December 19, 2014

Mr. Brent J. Fields, Secretary
Securities and Exchange Commission
100 F Street NE
Washington, DC 20549-1090

VIA ELECTRONIC MAIL: rule-comments@sec.gov

Re: "Plan to Implement a Tick Size Pilot Program"

Dear Mr. Fields:

The Committee on Capital Markets Regulation (the "**Committee**") is grateful for the opportunity to comment on the Proposed National Market System Plan to Implement a Tick Size Pilot Program (the "**Proposed Plan**").[1] The Proposed Plan expands trading and quoting tick sizes for certain pilot securities in order to determine whether an expansion would enhance market liquidity.[2]

Founded in 2006, the Committee is dedicated to enhancing the competitiveness of U.S. capital markets and ensuring the stability of the U.S. financial system. Our membership includes thirty-seven leaders drawn from the finance, investment, business, law, accounting, and academic communities. The Committee is chaired jointly by R. Glenn Hubbard (Dean, Columbia Business School) and John L. Thornton (Chairman, The Brookings Institution) and directed by Hal S. Scott (Nomura Professor and Director of the Program on International Financial Systems, Harvard Law School). The Committee is an independent and nonpartisan 501(c)(3) research organization, financed by contributions from individuals, foundations, and corporations.

The Proposed Plan was filed by a group of self-regulatory organizations ("**SROs**") pursuant to a Commission Order[3] directing the group to jointly develop a pilot program that would widen the quoting and trading increments for certain small capitalization stocks.[4] Impetus for the pilot was provided by extensive public debate,[5] by

[1] Proposed National Market System Plan To Implement a Tick Size Pilot Program on a One-Year Pilot Basis, 79 Fed. Reg. 66,423 (Nov. 7, 2014).
[2] *Id.* at 66,423.
[3] Sec. & Exch. Comm'n. *Order Directing the Exchanges and the Financial Industry Regulatory Authority To Submit a Tick Size Pilot Plan* 1 *available at* http://www.sec.gov/rules/other/2014/34-7246-/pdf.
[4] Proposed National Market System Plan To Implement a Tick Size Pilot Program on a One-Year Pilot Basis, 79 Fed. Reg. 66,423 (Nov. 7, 2014).
[5] *See, e.g.* Equity Capital Formation Task Force, *From the On-Ramp to the Freeway: Refueling Job Creating and Growth by Reconnecting Investors with Small-Cap Companies* 1, 19, *available at* http://www.equitycapitalformationtaskforce.com/files/ECF%20From%20the%20On-Ramp%20to%20the%20Freeway%20vF.pdf.

the Jumpstart Our Business Startups Act,[6] and by the Duffy-Carney Bill.[7] A primary goal of the program is the production of data that will "assist the Commission in studying and assessing the impact of increment conventions on liquidity and trading of stocks of small capitalization companies."[8]

The Proposed Plan identifies a universe of Pilot Securities using market capitalization, volume, and price criteria.[9] The plan randomly assigns Pilot Securities into three test groups and one control group in order to test the effect of tick size expansion on liquidity. Pilot Securities in the control group are allowed to trade in the one-penny increments currently permitted under Rule 612.[10] Each test group contains 400 securities.[11] Pilot Securities in test group one are to be quoted in $0.05 minimum increments, but can be traded in $.01 increments.[12] Pilot Securities in test group two are to be quoted in $0.05 minimum increments and cannot be traded in other increments, with few exceptions.[13] Finally, Pilot Securities in test group three must meet the same requirements as test group two, while also being subject to a trade-at prohibition.[14] The trade-at rule generally prohibits a trading center from using undisplayed orders to match an exchange's best bid or offer, and from executing a quotation displayed on an exchange anywhere but that exchange.[15] This has the effect of requiring securities in test group three to be traded primarily on exchanges.

