Remarks at the University of Notre Dame, Mendoza College of Business, Center for the Study of Financial Regulation

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Thank you so much Paul [Schultz] for that kind introduction and for the invitation to join you today. It is a privilege to be among so many outstanding market microstructure scholars. As I look around the room, I see many familiar faces, including former colleagues and people — like you, Paul, and [Mendoza College of Business] Dean Roger Huang — whose research influenced my decision to study empirical market microstructure.

Before I proceed, I need to provide the standard disclaimer than the views I express today are my own and do not necessarily reflect those of the Commission or my fellow Commissioners.

Today, I want to focus my remarks on the equities markets, and specifically equity market structure. Although it may be hard for some of you in this room to believe, in the 20 months since I began this job, some have suggested that I am a so-called "market structure expert." While such comments are certainly flattering, I cannot accept the compliment. Of course, my academic research, my private and public sector experience, and my current role as a Commissioner at the Securities and Exchange Commission ("SEC" or the "Commission") have all given me unique insights into the functioning of our equities markets. However, like many people in this room, I still consider myself a "student of markets." With so many issues to examine and debate, and the continued evolution of the financial markets, I think we can agree there is more for all of us to observe and learn.

It has been fifteen months since I gave my first speech on equity market structure.[1] Both before and since, my colleagues at the Commission have kept the issue of market structure in the forefront through their own public remarks.[2] Congress also has been expressing keen interest in equity market structure, shining a bright light on the issue.[3] And we have had some unsolicited prompting by a bestselling author, who, to put it lightly, does not have flattering things to say about the current state of the equity markets in what many refer to as simply "The Book." Given all of this attention, I am frankly disappointed that we at the SEC have accomplished very little.

Rather than merely expressing my frustration with our lack of movement in this area, I first want to point out two positive things the Commission has done in pursuit of a market structure review. First, we have made progress with respect to a tick size pilot program for small capitalization companies. By way of background, such a pilot program would test the benefits and costs of an alternative minimum price increment for small-cap stocks, which generally have lower liquidity than other market segments. Last summer, the Commission ordered the self-regulatory organizations ("SROs") to develop a plan to implement the pilot.[4] We have since published their plan for public comment.[5] Before any pilot program can begin, the SEC has to consider the approximately 75 comments we have received to date[6] and evaluate whether the program, as proposed by the SROs, is in furtherance of the purposes of the Securities Exchange Act. I understand that the Staff is diligently undertaking that analysis, and I am hopeful that the Commission will take prompt action so a pilot can commence soon.

Second, the Commission recently finalized the composition of a Market Structure Advisory Committee that was announced by Chair White in June of last year.[7] The Committee will focus on the structure and operations of the U.S. equities markets, and the Chair has described its function as a forum and resource for reviewing specific, clearly articulated initiatives or rule proposals.[8] Given the talented individuals comprising the Committee, I have no doubt that they will provide the Commission with valuable insights while undertaking this narrow function. However, I believe it would be a shame to convene this group of experts and then limit the scope of their discourse from the outset. That is why I will be challenging the Committee to think broadly about their mandate and what they can contribute to the overall market structure dialogue. As an initial matter, the Committee, rather than the Commission, should be identifying the right questions to be asked in a market structure review. The contours of an issue can be best explored from all angles, and we do not want to miss a key line of inquiry by ignoring the vast experiences and expertise of the Committee members. In addition, the Committee should recognize that its mandate grants it the authority to serve as an *independent* source of recommendations,[9] instead of simply acting as a sounding board for ideas generated by the Commissioners or the SEC Staff, or suggestions dusted off from prior discussions. We will never fully tap into the promise the Committee holds unless we free it to undertake an independent analysis of the complex issues confronting us in this space.

Despite some indications of progress, neither the tick size pilot nor the SEC's Market Structure Advisory Committee discussions are yet underway. Therefore, it is not too late to participate in and influence the market structure debate. In fact, I would like to spend the balance of my time with you today discussing the role of both academics and industry in charting the future course of our equity market structure. Specifically, I would like to enlist your help as the Commission hopefully shifts from talk about equity market structure to action. The perspectives of academic market microstructure researchers will not only be important. They will be vital.

