on the fleeting and all too often inaccessible liquidity they offer.

The life

The speed arms race was accelerated by market makers "offer[ing] more liquidity than they're prepared to trade in one go." That behavior launched the arms race as much as any other, when all kinds of participants discovered they had to invest in speed if they wanted to increase their rapidly diminishing probability of trading with displayed liquidity. The Filing is a play for the time and place advantages that got squeezed when everyone else wised up.[37] We should turn it down. This is the life they've chosen.

Sincerely,

R. T. Leuchtkafer

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[35] Letter from Stephen Crutchfield, Head of Market Structure, CTC, LLC, to Vanessa Countryman, Secretary, SEC, July 15, 2019.
[36] Letter from Stephen Crutchfield, Head of Market Structure, CTC, LLC, to Brent J. Fields, Secretary, SEC, November 1, 2016.
[37] As one example of how everyone else wised up, Chris Concannon, at the time the President and COO of Cboe Global Markets, commented in 2018 that "Flash Boys" had been a significant catalyst of direct feed sales because routing brokers (among others) realized they needed to have them.