The Committee has four major concerns with the Proposed Plan. First, we are concerned that the universe of Pilot Securities includes a number of highly liquid stocks, to the exclusion of illiquid small-cap stocks that are the pilot program's intended beneficiaries. Second, we believe that the one-year test period may be too short to produce a useful data set.[16] Trading and routing algorithms implemented at the outset of the pilot are unlikely to take full advantage of the new quoting regime. Market participants will need time to refine their strategies in light of data that emerges from the program. If limited to a one-year period, this data will also be skewed by market conditions that do not represent the long-term trends that are highly relevant to spreads and liquidity (e.g. volatility). We also believe that the objectives of the pilot and its measures of success should be clearly delineated. The pilot was initially intended to

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[6] 15 U.S.C. §78(k)-1(c)(6).
[7] H.R. 3448 "Small Cap Liquidity Reform Act of 2014."
[8] Proposed National Market System Plan To Implement a Tick Size Pilot Program on a One-Year Pilot Basis, 79 Fed. Reg. 66,423 (Nov. 7, 2014).
[9] *Id.* at 66,423-66,424.
[10] Proposed National Market System Plan To Implement a Tick Size Pilot Program on a One-Year Pilot Basis, 79 Fed. Reg. 66,423, 66,424 (Nov. 7, 2014); 17 CFR 242.612.
[11] *Id.*
[12] Proposed National Market System Plan To Implement a Tick Size Pilot Program on a One-Year Pilot Basis, 79 Fed. Reg. 66,423, 66,424-66,425 (Nov. 7, 2014).
[13] *Id.* Exceptions are limited to trades executed at the NBBO midpoint, certain retail orders, and certain negotiated trades.
[14] *Id.*
[15] *Id.* at 66,425-66,427, 66,431.
[16] Some members of the Committee do not agree that the duration of the pilot should be extended, due to their underlying skepticism about the rationale for the pilot itself.

promote IPO's in small cap stocks, but the Proposed Plan does not include a measure to evaluate success along this dimension.

Finally, we are concerned that the structure of the trade-at prohibition would significantly increase market complexity and dramatically reduce trading in Pilot Securities assigned to test group three. Limited trading will decrease Pilot Security liquidity and negatively impact the quality of pilot program data. Moreover, we are concerned that the trade-at prohibition authored by the SROs greatly expands the scope of the pilot contemplated in the Commission Order. This expansion will undermine competition between trading venues by channeling order flow to exchanges. More generally, the inclusion of a trade-at prohibition without also addressing related issues like exchange access fees and backup systems could harm investors and increase the likelihood of extreme adverse market events.

Security Selection Criteria do not Identify Illiquid Stocks

The Proposed Plan identifies Pilot Securities as the set of NMS common stocks with a market capitalization of $5 billion or less, a daily volume of one million shares or less, and a share price of at least $2.00.[17] The volume and market capitalization thresholds capture, respectively, more than 79% and 82% of common stocks listed on NYSE, NYSE MKT, NYSE Arca, and NASDAQ with a share price of at least $2.00.[18] The market capitalization threshold is high enough to reach several S&P 500 index constituents.[19] Many eligible securities already quote at spreads wider than $.05.[20]

A recent Commission staff paper suggests that the volume, price, and capitalization criteria are only indirectly related to a stock's liquidity.[21] We agree, and also believe that daily turnover[22] is a valuable measure of a stock's liquidity which is

[17] Criteria for inclusion are more involved, but share the same idea. A measurement period is fixed, and stocks are included if they have: (1) a market capitalization of $5 billion or less at the end of the measurement period, (2) a closing price of $2.00 or more at the end of the measurement period, (3) a closing price greater than $1.50 each day during the measurement period, and (4) a measurement period VWAP of at least $2.00. Proposed National Market System Plan To Implement a Tick Size Pilot Program on a One-Year Pilot Basis, 79 Fed. Reg. 66,423, 66,423-66,424 (Nov. 7, 2014).

