MEMORANDUM

TO: File No. S7-02-10

FROM: Neil Lombardo
Office of Commissioner Luis A. Aguilar

DATE: October 15, 2015

SUBJECT: Meeting with Representatives of RBC and Certain Large Institutional Investors

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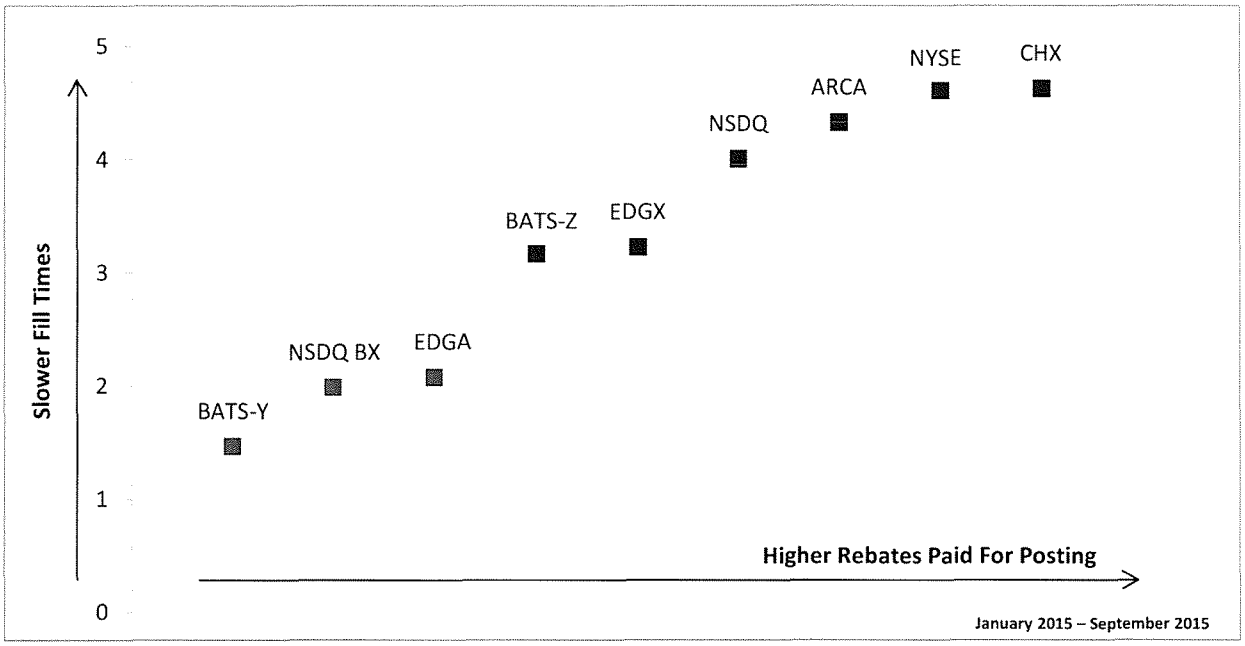
On Wednesday, October 14, 2015, Giles Cohen and Neil Lombardo, counsel to Commissioner Aguilar, met with representatives of RBC and certain large institutional investors. The discussion included, among other topics, equity market structure. RBC provided a copy of the results of a study regarding the effects of the maker-taker pricing scheme on the quality of order execution. A copy of that study is attached.

The Effects of Rebates and Fees on Order Routing (2015)



Introduction:

We set out to determine if there was a consistent sequence in the routing pattern of liquidity-seeking orders. Our study looked at passive, displayed orders which were posted at the same price on 5 or more exchanges simultaneously. The results show that the maker-taker pricing model has a significant impact on the sequence of receiving a passive execution from each exchange.

Analysis:

This study looked at passive orders placed simultaneously on multiple U.S. exchanges. Specifically, this study looked at orders which were initially posted at 5 or more exchanges at the same price. The universe of stocks studied was approximately 5,000 symbols. The results in the chart above show with a 99% confidence level which rank each exchange achieved. For example, when posting orders on at least 5 exchanges simultaneously, Nasdaq BX was the 2nd exchange from which we received an execution, while Nasdaq was the 4th exchange and Bats Y was the 1st exchange overall.

Conclusion:

We conclude that -- for passive, displayed orders which were posted at the same price on five or more exchanges simultaneously -- there is a correlation between the speed with which orders are filled and the amount of rebates paid (or, in the case of inverted exchanges, the amount of fees charged) to liquidity "makers". Specifically, orders are generally filled faster on exchanges where rebates paid are lower (or, in the case of inverted exchanges, where makers are charged a fee to *provide* liquidity). The data suggests queue times are longer at venues where rebates are higher, hence resulting in slower fill

times. The data further suggests at a minimum that the correlation between rebates paid to (or, in the case of inverted exchanges, fees charged to) liquidity makers should be further studied. One approach to further studying this correlation would be to prohibit, for a 6-month period, the payment of rebates for trading a random sample of 50 of the 100 most traded stocks on any venue where those stocks are traded. [1]

Data Acknowledgements:

Sample Set: RBC US Equities Platform from January 2015 – September 2015
US symbols only
15 million shares executed
Initial posting wave only, queue changes not included, posting at 5+ venues minimum

Add / Take Schedule

Tier 1 / Tape A Pricing

1 mil= $0.0001

Exchange	Post *	Take **
BATS-Y	**18**	**-15**
NASDAQ BX	**16**	**-17**
EDGA	**5**	**-2**
NYSE	-22	27
NASDAQ PSX	-28	28
NYSE MKT	-16	28
BATS-Z	-20	30
NYSE ARCA	-31	30
NASDAQ	-29.5	30
EDGX	-20	29
CHX	-20	30

as of 10/1/2015

[1] Support for such a study, or one similar to it, has been voiced by a number of market participants and government officials, including RBC, NYSE, SEC Commissioner Luis Aguilar, SEC Commissioner Kara Stein, U.S. Rep. Stephen Lynch (D-MA) (H.R. 1216, "The Maker-Taker Conflict of Interest Reform Act")