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December 22, 2014

Mr. Brent J. Fields, Secretary
Securities and Exchange Commission
100 F Street NE
Washington, DC 20549-1090
Re: "Plan to Implement a Tick Size Pilot Program"

Dear Mr. Fields:

As academic researchers on financial market microstructure, we appreciate the opportunity to comment on the proposed pilot program to widen the quoting and trading increments for certain small capitalization stocks (Tick Size Pilot hereafter). We understand that proponents to increase tick size argue that larger tick size increases market-making revenue and supports sell-side equity research and, eventually, increases the number of IPOs. Economic theories suggest that constrained prices should facilitate non-price competition, but we doubt that non-price competition would take the form of competing on providing the best research or more IPOs. I understand that both tick size and IPO have decreased since 1990, but their correlation does not imply causality. Currently, I have never seen any empirical results that demonstrate the causality of tick size on IPO based on clean identification strategy. Two of our recent papers, however, suggest two potential effects of widening tick size. First, it will encourage liquidity provision from high frequency traders (HFT). Second, it will encourage competition for maker-taker fee across different trading venues and market fragmentation.

Summary of Our Two Papers

Our empirical design is based on the cross-sectional variations in relative tick size. The uniform one-cent tick size implies that the relative tick size, or one-cent divided by the nominal price, is higher for low priced securities. Our paper "Tick Size Constraints, High-Frequency Trading, and Liquidity" find that stocks with large relative tick size attract HFT liquidity provision. The economic mechanism is as follows. 1) A large relative tick size hinders price competition of liquidity providers by imposing high cost on establishing price priority, thus it can force liquidity providers, who would have differentiated themselves by quoting at difference prices under a small relative tick size, to quote the same price. 2) A large relative tick size can

encourage speed competition of liquidity providers to establishing time priority, as the precedence of execution for limit orders at the same price is determined by their time of submission. To establish the causality from relative tick size to the liquidity provision by HFT, we use splits/reverse splits of ETFs as exogenous shocks to the relative tick size. An ETF that experiences a split witnesses a decrease in liquidity, at the same time, an increase HFT liquidity provision, compared with paired ETF that tracks the same index but does not experience split/reverse split events. Reverse splits, on the other hand, reduce HFT liquidity provision but increase liquidity.

The other paper “Two-Sided Markets, Make-Take Fees and Competition between Stock Exchanges” shows that tick size leads to complex make-take fee games among stock exchanges. The economic intuition is as follows. The minimum price variation prohibits liquidity providers and demanders from negotiating price increments of less than a tick size. The make-take fees set by the exchanges, however, are not subject to the tick size regulation. The nature of the fee game reflects competition between exchanges for orders based on proposing sub-penny prices for makers and takers. We expect that an increase in tick size would generate more intense competition for make-take fees. Particularly, an increase in tick size would potentially increase the market share of the taker/maker market, or the market that charges liquidity providers and subsidizes liquidity demanders.

Policy Implications

Our research generates the following policy implications:

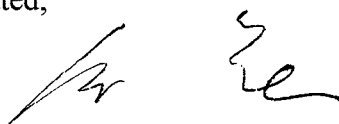
1. The U.S. market structure has already been very complex and interrelated, and many policy proposals should not be evaluated in isolation. Besides the policy debate on tick size, we also see independent policy debate on HFT and make-take fee. However, we need to be aware these policy issues are related, and the change in one dimension may affect the other.
2. Current policy debates on tick size, HFT and make-take fee focus on whether additional regulation is required. Sometimes, *deregulation* can be a solution. We argue that we should consider *decreasing* tick size for low priced liquid stocks. At the minimum, the first step towards further regulations is to evaluate current policies.
3. According to spirit of point 2, we suggest SEC consider a pilot program that *decreases* tick size for low-priced liquid stocks.
4. Make-take fee setting by stock exchange effectively changes the tick size, and we have heard that NASDAQ is considering implementing a pilot program for make-take fee. We

believe it would be beneficial for SEC and NASDAQ to coordinate these two pilots to create overlaps for the sample of stocks.

5. The economically meaningful tick size is relative tick size, but not the nominal tick size. Therefore, we need to consider the possibility that some firms in the pilot group will reverse split their stocks to undo a larger nominal tick size. At this point, it is hard to predict the extent of such reverse splits. On one hand, previous empirical evidence suggests that firms do not actively manage their relative tick size. For example, the tick size in NYSE changed from \$1/8 to 1 cent, but we have not seen the nominal share price fall by a factor of 12.5. However, these changes in tick size applied to all stocks. It is hard to predict the outcome when a firm knows that it has been treated relative to its peers. We should definitely consider the possibility of reverse splits in the design of the pilot.

We attach our two papers on tick size to these comments. Please feel free to contact Mao Ye at maoye@illinois.edu, Chen Yao at Chen.Yao@wbs.ac.uk or Yong Chao at yong.chao@louisville.edu if you have any questions.

Respectfully submitted,



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Attachments

Paper 1: Tick Size Constraints, High-Frequency Trading, and Liquidity

Chen Yao: University of Warwick

Mao Ye: University of Illinois, Urbana-Champaign

Paper 2: Two-Sided Markets, Make-Take Fees and Competition between Stock Exchanges

Yong Chao: University of Louisville

Chen Yao: University of Warwick

Mao Ye: University of Illinois, Urbana-Champaign