[18] Staff analysis based on CRSP database entries with share code eleven, a date stamp in December 2013, and a time-weighted average price of at least $2.00. For the remainder of this document, "**all stocks**" will refer to this CRSP sample.

[19] Proposed National Market System Plan To Implement a Tick Size Pilot Program on a One-Year Pilot Basis, 79 Fed. Reg. 66,423, 66,423-66,424 (Nov. 7, 2014).

[20] Sec. & Exch. Comm'n, *A Characterization of Market Quality for Small Capitalization U.S. Equities* 1 *available at* http://www.sec.gov/marketstructure/research/small_cap_liquidity.pdf.

[21] *Id.*

[22] Daily turnover is the fraction of a stock's market capitalization that is traded in a day. Our confidence in turnover as a valuable liquidity measure is rooted in academic literature that finds a negative relationship between turnover and liquidity costs, and a negative relationship between turnover and bid-ask spreads. *See, e.g.* Yakov Amihud & Haim Mendelson, *Asset Pricing and the*

overlooked by the Proposed Plan. We are concerned that the high market capitalization threshold produces a set of pilot securities with too few low-turnover stocks and too many high-turnover stocks.

By using blunt volume and capitalization thresholds, the Pilot Program inadvertently incorporates a number of highly liquid stocks. This is particularly true of stocks with a capitalization above \$750 million. Roughly one-third of Pilot Securities with a capitalization above \$750 million have a daily turnover in the top one-third of all stocks.[23] Figure 1 documents a qualitative shift in Pilot Security liquidity near the \$750 million capitalization threshold. Nearly 60% of stocks added beyond this point have above-average liquidity. In addition, more than 60% of stocks with a capitalization above \$750 million are S&P 1000 constituents.[24] Many of these stocks are actively traded by index-tracking mutual and exchange-traded funds.[25]

Figure 1: Fraction of Pilot Securities with Above-Average Turnover[26]

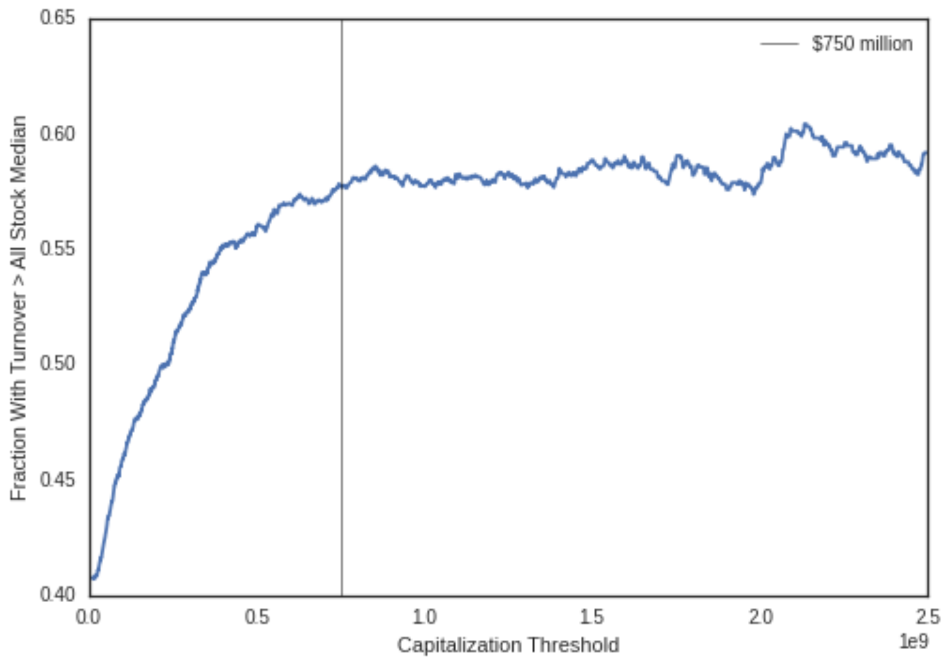

Figure 1 shows the fraction of pilot securities whose daily turnover exceeds the median daily turnover for all stocks. The curve is generated by examining subsets of pilot securities with an increasingly large lower bound on market capitalization.