The Vital Role of Academics

Academics are too often criticized for sitting in a proverbial ivory tower, sheltered from the practical concerns of everyday life. Surely I am not the only one in this room that has disdain for that pejorative characterization. The truth is that academic research can have real, measurable influence. As someone who has spent time navigating the academic journal publication process as well as the Washington, DC policymaking processes, I would like to make a few personal observations about how academics can truly inform policymaking through their scholarly work, particularly in the area of market structure. To start, I urge you to keep policy implications in mind as you construct and conduct your research. Too often, policy implications are simply an afterthought added to an already-finished working paper just prior to submitting it to a conference or journal.

In my several years in Washington, DC, I have had the honor to serve in several capacities in the federal government — at the SEC as an economist, at the White House during two presidential administrations, on Capitol Hill as an economist on the Committee Staff for two

Senators, and now back at the SEC as a Commissioner. From my various perches, I have been the consumer of your great work, so I know just how much academic research can enrich the policy discourse. To name just a couple significant contributions to the equity market structure conversation — from right here at the Notre Dame Mendoza School of Business — Robert [Battalio] and Shane's [Corwin] recent co-authored paper with Bob Jennings on order routing and execution quality prompted a vigorous debate on Capitol Hill, at the Commission, and elsewhere.[10] We all know that correlation does not always imply causation, but we also know that Paul's [Schultz] paper with Bill Christie, and their follow-up paper with Jeff Harris, were associated with pronounced changes in market maker quoting, as well as a criminal investigation and a billion dollar settlement of a class-action lawsuit.[11] Paul, Robert, and Shane's research has not only been groundbreaking and thoughtful, but it has also been quite impactful, beyond the narrow meaning of the term "impact factor" used by academic research journals.

This may seem self-evident, but to be truly *impactful*, you need to be *visible*. I encourage you to make policymakers aware of your research. It can be as straightforward as identifying the relevant decision-makers and forwarding your papers directly to them and their staffs. Or you can contribute to the discussion by submitting comment letters to administrative agencies like the SEC. We, for example, have a robust public comment process on each and every rulemaking, and I assure you we pay attention to what we hear. Unfortunately, the number of comments received from academics is often disproportionately low relative to other groups.[12] I hope you will consider submitting comments that let us know how our rules and regulations stand up to what we articulated as the expected impacts, identify opportunities to further enhance the regulatory system, opine on the likely economic consequences of an action, and suggest measures of success. As you prepare any of those comment letters, please keep in mind that submissions are especially impactful when they include the empirical evidence and analysis that underlies the position being advocated. Academics are perfectly situated to make such data-driven observations.

And speaking of data, I continue to be a self-appointed marketing executive for the SEC's innovative Market Information Data Analytics System ("MIDAS"). MIDAS has data about *every* displayed order posted on national exchanges. The Commission uses MIDAS internally to, among other things, monitor market behavior, understand market events, and test hypotheses about the equity markets. But we also make a number of data series freely available to the public. Please download the data, conduct analyses, and come back to us with your empirical findings. Let the Commission know whether, and if so how, the data is useful for teaching purposes. We promise to take the feedback constructively.

Further, to the extent you have occasion to be in Washington, DC and you would like to discuss your research, please reach out. Do not underestimate your ability to get a meeting with policymakers. I know I am not the only one — at the SEC or on Capitol Hill — that makes every effort to meet with anyone who expresses interest in discussing market structure issues. Schedules are challenging, but I find I am able to accommodate a surprisingly large number of requests. And I learn more listening to academics engaged in thoughtful market microstructure research than from the usual inside-the-Beltway suspects and their buzzword-laden talking points.

