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March 21, 2016

Mr. Brent J. Fields, Secretary
U.S. Securities and Exchange Commission
100 F Street, N.E.
Washington, D.C. 20549-1090

Re: Notice of Proposed Commission Interpretation Regarding Automated Quotations Under Regulation NMS (Release No. 34-77407; File No. S7-03-16)

Dear Mr. Fields:

This is in response to your request for public comment on the following proposed interpretation of the order protection rule:

Specifically, the Commission preliminarily believes that, in the current market, delays of less than a millisecond in quotation response times may be at a *de minimis* level that would not impair a market participant's ability to access a quote, consistent with the goals of Rule 611... permitting the quotations of trading centers with very small response time delays, such as those proposed by IEX, to be treated as automated quotations, and thereby benefit from trade-through protection under Rule 611, could encourage innovative ways to address market structure issues.

Accordingly, the Commission today is proposing to interpret "immediate" when determining whether a trading center maintains an "automated quotation" for purposes of Rule 611 of Regulation NMS to include response time delays at trading centers that are *de minimis*, whether intentional or not.

I am in complete agreement with the claim that this interpretation "could encourage innovative ways to address market structure issues." In fact, that is precisely what IEX

is proposing. I also fully endorse the views expressed in two comment letters by RT Leuchtkafer, both cited in your notice, that if an intentional delay of this magnitude is considered to be a violation of Regulation NMS, then the permissibility of the current system of co-location services, differential access speeds, and proprietary data feeds would need to be reexamined.

However, when considering whether or not delays—intentional or otherwise—violate Regulation NMS, I would urge you to take into account not just the length of the delay but also its *purpose*.

In my own comment letter, I argued that the design proposed by IEX moves us closer to the national market system envisaged by Congress, by making it more difficult for orders to trade out of sequence (measured with respect to *first contact* with the market). In contrast, many of the delays and differential access speeds that exist under current market structures are explicitly designed to *facilitate* trading out of sequence. They make it *easier* for some firms to trade based on information from an order that has been partially filled but not yet fully processed. As a result, liquidity that was readily available when the initial order made contact with the market vanishes before it can be fully accessed. To my mind this violates the spirit if not the letter of the Exchange Act.

I believe that the SEC is permitted, if not explicitly required, to consider the broader implications for markets and the economy of its regulations and actions. In the remainder of this letter, I'd like to discuss some of these implications, with particular focus on the balance between different trading strategies and trader types.

There is an extremely diverse set of participants in the secondary market for stocks, with significant differences in goals, investment horizons, and trading strategies. It is useful to group these into three broad categories: (a) long-term investors, who save during peak earning years and liquidate assets to finance consumption during retirement (b) information traders, who seek to profit from deviations between prices and their private estimates of fundamental values, and (c) high-frequency traders, who combine a market-making function with arbitrage and short-term speculation based on rapid responses to incoming market data.

There is clearly a lot of overlap between these categories. For instance, actively managed mutual funds and some hedge funds belong to the second category but often manage money for long-term investors, pension funds, or university endowments.

The traditional market making function involves the placement of passive orders that provide liquidity to the rest of the market. Such passive order placement is subject to *adverse selection*: if a posted offer to buy or sell is met by an information trader the

market maker will suffer losses on average. In order for a market making strategy to be profitable, these losses have to be matched by gains elsewhere. Where do these gains come from?

In standard models of market-making, the bid-ask spread is determined by a balance between losses from transactions with information traders and gains from transactions against those with price-insensitive demands.¹ But this is not the balance that exists in markets today. Instead, high-frequency traders combine passive liquidity provision with aggressive liquidity-taking strategies based on the near instantaneous receipt, processing, and reaction to market data. The posting of bids and offers is motivated less by profiting from the spread than by fishing for information, which can then be used to take and quickly reverse directional positions. The relative weights on passive liquidity provision and aggressive short-term speculation varies considerably across firms, but there is evidence that the most aggressive and profitable among these are able to effectively forecast price movements over very short horizons.²

A transition to a truly national market system will affect the competitive balance between information traders and high-frequency traders. It is in the interests of the former to prevent information leakage so that they can build large positions with limited immediate price impact. It is in the interest of the latter to extract this information from market data and trade on it before it has been fully incorporated into prices. Other things equal, the ability to extract information from a partially filled order and trade ahead of it at other exchanges benefits high-frequency traders at the expense of information traders. A truly national market system would mitigate this advantage.

This means, of course, that the high-frequency traders would be more vulnerable to adverse selection and would place a lower volume of passive orders to begin with. But the orders would be genuinely available, and not subject to widespread cancellation or poaching if one of them were to trade. Visible bid-ask spreads may widen but there would be no illusion of liquidity.

The shift in competitive balance between these trading strategies would have broader economic effects. The returns to investment in fundamental information would rise

¹ See, especially, Albert Kyle, Continuous auctions and insider trading, *Econometrica* (1985) and Lawrence Glosten and Paul Milgrom. Bid, ask and transaction prices in a specialist market with heterogeneously informed traders, *Journal of Financial Economics* (1985).

² Much of this evidence comes from the S&P E-mini futures market, for which transactions level data has been examined. See, for instance, Matthew Baron, Jonathan Brogaard, Björn Hagströmer, and Andrei Kirilenko, Risk and return in high-frequency trading, Available at SSRN: <http://ssrn.com/abstract=2433118> (2016).

relative to the returns to investment in speed, which should result in greater share price accuracy.³ Furthermore, there is a real possibility that the aggregate costs of financial intermediation would decline, as expenditures on colocation, rapid data processing and transmission, equipment, energy, and programming talent are scaled back. This would be a desirable outcome from the perspective of long-term investors. After all:

It is the iron law of the markets, the undefiable rules of arithmetic:
Gross return in the market, less the costs of financial intermediation,
equals the net return actually delivered to market participants.⁴

Finally, extreme volatility events should occur less often. Algorithms making short-term price forecasts may predict well on average but they will sometimes mistake a random fluctuation for a large order imbalance. Such false positives can give rise to a hot potato effect, of the kind that is believed to have been in play during the flash crash.⁵ Of course such events can occur even in the absence of market fragmentation, and cannot be prevented entirely, but a transition to a true national market system should mitigate their amplitude and frequency.

For these reasons and more, approval of the IEX application would be a modest but meaningful step in the right direction, and entirely consistent with the broader mandate of the Commission.

Sincerely,



Rajiv Sethi
Professor of Economics
Barnard College, Columbia University

³ Merritt Fox, Lawrence Glosten, and Gabriel Rauterberg, *The New Stock Market: Sense and Nonsense*, *Duke Law Journal* (2015).

⁴ John C. Bogle, "Value" Strategies, *The Wall Street Journal*, February 9, 2007.

⁵ See Andrei Kirilenko, Albert Kyle, Mehrdad Samadi, and Tugkan Tuzun, *The flash crash: The impact of high frequency trading on an electronic market*. Available at SSRN 1686004 (2014), and SEC, *Findings regarding the market events of May 6, 2010, Report of the Staffs of the CFTC and SEC to the Joint Advisory Committee on Emerging Regulatory Issues* (2010).