Bid-Ask Spread, 17 Journal of Financial Economics 223 (1986). Allen Atkins & Edward Dyl, *Transaction Costs and Holding Periods for Common Stocks*, 52 Journal of Finance 309 (1997).

[23] We identify 2558 securities that meet the eligibility requirements for inclusion in the pilot program. 938 of the 2558 (36.7%) have a capitalization above \$750 million, while 311 of those have a turnover in the top third of all stocks.

[24] 749 potential pilot securities are in the S&P 1000, 570 of which have a capitalization above \$750 million.

[25] For example, State Street's SPDR S&P 600 Small Cap ETF (SLY) tracks the S&P 600, while its SPDR S&P Midcap 400 (MDY) tracks the S&P 400.

[26] *See supra* notes 16-17.

We believe the pilot program should be narrowly tailored to identify illiquid small-cap stocks that are most likely to benefit from wider tick sizes. Owing to the program's limited size, the inclusion of highly liquid stocks necessarily requires the exclusion of illiquid small-cap stocks that are its intended beneficiaries. This can be avoided by capping Pilot Security market capitalization at $750 million and excluding stocks with a daily turnover in the top third of all stocks. A $750 million capitalization threshold is consistent with both the Duffy-Carney bill[27] and the Equity Capital Formation Task Force's recommendations to the Treasury Department.[28]

Duration of the Pilot

A one-year test period will not produce a dataset that can reliably determine whether the program has been a success or a failure. Current industry practice has evolved in response to changing market conditions, often involving statistical analysis of long historical records under a diverse set of market conditions. It will take longer than one year for market participants to adapt to the new quoting regime. Under Basel III, banks that utilize internal models to compute collateral haircuts are *required* to evaluate at least one year of continuous historical data.[29] Prudent equity market participants will need at least as much data to optimize their routing and trading practices. Dominated by suboptimal practices, data from a one-year pilot will not reflect the long-term benefits of increased quote size for illiquid small-cap stocks. Results may also be distorted by market conditions that do not accurately reflect long-term trends. For example, the natural bid-ask spread depends on market volatility, which fluctuates over time. Accordingly, we believe the pilot program should be extended by one to two years.

Adverse Consequences of the Trade-at Prohibition

A. Expansive Scope of the Prohibition

In its 2010 Concept Release on Equity Market Structure, the Commission introduced the idea of a trade-at prohibition as a mechanism to control undisplayed liquidity and encourage public price discovery.[30] At that time, the Commission acknowledged that a trade-at prohibition would produce a complex interaction with existing trade-through rules.[31] When investors are forced to trade on-exchange, they are

[27]H.R. 3448 "Small Cap Liquidity Reform Act of 2014" affects companies with gross annual revenues below $750 million. Market capitalization to revenue ratios generally fluctuate in a narrow band around 1.0. *See* Sean O'Hara & Vincent Lowry, *How Market-cap-to-revenue Makes a Difference,* MarketWatch (Jul. 1, 2009).

[28]Equity Capital Formation Task Force, *From the On-Ramp to the Freeway: Refueling Job Creating and Growth by Reconnecting Investors with Small-Cap Companies* 1, 19, *available at* http://www.equitycapitalformationtaskforce.com/files/ECF%20From%20the%20On-Ramp%20to%20the%20Freeway%20vF.pdf.

[29] Regulatory Capital rules, 78 Fed. Reg. 55,340 (Sept. 10, 2013).

[30] Sec. and Exch. Comm'n, *Concept Release on Equity Market Structure* 1, 70-71 (2010), *available at* http://www.sec.gov/rules/concept/2010/34-61358.pdf.

