Ms. Vanessa A. Countryman   January 20, 2020
U.S. Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549-1090

Re: Release No. 87814; File No. SR-IEX-2019-15 (December 20, 2019)

Dear Ms. Countryman,

Thank you for the opportunity to comment on the IEX's rule change proposal to add a new Discretionary Limit ("D-Limit") order type. I am an Assistant Professor at the University of Toronto Mississauga and the Rotman School of Management in Toronto, and my research agenda focuses on the optimal structure and design of securities exchanges.

I encourage the SEC to approve the IEX proposed rule change. The new D-Limit order type is aimed to shield resting limit orders against latency arbitrage. Broadly defined, latency arbitrage is a trading strategy by which high-frequency traders exploit their speed advantage to "pick off" resting orders before an anticipated change in the national best bid and offer quotations ("NBBO"). 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.[1]

It is important, I believe, that financial exchanges should actively innovate in the market design space to eliminate this type of negative trading externalities. The D-Limit order is, in my opinion, an important step towards reducing the impact of latency arbitrage. The main innovation of the D-Limit order over a "speed bump" (i.e., a short delay on trading messages which was also proposed as a solution to latency arbitrage) is that the D-Limit requires no proactive action on the side of the liquidity providers. Consequently,

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[1]See, for example, (1) Shkilko, Andriy, and Konstantin Sokolov, 2019, *Every Cloud Has a Silver Lining: Fast Trading, Microwave Connectivity and Trading Costs*, conditionally accepted at the Journal of Finance, https://ssrn.com/abstract=2848562 and (2) Menkveld, Albert J., and Marius Zoican, 2017, *Need for Speed? Exchange Latency and Liquidity*, Review of Financial Studies 30 (2017), 1188–1228.

the D-Limit is particularly valuable to "slow", non-HFT investors, who do not have access to low-latency trading technology.

Expected effect of D-Limit orders. Currently, slow (non-HFT) investors are very unlikely to update any "stale" quotes before being picked off by fast latency arbitrageurs. Therefore, non-HFT investors might be discouraged to provide liquidity in the first place. I expect the D-Limit order to reduce the information asymmetry costs for slow traders by scaling down their exposure to latency arbitrage risk. Consequently, I expect the D-Limit order to increase the slow investors' appetite for liquidity provision, resulting in tighter bid-ask spreads and deeper order books.

One potential concern regarding the D-Limit order is that it might lead to "fading liquidity," a phenomenon where limit orders are re-priced to a less aggressive level exactly at those times when liquidity demand is at its peak. "Fading liquidity" generates uncertainty for investors regarding the price at which their order can be executed. One should, however, benchmark the expected outcome of introducing D-Limit orders against the appropriate counterfactual. In the absence of the D-Limit order, investors who stand to lose from latency arbitrage are likely to provide less liquidity to begin with, if any. The D-Limit order, would improve liquidity in "normal" times (i.e., when the risk of latency arbitrage is low and the Crumbling Quote Indicator is off), while not necessarily harming liquidity if the risk of latency arbitrage is high.

Economies of scale and efficient market infrastructures. One compelling argument in favor of the IEX's proposal is that the D-Limit order generates economies of scale by offering a "democratic," out-of-the-box HFT toolbox without the costly initial investment associated with entering the low-latency space.

The D-Limit order allows traders to separate high-frequency trading *strategies* from high-frequency trading *infrastructure*. Traditionally, securities exchanges "bundle" the two elements together, which imposes a substantial entry cost on investors. To protect their quotes against latency arbitrage, traders need to invest in technology, particularly to purchase a high-speed data connection with the exchange (co-location). The D-Limit order "un-bundles" HFT algorithms from HFT-specific hardware: it implements high-frequency trading algorithms using a single infrastructure (the exchange's) and by-passes the requirement for each trader to purchase co-location services individually.

My research with Professor Michael Brolley suggests that "unbundling" trading infrastructure from trading strategies could eliminate a negative externality of low-latency trading, that is, the build-up of idle capacity.[2] On the one hand, latency arbitrage activity tends to cluster in very short intervals, equivalent to a few seconds for a given stock in a trading day. Professor Albert Menkveld documents in a recent paper that 20% of trades cluster in sub-millisecond intervals.[3] On the other hand, high-frequency traders typically purchase co-location services for months ahead. We estimate that as much as 90% of the high-throughput exchange infrastructure is idle for 90% of the typical trading day. While idle, the rented computer processing capacity is excluded from alternative productive uses. The D-Limit order, which allows traders to use a set of HFT algorithms without committing to costly technology investments, is a welcome first step towards a more parsimonious exchange infrastructure that eliminates such built-in redundancies.

To sum up: I believe, based on my research results and the body of academic literature, that the D-Limit order will have a positive direct impact on market quality and has the potential to become a standard to eliminate redundant infrastructure in the exchange system. Therefore, I encourage the Commission to move forward on the rule change.

Sincerely yours,

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[2]Brolley, Michael, and Marius Zoican, 2019, *Liquid Speed: On-Demand Fast Trading at Distributed Exchanges*, https://ssrn.com/abstract=3377346.

[3]Menkveld, Albert J, 2018, *High-Frequency Trading as Viewed through an Electron Microscope*, Financial Analysts Journal l74, 24–31.