One more seemingly obvious point: visibility and relationships lead to opportunities. It is incumbent upon us as policymakers to affirmatively reach out to tap into your expertise. The Commission needs to hear a diversity of viewpoints, by bringing together people from academia and industry as collaborators. And we can surpass government constraints — financial and otherwise — by leveraging outside resources, such as academic research. To this end, you may be invited to participate in roundtables hosted by the Commission or other interested parties. The SEC also offers academics short-term fellowships to work in one of our Divisions, which can be mutually beneficial. In fact, I understand a few of the SEC's fellows are here today. The House or Senate may extend invitations to testify in hearings as a subject-matter expert.[13] And so on and so on. I implore you to accept such requests.

Before leaving this topic, I want to briefly circle back to the SEC's current equity market structure initiatives. I have every expectation that the willingness of academics to serve on the SEC's Market Structure Advisory Committee will substantially improve the output. Former SEC Chief Economist Chester Spatt is among the members of that Committee, as are other distinguished academics Maureen O'Hara and Andy Lo.[14] Their views, both individually and collectively, will certainly influence how the regulation of equity market structure evolves. Along the lines of what I have already said, however, it is important to keep in mind that the Commission will not be listening to the members of the Committee to the exclusion of other voices. You can stay involved by "speaking" through your scholarly works, or by talking directly to Chester, Maureen, or Andy, to the Staff of the Commission, to the Chair and other Commissioners, or to me personally.

I also look forward to reading academic research papers that will study the effects of the tick size pilot program.[15] The Commission's order directing the SROs to develop a plan to implement the pilot requires them to provide to the Commission and make publicly available their assessment of the impact of the pilot no later than eighteen months after the beginning of the pilot. I have asked Chair White to hold a public roundtable to discuss the results of their assessment, the results from academic research papers that study the pilot, and the practical application of the evidence presented.

Industry Involvement

Now that I have laid out the status of Commission efforts to evaluate the current equity market structure, and the considerable assistance academics can offer by engaging with policymakers, I want to spend a few minutes discussing another key constituency in the market structure discussion, the securities industry. Rather than waiting around for the SEC to finally begin tackling these complex issues, members of the securities industry are taking proactive steps with respect to equity market structure. To provide just one specific example of extensive industry engagement in this area, a petition for rulemaking was submitted to the SEC that proposes reform of, among other things, access fees and order handling transparency.[16] We also have received a number of white papers that discuss and make recommendations on a range of key issues.[17]

For its part, Nasdaq designed and is conducting an access fee pilot.[18] This experimental pricing program, which is limited to fourteen stocks, lowers the access fee on Nasdaq from 30 cents per 100 shares to five cents per 100 shares and reduces rebates for liquidity provision. The pilot is generating data about how lower access fees affect the quality of the markets for investors and public companies, as well as the level of off-exchange trading, price discovery, trading costs, and displayed liquidity.[19] Nasdaq has committed to periodically share the results of the program.[20] (By the way, if anyone in the audience has been studying the Nasdaq access fee pilot and cares to share their preliminary findings, please let me know after lunch.)

Because private enterprises are far more nimble than the government, initiatives like Nasdaq's that are voluntarily undertaken are much more efficient than Commission programs. Such experiments, whether they produce results favorable or unfavorable to the theories being tested, will have true value as a supplement to what we at the Commission may be trying.

By mentioning the Nasdaq pilot, as well as the SEC's tick size study, I do not mean to overstate the role of pilots or be interpreted as supportive of any and all pilots under any and all circumstances. To be clear, pilots, whether initiated by the Commission or an industry participant, have limitations. The design matters — which securities are included in the pilot, the control samples, the duration, and the data collected, etc. We must always be mindful that pilots also impose costs on market participants. Careful cost-benefit analyses must be conducted before and during the implementation of any pilot program to ensure that investors or issuers are not unduly harmed.

Finally, it is worth noting that structured pilots are not the only way to evaluate equity market structure issues, or that market participants can participate in the discussion. We continually see new entrants to the market that challenge the existing business landscape, which then serves as a natural experiment. In this way market dynamics themselves will ultimately show whether a new approach has positive or negative impacts on market quality measures, reveals insights about equity market structure generally, or exposes a market imbalance created by regulation.