[31] *Id.*

also required to pay the exchange access fees that are currently regulated by Rule 610(c). The Commission's Concept Release identified this close relationship between trade-at and exchange access fees.[32] The trade-at prohibition fashioned by the SRO's in the Proposed Plan is significantly more complex and broader in scope than any Commission publication to date.

Both the Concept Release and the Commission Order contemplate a trade-at rule that would "prohibit [a] trading center from executing a trade at the price of the NBBO unless the trading center was displaying that price at the time it received the contra-side order."[33] The Proposed Plan is broader along two dimensions. First, the Proposed Plan extends the trade-at prohibition to quotes other than the NBBO.[34] We are concerned that protecting less competitive prices will undermine price competition and increase complexity. Second, the Proposed Plan introduces a new size restriction that prohibits a trading center that is displaying the NBBO from executing any undisplayed volume, without first executing against all publicly displayed liquidity at that price.[35]

The second expansion reduces the control investors have over their orders, exposing them to heightened signaling risk and market impact.[36] Investors may currently oversize orders, expecting to execute against undisplayed liquidity at their preferred market center. Under the Proposed Plan, these investors will be exposed to the risk that a market center re-routes their orders to multiple venues before executing against undisplayed liquidity. If a large investor is forced to simultaneously execute against the BBO at multiple venues, he is exposed to significant signaling risk and market impact. Investors without extensive knowledge of the *non-public* details about exchanges' smart order routing algorithms may be unable to defend themselves from this effect, and may therefore elect to avoid trade-at affected stocks.[37] The enormous cost and complexity of modifying routing algorithms to address these risks may dissuade investors from trading pilot securities.

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[32] *Id.*

[33] Sec. and Exch. Comm'n, *Concept Release on Equity Market Structure* 1, 70-71 (2010), *available at* http://www.sec.gov/rules/concept/2010/34-61358.pdf.; Sec. & Exch. Comm'n, *Order Directing the Exchanges and the Financial Industry Regulatory Authority To Submit a Tick Size Pilot Plan* 1, 22 *available at* http://www.sec.gov/rules/other/2014/34-7246-/pdf.

[34] "Participants will adopt rules prohibiting trading centers operated by Participants and members of Participants from executing a sell order for a Pilot Security at the price of a protected bid or from executing a buy order for a Pilot Security at the price of a protected offer . . .." Proposed National Market System Plan To Implement a Tick Size Pilot Program on a One-Year Pilot Basis, 79 Fed. Reg. 66,423, 66,426 (Nov. 7, 2014).

[35] "Trading centers will be permitted to execute an order for a Pilot Security at a price equal to a protected bid or protected offer under the following circumstances: (1) The order is executed by a trading center that is displaying a quotation… at a price equal to the traded-at protected quotation *but only up to the trading center's full displayed size*." *Id.* (Emphasis added).

[36] Some institutional investors delegate routing decisions to their brokers, while others operate their own systems. The crucial parameters of a routing algorithm are "what, where, when, how much," and are tuned to minimize market impact and information leakage. CFA Institute, *Dark Pools, Internalization, and Equity Market Quality* 1, 21-22 (2012).

[37] Gary Stone, *The SEC is Listening – The Tick Size Pilot,* Bloomberg Tradebook (2014).

B. Complexity of Trade-at Will Adversely Affect Pilot Security Liquidity, the Quality of Program Data, and Market Stability.

We are concerned that the complexity of complying with the trade-at rule would dissuade market participants from trading trade-at affected Pilot Securities. To comply with the trade-at prohibition, market participants must significantly alter their trading systems and general operations.[38] This includes buy-side firms who operate their own order-routing systems and sell-side firms who route on behalf of clients or operate market centers. Restructuring to accommodate the trade-at prohibition would entail significant costs, which will likely outweigh the benefits of continuing to trade the affected securities.[39] Given the relatively small number of pilot securities, the opportunity cost (i.e. foregone revenue) of avoiding trade-at securities is low. Market participants may judge that high implementation costs are not justified by the expected benefits from trading 400 relatively illiquid stocks for one year. Accordingly, many market participants would likely choose to avoid trade-at affected Pilot Securities.[40]

Reduced participation by investors and intermediaries would ultimately lessen the liquidity of pilot securities, thereby negating a key goal of the Pilot Program. In addition, reduced market participation during the one-year pilot would sacrifice the integrity of the Pilot Program's data findings. Therefore, the results of the Pilot Program would then have limited efficacy, as the data would not account for market participants who did not participate in the Pilot Program on the basis of the trade-at prohibition's costs.

By requiring orders to execute on specific venues, the trade-at rule will increase message traffic between exchanges and other trading centers. This spider web of communications will increase load on systems that are already prone to failure.[41] Adding traffic to these networks may encourage additional failures. Such disruptions carry a serious risk of undermining public faith in market stability and fairness.

C. Negative Effect on Competition

The trade-at prohibition will divert considerable order flow to exchanges, an outcome seemingly at odds with the core Exchange Act objective of ensuring "fair competition . . .. between exchange markets and markets other than exchanges."[42] The Commission is sometimes permitted to prohibit off-exchange transactions, as the trade-at

[38]Letter from John C. Nagel, Managing Director & Sr. Deputy General Counsel, Citadel LLC 1, 1-2 (Sep. 12, 2014), *available at* http://www.sec.gov/comments/jobs-title-i/tick-size-study/ticksizestudy-28.pdf.
[39]*Id.* at 1-2.
[40]*Id.* at 1-2.
[41] In October 2014 the NYSE securities information processor crashed for ten minutes before a backup system was activated. In August 2013, a server malfunction caused a three hour trading halt in a broad swath of NASDAQ-listed securities. *See* Nick Baker et al., *Disaster Averted in NYSE Stocks as Backup Feed Kicks In,* Bloomberg (Oct. 30, 2014).
[42]Exchange Act §11(A)(a)(1)(C)(ii).

prohibition does. However, before doing so it must first find on the record, and after notice and opportunity for a hearing, that the fairness or orderliness of the market has been impaired and that the restoration of fair and orderly markets cannot be achieved through other means.[43]

In addition to the trades explicitly required to execute on exchanges,[44] market centers may choose to not participate in the pilot by automatically routing customer orders to exchanges.[45] Reducing competition between exchanges and other venues will undermine the exchanges' incentives to continue investing in technology. Moreover, exchange access fees are several times larger than fees charged by other venues.[46] Higher fees will harm investors by raising their transaction costs.

Overall, the complexity of the SRO's trade-at prohibition would undermine competition between trading venues, reduce participation in the Pilot Program, limit data collection, hinder liquidity for pilot securities, and potentially increase systemic risk. Moving forward, we believe it is critical to carefully consider these adverse consequences when reviewing the Pilot Program.

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Thank you very much for your consideration of our views. Should you have any questions or concerns, please do not hesitate to contact the Committee's Director, Prof. Hal S. Scott [redacted]) at your convenience.

Respectfully submitted,

R. Glenn Hubbard	John L. Thornton	Hal S. Scott
CO-CHAIR	CO-CHAIR	DIRECTOR

[43] Exchange Act §11(A)(c)(3)(A).
[44] "Where a quotation is displayed through a national securities exchange, the execution at the size of the order must occur… on that national securities exchange." Proposed National Market System Plan To Implement a Tick Size Pilot Program on a One-Year Pilot Basis, 79 Fed. Reg. 66,423, 66,426, 66,431 (Nov. 7, 2014).
[45] Gary Stone, *The SEC is Listening – The Tick Size Pilot,* Bloomberg Tradebook (2014).
[46] SIFMA, *SIFMA Recommendations before Roundtable on Equity Market Structure* 1, 2 *available at* http://www.sifma.org/issues/item.aspx?id=8589950100.