Conclusion

Let me close with the words of someone I hear is still pretty popular around here — Lou Holtz. "*I never learn anything talking. I only learn things when I ask questions." With respect to a review of equity market structure, the SEC can only get so far through internal discussion and debate. We will be posing a lot of questions, and I hope the academic community and industry will continue to provide us with vital data, analysis, and feedback.*

Thank you for your attention.

[1] *See* The Benefit of Hindsight and the Promise of Foresight: A Proposal for A Comprehensive Review of Equity Market Structure, Speech by Commissioner Michael S. Piwowar (Dec. 9, 2013), *available at* http://www.sec.gov/News/Speech/Detail/Speech/1370540470552.

[2] *See, e.g.,* Focusing on Fundamentals: The Path to Address Equity Market Structure, Speech by Chair Mary Jo White at the Security Traders Association 80th Annual Market Structure Conference (Oct. 2, 2013), *available at* http://www.sec.gov/News/Speech/Detail/Speech/1370539857459; Seeing Capital Markets Through Investor Eyes, Speech by Commissioner Luis A. Aguilar at the Consumer Federation of America's 26th Annual Conference (Dec. 5, 2013), *available at* http://www.sec.gov/News/Speech/Detail/Speech/1370540451723; Market 2012: Time for a Fresh Look at Equity Market Structure and Self-Regulation, Speech by Commissioner Daniel M.

Gallagher at SIFMA's 15th Annual Market Structure Conference (Oct. 4, 2012), *available at* https://www.sec.gov/News/Speech/Detail/Speech/1365171491376; Remarks before Trader Forum 2014 Equity Trading Summit, Speech by Commissioner Kara M. Stein (Feb. 6, 2014), *available at* http://www.sec.gov/News/Speech/Detail/Speech/1370540761194.

[3] For example, Committees in both the House and Senate have held hearings on market structure. *See, e.g.,* Committee on Banking, Housing, and Urban Affairs, Hearing entitled "The Role of Regulation in Shaping Equity Market Structure and Electronic Trading" (July 8, 2014), *available at* http://www.banking.senate.gov/public/index.cfm?FuseAction=Hearings.Hearing&Hearing_ID=2e98337f-d5c5-490f-80e7-6c1c81af7243; Senate Permanent Subcommittee on Investigations, Hearing entitled "Conflicts of Interest, Investor Loss of Confidence, and High Speed Trading in U.S. Stock Markets" (June 17, 2014), *available at* http://www.hsgac.senate.gov/subcommittees/investigations/hearings/conflicts-of-interest-investor-loss-of-confidence-and-high-speed-trading-in-us-stock-markets; Subcommittee on Capital Markets and Government Sponsored Enterprises of the House Committee on Financial Services, Hearing entitled "Equity Market Structure: A Review of Regulation NMS" (Feb. 28, 2014), *available at* http://financialservices.house.gov/calendar/eventsingle.aspx?EventID=370440. In addition, Congressman Scott Garrett independently held a roundtable on market structure issues last summer. *See, e.g.,* N.J.'s Garrett Hosts Roundtable on Market Structure, *available at* http://www.bloomberg.com/news/videos/b/300e9cf8-2b36-4cb6-abf7-bfc50004a08b (July 28, 2014).

[4] *See* Order Directing the Exchanges and the Financial Industry Regulatory Authority to Submit a Tick Size Pilot Plan, Securities Exchange Act Release No. 72460 (June 24, 2014).

[5] *See* Notice of Filing of Proposed National Market System Plan to Implement a Tick Size Pilot Program on a One-Year Pilot Basis, Securities Exchange Act Release No. 73511 (Nov. 13, 2014).

[6] *See* Comment File for 4-657, *available at* http://www.sec.gov/comments/4-657/4-657.shtml.

[7] *See* Enhancing Our Equity Market Structure, Speech by Chair Mary Jo White at Sandler O'Neill & Partners, L.P. Global Exchange and Brokerage Conference (June 5, 2014), *available at* http://www.sec.gov/News/Speech/Detail/Speech/1370542004312.

[8] *See id.; see also* Press Release, SEC Announces Members of New Equity Market Structure Advisory Committee, Committee Comprised of Experts with Diverse Backgrounds and Viewpoints (Jan. 13, 2015), *available at* http://www.sec.gov/news/pressrelease/2015-5.html.

[9] As analogies, the Investor Advisory Committee and SEC Government-Business Forum on Small Business Capital Formation advise the Commission by, among other things, developing recommendations for review and consideration. *See* http://www.sec.gov/spotlight/investor-advisory-committee-2012.shtml; http://www.sec.gov/info/smallbus/sbforum.shtml.

[10] *See* Robert Battalio, et al., Can Brokers Have it All? On the Relation between Make-Take Fees and Limit Order Execution Quality (Mar. 5, 2014), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2367462&download=yes.

[11] *See* William G. Christie & Paul H. Schultz, Why do NASDAQ Market Makers Avoid Odd-Eighth Quotes?, *The Journal of Finance* Vol. XLIX, No. 5 (Dec. 1994); William G. Christie, et al., Why did Nasdaq Market Makers Stop Avoiding Odd-Eighth Quotes?, *The Journal of Finance* Vol. XLIX, No. 5 (Dec. 1994); William G. Christie & Paul H. Schultz, Policy Watch: Did Nasdaq Market Makers Implicitly Collude?, *Journal of Economic Perspectives* Vol. 9, No. 3 (Summer 1995). *See also* Press Release, Justice Department Charges 24 Major Nasdaq Securities Firms with Fixing Transaction Costs for Investors (July 17, 1996), *available at* http://www.justice.gov/archive/opa/pr/1996/July96/343-at.html; Collusion in the stock market, *The Economist* (Jan. 15, 1998), *available at* http://www.economist.com/node/111273.

[12] By way of example, the Commission received approximately ten comment letters from professors (and professor groups) in connection with its 2010 Concept Release on Equity Market Structure. That constitutes only approximately 4% of the comment letters submitted in connection with the release. *See* Comment File for S7-02-10, *available at* http://www.sec.gov/comments/s7-02-10/s70210.shtml.

[13] There are many examples of professors testifying at congressional hearings. *See, e.g.,* Chester Spatt, Statement for House Subcommittee on Capital Markets and Government Sponsored Enterprises Hearing on "Equity Market Structure: A Review of SEC Regulation NMS" (Feb. 28, 2014), *available at* http://financialservices.house.gov/uploadedfiles/hhrg-113-ba16-wstate-cspatt-20140228.pdf; Erik R. Sirri, Testimony for House Subcommittee on Capital Markets and Government Sponsored Enterprises Hearing on "Equity Market Structure: A Review of SEC Regulation NMS" (Feb. 28, 2014), *available at* http://financialservices.house.gov/uploadedfiles/hhrg-113-ba16-wstate-esirri-20140228.pdf.

[14] *See supra* note 8.

[15] *See supra* note 4.

[16] *See* Letter from Joe Ratterman, CEO, BATS, to Brent Fields, Secretary, U.S. Securities & Exchange Commission (Jan. 21, 2015), *available at* http://www.sec.gov/rules/petitions/2015/petn4-680.pdf.

[17] *See, e.g.,* SIFMA Board Committee on Equity Market Structure Recommendations as of July 10, 2014, *available at* http://www.sifma.org/issues/item.aspx?id=8589949840; Managed Funds Association Equity Market Structure Policy Recommendations (Sept. 30, 2014), *available at* https://www.managedfunds.org/wp-content/uploads/2014/09/MFA-Equity-Mkt-Structure-Recommendations-final-9-30-14.pdf.

[18] *See* Press Release, Nasdaq Launches Experimental Access Fee Program (Feb. 2, 2015), *available at* http://ir.nasdaqomx.com/releasedetail.cfm?ReleaseID=894037.

[19] *Id.*

[20] *Id.*

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